Citizens’ expectations from their governments are ever increasing. E-government is a powerful tool which can enable governments to deliver the expectations of citizens. It also presents to governments, possibly their last opportunity to evolve from their traditional image and be seen as the citizen’s friend, who is just a click away.

E-government Macro Issues presents the big picture of e-government, its impact on democracy, citizen empowerment and country competitiveness. It also brings together, interesting country perspectives and government re-engineering issues.

The book will help to develop a critical understanding of the role and impact of e-government across countries, sectors and projects. It should also help to trigger a process of constructive thought and action in the minds of all stakeholders, which would hopefully lead to more and more success stories in e-government.

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E-government: Macro Issues

Editor
R. K. Mitra

GIFT Publishing
Global Institute of Flexible Systems Management
New Delhi
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ISBN: 81-903397-5-3

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Published by

GIFT Publishing
Global Institute of Flexible Systems Management
S-15, LSC, DDA Commercial complex
Mayur Vihar, Phase-I, Delhi-110091
Tel: 91-11-22754712
E-mail: admin@giftsociety.org
Website: www.giftsociety.org

Printed by

Jay Dee Services Inc.
1897, IInd floor, Udaipur Chand Marg, Kotla Mubarakpur, New Delhi - 110003
Tel: 91-11-24628556, 65644537
E-mails: jdsi2000@gmail.com; jdsi2001@yahoo.com
Website: jdsionline.com
Foreword

As the nation moves into an accelerated process of adopting E-government, it has become very essential to understand the wider issues that have an impact on E-government. It is also essential to understand how E-government impacts our society and our institutions.

Unfortunately, very little structured study has been carried out in this area. With the launch of the National e-Governance Plan (NeGP), a study of the various macro issues of E-government is a great help for E-government policy makers. It is not only a science but also an art to grasp the wide implications of E-government and to identify causal relationships in this complex initiative.

The complexity of the macro issues of E-government get further compounded by the myriad cultural and sub-cultural sensitivities that we have to consider. For example, how can we have a web site in 2 languages in a state that has at least 4 languages being spoken by significant populations? And if we cater to all the language requirements, how can we make E-government cost effective? Wouldn’t E-government become more expensive than the non-IT enabled government and thus take away the promise of E-government making governments more cost efficient? Would that not make E-government a self-defeating exercise? These, and many more such issues, make the study of macro issues of E-government such a complex activity.

I am immensely impressed with the quality of papers included in this book that throw light on some of the macro issues of E-government. I am confident that this book will help E-government policy makers in formulating more effective policies.

R Chandrashekar
Preface

“Only strategy and no tactics will lead to partial success; no strategy and only tactics is a sure path to failure” - Sun Tzu, The Art of Warfare

The above were the words of the great Chinese general Sun Tzu, written in his military manual, The Art of Warfare. These words have stood the test of time and is relevant even in the age of E-government. If we blindly implement E-government without looking at the strategic macro issues and study the wider aspects and implications of E-government, we are bound to walk into failure.

What if our people are not computer literate and we provide accessibility to government only through IT channels? After all, change management preaches that all alternate channels of delivery should be stopped in order to ensure the success of E-government. What happens to those who are not computer literate? Or for that matter those who are illiterate? After creating digital divide, would we not also create a governance divide? Won’t those who are illiterate or not computer literate not be able to access government services? What kind of a E-government would that be? Would that be beneficial to our society? Would E-government add to the dangerously piling up e-waste which is sometimes blamed for the increase in cancer?

Macro issues of government are thus extremely critical for a balanced approach to E-government that not only ensures the output (which is invariably a technological system) but also ensures the outcome (such as reduction in infant mortality, improved healthcare etc).

It is equally important to study these macro issues from a country perspective since cultural peculiarities have a considerable effect on the macro issues. For example gender issues vary from culture to culture and therefore their impact on E-government or vice versa, will vary from culture to culture. Even issues such as ODF adoption, will be impacted by the existing sub-cultures.

Given the above gamut of issues, it becomes imperative to re-engineer the government processes to benefit from the understanding of the macro issues. Without appropriate re-engineering, it would be a futile exercise to expect proportionate outcomes from the investments into the E-government systems.

This book captures some of the thoughts on the above issues. Hopefully this book will help E-government policy makers and practitioners to conceptualize and implement E-government systems that deliver the outcomes that they were conceptualized for.

R. K. Mitra
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E-governance – Inhibitor or Facilitator for Democracy and Citizen Empowerment?

Bardo Fraunholz and Chandana Unnithan

ABSTRACT

Democracies of the globalised world have been striving towards citizen empowerment in the recent decade where E-Governance is perceived as a facilitator. Democratic governments in general feel that being accessible online 24/7 to the average citizen not only makes them transparent, but also empowers the average citizen. In this process, citizen data privacy, information sharing across nations and uniform accessibility to electronic services delivery, emerge as pertinent issues. Through a critical discourse analysis, we take a deeper look at the perception of e-governance being a catalyst in empowering citizens in the global progress towards electronic democracies.

Keywords: Democracy, E-democracy, Digital Democracy, Citizen Empowerment, E-governance

1. Introduction

The concept of empowering the citizen via electronic governance has been gaining momentum across liberal economies in the world where democratic principles underlie the government constitutional structures. Norris (2003) purport that this has been enabled by the growing use of new information and communication technologies (ICTs) particularly designed for strengthening democratic governance around the world. E-governance is widely acknowledged as the application of new ICTs, especially the Internet and WWW as channels for engaging citizens in government as well as facilitating delivery of government information and services. According to a UN Study in 2001, almost all developed nations had launched comprehensive initiatives in e-governance with big budgets. Forefront in this progress is the United States, Australia, New Zealand, Singapore, Norway, Canada and the UK (UN/ASPA, 2002). However, reports in the same year (Backus, 2001) indicate that e-governance is being deployed as a vehicle for facilitating uniform democracies in some developing economies such as Uganda and South Africa, where issues of uneven spread of ICTs and low literacy are limiting the progress. In India, a progressive developing democracy, e-governance seemingly is visualised as an equaliser which will eventually empower the disparate population in participating in the democratic process.

An alternative dimension is provided by Treanor (2006) in his commentary, ‘Why democracy is wrong’. He points out that electorate rich democracies will not accept mass transfers of wealth to poorer democracies nor accept mass migration. A causal relationship is thus developed at global level between democracies in rich democracies and excess mortality in poor democracies. This is where the digital divide comes into governance. Although the Internet may have prepared an even playing ground, the digital divide among

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democratic nations across the world has lead to an uneven implementation of electronic governance and also brought up varied issues. The rather implicit, yet pertinent issue that is beginning to emerge is that whether electronic governance is really facilitating the promises of democracies by empowering the citizen, also via bridging this divide.

Conversely, in developed rich democracies of the world, the issue of privacy and security/integrity of personal information is beginning to emerge as the pertinent issue. In a brief research of three democratic developed nations Riley (2004) points out that there is information sharing of citizen databases not only internally among departments, but also between the nations, enabled by the new ICTs/Internet. Internally, there is a move towards ‘surveillance societies’ which then endangers the foundational principles of a democracy itself. If the government or executive is watching its citizens (albeit for their own protection), with their information handy for reference (albeit for identity/convenience purposes), how will this translate into free democratic principles? There is also a distinct possibility of manipulating or using it for sustaining the government.

Our paper is based on this premise where developed democracies in the world are struggling to find the right balance while developing democracies are faced with the difficulty of equal distribution of wealth translating into ICT access, and implementation issues – in the hope of facilitating digital democracies to empower the citizen and enable more participation of informed citizens in governance. Two main objectives have been identified for e-democracy: (1) to provide citizen access to information and knowledge about the political process, services and choices available and (2) to enable the transition from passive information access to active participation by informing the citizens, encouraging them to vote, representing them, consulting with them and involving them (Backus, 2001:1). Depending on varied dimensions of democracy, these objectives may translate into varied initiatives in e-governance, which may or may not be a facilitator for the types of democratic governments and in many cases there may be conflict of founding principles/ideals. In this premise, we propose our research question: is e-governance an inhibitor or facilitator for democracy and citizen empowerment?

This paper is organised as follows. In the next section we explain the research framework with justifications, essential terms, underlying principles and theories. The following section discusses some pertinent issues via examples visible in developed and developing economies, to highlight the issues that are emerging with metrics which seem to indicate their relevance. The paper is concluded with an outlook, throwing an open forum for debate. We expect this paper to be one of the pioneers in bringing together varied economy profiles into context, informing academia, researchers and political forums engaged in the progression of digital democracies.

2. Research Framework

The post modern approach of critical discourse analysis (see Locke, 2004; Blommaert, 2005) has lately been used as a way of approaching an issue by deconstructing reading and interpretation of the ‘discourse’ available in public domain, especially when there is not sufficient empirical data available for analysis and the topic itself is evolving or fuzzy. The contribution of the post modern Discourse Analysis is the application of critical thought to social situations and the unveiling of hidden (or not so hidden) politics within the socially dominant as well as all other discourses (interpretations of the world, belief systems, etc…(Palmquist, 2005:1). While there are no set guidelines on applying this method, in general, emerging debates and information are presented in a logical discussion to probe their hidden meaning – bringing forth relevant insights. Numerous instances have revealed the applicability of this approach in information systems related discourses. Beath and Orlikowski (1994) applied this approach in deconstructing the IS user relationship in information engineering. Abott and Jones (2002) attempted to bring forth emerging themes on the near shore software outsourcing and globalization. Thompson (2004) applied this approach to elicit meaning from a developmental discourse on ICTs and power in emerging economies. Yamaguchi and Harris (2004)
applied this approach to a Bt Cotton discourse to find that there are dominant shifts over time from governmental process to economic impact.

Our research quest is on a topic that is being debated in different contexts across the world and the answers are still emerging. We felt that this approach is most suitable to ‘deconstruct’ the debates and find some emerging answers. In the process, the paper has been written with this underlying philosophy of posing questions, deconstructing the rhetoric and drawing some emerging thoughts together. Before we launch into the discussion, a few terms that are relevant to this paper are defined in the table below. Given the varied definitions available, this is a broad attempt to define those terms that are relevant to our theme and not seminal definitions.

### 2.1. Demystifying Democracy in Context

World economies have experimented with varied forms of government structures. While every form of government including monarchy, capitalism, communism, socialism, dictatorship has had its relevance in history as well as recent times, the most popular form in the world today is democracy. However, democracy can either foster a cohesive political structure by engaging/empowering the citizens, or destabilise societies in transition by dissolving consensus and fuelling differences (Hay, 2005). As pointed out by Treanor (2006) democracy perhaps does not deserve a semi-sacred status, as the issues of inequality and defects of the democratic culture are in conflict with its application… it is perhaps possible to create a political condition

**Table 1: Definitions in Context: Democracies to Digital Governance**

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
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<tbody>
<tr>
<td>Democracy</td>
<td>is, literally, rule by the people (from the Greek demos, &quot;people,&quot; and kratos, &quot;rule&quot;). In contemporary usage, the term &quot;democracy&quot; refers to a government chosen by the people, whether it is direct or representative (Wikipedia, 2005)</td>
</tr>
<tr>
<td>E-democracy</td>
<td>a portmanteau of electronic democracy, comprises the use of electronic communications technologies, such as the Internet, in enhancing democratic processes within a democratic republic or representative democracy (Wikipedia, 2005)</td>
</tr>
<tr>
<td>E-democracy</td>
<td>refers to the processes and structures that encompass all forms of electronic interaction between Government (elected) and the Citizen (electorate). (Backus, 2001)</td>
</tr>
<tr>
<td>E-government</td>
<td>is a form of e-business in governance and refers to the processes and structures pertinent to the delivery of electronic services to the public (citizens and businesses), collaborating with business partners and conducting electronic transactions within an organisational entity (Backus, 2001)</td>
</tr>
<tr>
<td>E-governance</td>
<td>is the application of electronic means in the interaction between government and citizens; government and businesses as well as in the internal government operations to simplify and improve democratic, government and business aspects of governance (Marchus, 2001)</td>
</tr>
<tr>
<td>Digital Governance</td>
<td>refers to governance processes in which Information and Communications Technology (ICT) play a significant role. The role played by ICT could be wide-ranging: in delivery and standards of governance services, to how people access such services, and the participation of people in the governance sphere. Digital Governance uses ICT to induce changes in the delivery and standards of governance services and more importantly, in the way citizens interact and participate in the governance sphere (DigitalGovernance.org, 2005)</td>
</tr>
</tbody>
</table>
E-government: Macro Issues

for utopian world, via rather non-democratic, but innovative societies. For facilitating innovation at grass root levels in democratic societies however, as the proponent Thomas Jefferson believed, educating the averaging citizen and empowering them in the process is essential. This is perhaps where e-governance begins. In a seminal paper, Norris (2003) brought out theories on the role of e-governance in deepening democracies which have been used as a theoretical platform to launch our discussion.

Pluralist democracy suggests elite level competition and bargaining among the representatives of diverse interest groups, agencies, voluntary organizations, NGOs and political parties representing the major sectors of society. Within strong civic societies such as the United States, the use of new ICTs in politics are likely to accelerate hyperpluralism, with a fragmentation of new specialist organizations and agencies seeking to influence multiple access points in the policy process. This is further exemplified by networks concerned with consumer protection and environmental advocacy (Norris, 2003:4) However, if the civic societies are weak and power remains with the government, there is a role for e-governance. For example, take the case of public contracts bidding process being online. Opportunities for corruption would reduce and competition would become healthier, due to transparency. Other roles where e-governance can facilitate democracy is via facilitating cost effective efficient public sector for routine e-government transactions such as issuing official ID cards, driving licenses and birth certificates as well as disseminating information such as jobs, weather forecasts or rural crop prices for rural farmers in developing societies. The ideal role of new technologies for government in this view is to improve core business operations in the public sector, reduce transaction costs, expand information resources, and deliver services faster, cheaper, and to a wider variety of 'customers'. To meet the requirements of pluralist democracy, at a minimum level, government websites need to emphasise the provision of rich information content as well as facilitate two way interactive communication with government officials and people involved in policy building (Norris, 2003)

Representative Democracy by contrast focuses particularly upon how democracies function through free/fair elections. Theoretically, citizens are allowed to choose from alternative candidates/parties to represent them in government, by exercising their informed choices while casting a vote in the elections. Opportunities are then given to citizens to have their preferences weighted equally in the conduct of government. Theoretically, government is thus kept accountable. This is also perhaps the widely practised form of democracy in the world. However, there is the real question if this process really works in democracies today? For example, in a democratic nation where half or more of the population is illiterate – how can an informed choice be made? Here is where the promise of ICTs and e-governance comes in. First, e-governance could improve the quality of information available to a citizen to make an informed judgement in electing the correct representative. Corrado (2000) argued that a number of political websites, including mass media, interest groups, parties, unmediated information and so on could prove to be information sources on performance of government, record of candidates and legislative debates. The use of ICTs conversely could enable efficient electoral administration facilitating vote counting and dissemination of results. The potential of e-voting adds a further dimension as an important innovation reducing costs and strengthening electoral turnout – as it is more convenient. Further, in established democracies having multiple channels for political communication, where press is partisan or state broadcasting is biased, the Internet may be a neutral source of independent information. To meet the requirements of representative democracy, as with pluralist visions, government websites need to provide official information such as laws, research reports and publications, as well as facilitating two-way interactive communication with officials in the agency and with issue-related policy networks. Ideally to strengthen representative democracy governments should also introduce a variety of e-registration and e-voting facilities as well, a stage which currently remains under development with pilot schemes tried in many countries such as Switzerland, the United States and the United Kingdom (Norris, 2003:4)

Direct Democracy (alternatively termed ‘strong’ or ‘deliberative’ democracy), assumes that the public should have more opportunities to exercise their voice rather than periodic via elections. For this purpose
they need to become engaged in community decisions. Etzioni (1993) envisioned that the Internet will enable a ‘teledemocracy’ through mobilisation of virtual communities that participate in the process. Budge (1996) commented that e-governance could enable online referendums, plebiscites and public forums for direct decision-making. In established democracies many believe that the growth of e-governance can serve to modernize and deepen democracy where the public has become more disenchanted with the traditional channels of participation in representative democracy, exemplified by falling levels of voting turnout, party membership, and community associations (Norris, 2003:7). However, as Robert Putnam (2000) argues, mass membership of voluntary organizations has eroded democracies such as America, reducing social capital and the capacity of citizens to work together to solve common problems. While there are debates on the ‘crisis of democracy’ (Trenear, 2006), the growth of average informed citizens in affluent democracies are on the rise, with high expectations on the form of democratic governance. Conversely, there are rather passive evaluations of the actual performance of the traditional institutions of representative government. The new ICTs and e-governance put together could ‘…potentially serve to reengage citizens with government, though expanding public consultations, increasing two-way interactions between citizens and public officials, and widening deliberation’ (Norris, 2003:7). As against the other forms, direct democracy ‘…emphasize action-related facilities, including, at a minimum, the ability for citizens to perform transactions, to submit forms online, to engage in online issue-related discussion forums, and to appeal procedural irregularities. More demanding forms of interaction would ideally involve departments offering public consultation processes, online surveys and polls.’ (Norris, 2003:8)

With the three types of democracies, strengthening public participation in formulating government policies or facilitating the governance is a common feature. The attempt to engage the public direct through new ICTs could widen social inequalities in less developed democracies. As Margolis and Resnick (2000) comments with the power of Internet, the democratic process would be ‘politics as usual’ as it reinforces the power of established institutions such as the major parties, interest groups and media corporations, that are already well-entrenched players in the policy process. Although Internet may be a new and neutral platform, it may be of no value in a less developed democracy where there are wide inequalities of access or an established democracy with uninterested average citizens, who vote passively. Will the Internet based information help in an illiterate or semi literate society where citizens lack the inherent knowledge or do not have sufficient access to the Internet? Chadwick and May (2003:289) argue that e-governance serves to reinforce managerialism in the public sector rather than opening new doors for public consultation and participation. While studies on direct democracy focus on government websites delivering better services, they may not have addressed the converse perspective on ICTs or e-governance that conflicts with democratic ideals. As Norris (2003) comments, a broader understanding is required to evaluate the actual value of e-governance in facilitating democracies.

3. Deconstructing Discourses on E-democracies

In this section we are exploring some established, new or developing democracies in the context of e-governance. In 2004, an e-democracy seminar was organised by the European Commission in Brussels. The highlights of this seminar reported by Riley (2004) seem to point towards citizen participation and empowerment, in relation to facilitating democracies. At a second level, all the governments involved may perhaps be facilitating governance via local councils, state councils or federal offices i.e. online (Okot-uma,2000; Caston and Tapscott 1992, Holmes 2001) to make themselves available to average citizen 24/7. The real question is how much of this is really engaging the citizens, which would then make e-governance an effective vehicle in facilitating democracy? Riley (2003) argues that the debate is often polarised between those who feel that the new ICTs will enhance the participation by the citizen in the government process and others who feel it is another medium only. Clift (2002) believes that if the governments deliver more services online, there will be a dramatic shift in the willingness of citizens to use them. Is this a correct assumption? If the government
E-government: Macro Issues

engages in online activities with the citizen, does it mean that it will automatically facilitate the democratic process? Conversely, will the use of ICTs in governance interfere with the democratic freedom within a nation? These are some underlying questions that are driving this discourse analysis.

Consider the notion that the free and fair election process which is regarded as fundamental for democracies. It is meant to enable citizens participate in the democratic process, by electing their representatives to represent them in the government. The essential component in this is the participation of all citizens in the elections. According to a recent survey (MORI, 2005) there is a gradual decline in the number of voters in developed nations although many economies enforce mandatory voting (for example, Australia) so that every citizen is included participating in the democratic governance. Conversely, the survey also highlighted an increasing desire among developing democracies to lower election relation costs through e-voting. Many economies such as Austria, Brazil, Canada, Estonia, India, Ireland, Norway, etc have pioneered electronic voting (Ace, 2006). We cite two examples from a developing and developed economy that is relevant here. In Brazil, more than 400 thousand electronic voting machines were used nationwide in the 2002 elections and the results were tallied electronically within minutes after the polls closed. Subsequently, data transfer took place on secure diskettes or via satellite telephone to central tallying stations, and then transmitted electronically over secure lines to tabulating machines in the capital, Brasília, where the results were consolidated and announced within hours (Ace, 2006). In the Canadian State of Ontario, 12 municipalities held the first full municipal and school board electronic elections in North America using either the Internet or the phone but no paper ballots. The e-voting system helped increase turnout to 55 percent in some places, against normal municipal election rates of 25 to 30 percent (Ace, 2006). As visible from these examples, both developed and developing democracies do have valid precedents for pursuing the e-voting process – as a first step towards empowering the citizen in a democracy.

The Republic of Congo had its first open and democratic legislative elections in four decades (Isango and Colombant, 2006), where more than 9500 candidates were competing for the country’s new 500 seat parliament – the electronic voting process would seem quite relevant in enabling the process. The elections which were held in July 2006, with the international community investing USD460 million into the election process (Flynn, 2006). However, following the elections, allegations of fraud lead to the arrests, unrest and deployment of peace keeping troops in September 2006, when the results were to be announced. The Supreme Court of the Democratic Republic of Congo (DRC) postponed the release of final results and also declared second proposed elections in October as unconstitutional (Xinhua, 2006). The costs in conducting a re-election and logistical difficulties seem to be the major reasons for this ruling. Therefore, it would be theoretically very relevant for this economy to use electronic voting to avoid fraud, reduce transaction costs and perhaps resulting in a more peaceful outcome. However, this would mean engaging all of the citizens in the process. In a country with a population of 3,039,126 with 82.8 percent literacy (Wikipedia, 2006), wrought with civil war history, lacking infrastructure, where the reach of ICTs to every citizen poses a significant challenge — is this a viable solution? In such a situation, can ICTs and eGovernance be the answer to facilitating equitable participation resulting in a representative democracy?

India is touted to be the world’s largest which has pioneered e-voting seemingly to reduce the costs as well as to engage as much of its large voter base in the population. Over 1 million electronic voting machines were used in 2004 elections (Ace, 2004) to engage approximately 672 million voters which constitute a large literate/semi literate population. However, electronic voting is only one of the initial measures in the way towards empowering citizens. The voter population at the end of 2005 as per indicatory statistics show that the literacy is approximately 66 percent with an almost 50:50 percent spread between literate/semi-literate population (Fraunholz and Unnithan, 2006). The semi-literates are the population which has developed from government initiatives in literacy using ICTs. However, a large population of voters are the ‘digerati’ generation (Bagga, 2004), mainly concentrated in the metropolitan cities as professionals or the beneficiaries of the ICT industry. To a large extent, the ICT revolution and the subsequent boom of businesses relating to
Business process outsourcing has led to an increase of informed citizenry. Conversely, the usage of ICTs and e-governance is visible in the state and federal level government services (www.mit.gov.in). In a review of the usage of ICTs and e-governance, Dogra (2005) points out that e-governance has been a useful way of reaching the country’s large population base. He argues that the initiatives have made the government more transparent, efficient and engages the citizen in the democratic process.

India has a multiparty system in which candidates are nominated for participating in the elections by people representations. Over time, there have been allegations of implicit manipulation by political parties also aided by the media to help in the winning process of any political party although this may not only be the case of India, but rather all democracies. In the recent elections, the strongest political party which was set to win the elections were the BJP who really targeted the ‘digerati’, with campaigns via Internet. (Wilkinson, 2005). Perhaps, the ultimate aim was to win via the ‘swadeshi’ or self reliance using ICTs. However, as against predictions, the Congress party which campaigned in the low or semi literate rural areas, aiming at farmers and common man, hoping for less or no mass votes from metropolitan areas won the elections. As pointed out by the post election analysis of Wilkinson (2005), most professionals seem to have voted for the Congress, especially from metro cities. As an antithesis, the CPI Marxist party, which had always remained in the shadows except for their regional presence, formed an alliance with the Congress party – with completely different set of ideals to form the new government.

E-governance seems to be successful in the Indian context especially in reversing a defect in the democratic system, and thereby helping to empower the citizens. First, many of the government services and information becoming electronic has helped the upcoming professionals with much demand on their time. The lifestyle changes caused by the ICT revolution in India, also promoted actively through governance, have brought the semi-literate population closer to Internet and to better inform them regarding the democratic elections. Specifically, while the illiterate population who is approximately the 50 percent voters is becoming better informed, the already literate, professional, ‘digerati’ who is already aware of the actual reforms touted to have been taken place by the existing BJP or regional governments is questioning them. For example, a professional who has benefited the most from a multinational or BPO is questioning the notion of ‘swadeshi’ or national self reliance slogan of BJP because it contradicts with the existing structure. These people seek economic stability and expect the governments to create an atmosphere of stability and prosperity. In some regional strongholds such as the ‘Cyberciti’ of Hyderabad, the post election posters seem to indicate that the professionals have woken up to the fact that nothing concrete is being done to improve their quality of life by the existing regional governments (Hindu, 2004). And the result, we think, perhaps is the success of e-governance and ICTs in facilitating the democratic turnaround in India, reversing the possible manipulation by the government.

<table>
<thead>
<tr>
<th>Table 2: India – A Post Election Analysis of Media</th>
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<td>‘… the Congress-UPA victory represented the Indian people’s rejection of economic liberalisation – a call for government to focus on helping the poor and rural Indians rather than software engineers, exporters, call-center employees, and other assorted yuppies in such boom towns as Bangalore, Hyderabad, Pune, and Chennai (Madrus). One post election newspaper cartoon showed defeated Andhra Pradesh chief minister Chandrababu Naidu, nicknamed the “laptop minister” for his high technology and economic modernisation initiatives, being beaten over a peasant’s knee with the caption “the Laptop”…</td>
</tr>
<tr>
<td>…supporters of secularism claimed that the election results represented clear rebuke to the BJP’s Hindu nationalist ideology and politics of polarisation that led to massive anti-muslim programs…</td>
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<tr>
<td>…a third explanation saw the elections as part of now familiar pattern of anti-incumbancy in India. State and national governments perform so badly that India is perhaps the only country where it is statistically better to be a challenger than an incumbent.</td>
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E-government: Macro Issues

The notion of manipulation of governance in democracies facilitated by e-governance takes the discourse into the area of dual citizenships. Post the world war time many people migrated to different countries seeking a better quality of life. With globalisation and movement of people, many economies now constitute a significant amount of immigrants from another nation. Over the past decade in particular, dual citizenships became the norm to keep these migrants engaged in the democratic process of their parent economies. We take the example of Australia, a large immigrant nation in this context initially. According to statistics, 3.5 percent of Australian population in 2003 consisted of Italians (Cavallaro, 2003). Our discourse is focussing on this population who live as immigrants in Australia, many with dual citizenships.

As is evident from table 3, the existing governance has been able to manipulate the turnout in the electoral process, through dual citizens, living outside of Italy. We argue that perhaps, when the migration began post world war, without the Internet and power of ICTs translating into e-governance, this obvious manipulation would not have been that easy. The manipulation is now easy given that the older generations of immigrants are still caught up with sentimental attachments to their homeland and the second generation of immigrants finds the concept ‘interesting’ (Cavallaro, 2003, ABC Radio National, 2006). In such a situation, is e-governance really empowering the citizen or manipulating it? And therefore, can this be enabling a democratic process of true representation?

Table 3: Italian Elections – A Media Analysis

The Italian election has suddenly become particularly relevant to the three and half million living abroad including some 100,000 in Australia. That is because for the first time communities will be able to vote, with the creation of four massive electorates outside election campaign is underway throughout the world including Australia, which has candidates for the upper and lower house.

Australia, a large immigrant nation has dual citizenships with many democracies across the world. As of 2005, a significant population i.e. 5 percent of citizens live outside the country as dual citizens (COA, 2005). For a dual citizen, the mandatory requirement of voting is fulfilled via postal voting routed either through their nearest embassy. There has been several debates on the provision of electronic voting, which would make the process more convenient for the citizens, but remote e-voting is yet to come into practice. Conversely, every citizen perhaps is regularly inundated with information regarding the votes and candidates and so on. There are two types of Australian citizens who live outside Australia. The first is seeking a better quality of life in regards to work or have settled in the UK or US. This is also similar is the case with an economy such as Jamaica, where much of its population live and work in the US. For these people, how relevant are the current issues that happen in Australia (or Jamaica) which might inform them better in the voting process to take an informed choice in their respective home economies? With the information overload, the tendency is to become more complacent and vote passively because of the mandatory requirement enforced by some democracies. While the principle behind the mandatory enforcement is to engage every citizen, we ask the question, is it really engaging the citizen? Conversely, consider the significant number of dual citizens from economies such as Lebanon, who have become Australian citizens but live in their home country. For these people, the citizenship and passport acts as a ‘security blanket’ especially in times wrought war. How involved are these citizens in Australian democratic process? Specifically, in such a situation, how relevant is the mandatory voting, which will empower the citizen, made even more convenient via electronic voting, to a dual citizen? Would they really exercise the voting intelligently, considering the issues relevant for their
home democracies?

Australia had undertaken a recent census in which all people where to participate, using the Internet. One of the options which the person had to tick off was to make their information public after 90 years. There has been several debates regarding the privacy of such information. What if the governance changed and the information is then released for public? What is the guarantee of privacy with such a rich database? In light of the recent security dangers, is there any guarantee that the actual data is not manipulated affecting certain ethnic minorities, who exist in the population? Is this not affecting the democratic principles? To ensure security for average citizens, it is common practice to photograph people on the streets in many developed nations. However, how does this align with the democratic principles of the freedom to be left alone in a democracy? In regards to privacy, Riley (2004:12) focuses on the national ID card debate in the UK. The labour government proposed biometric passports, ID cards and finger printing of citizens who want to fly to the USA. The government argues that these are measures to protect the average citizens within UK against terrorism. An ACLU (Riley, 2004) report articulates fears about potential privacy violations and the growth of the new ‘surveillance society’ where there is seemingly gross violation of citizen privacy. For example, the ‘Terrorism Information and Prevention System’ in the US was proposed to engage citizens from all walks of life, such as cable repair men or technicians and public transit employees in the security initiatives via building a database with their information. The program met with an outrage, as it reflected badly on an average citizen of the country or specifically, it turned them into ‘potential terrorists’. Any person with a grudge could misuse this opportunity with misleading information. And as a result, instead of enabling democracies and citizen empowerment – there would be gross violation of privacy and the right to be left alone in a democracy. Riley (2004) comments that over the two centuries, the thrust on human rights have also increasingly lead to privacy legislation becoming a critical issue. In democratic societies, individuals have certain expectations on governments in this regard. More specifically, in leading first world economies such as the USA, UK and Canada, personal information is available to the government for security purposes mainly. This in net effect means that these economies, promoting dual citizenship will also share the data. Is this not an interference with democratic principles?

4. Summary and Outlook

In this critical discourse analysis, some poignant issues relating to the notion of e-governance and ICTs in enabling democracies have emerged. First, the notion of democracy and e-governance seem to have different relevance in developing and developed democracies. While it seems to be a cost effective option to deploy e-governance techniques in a developing democracy, the lack of infrastructure and uneven spread of education adversely affects the concept. Unless 100% literacy which will include all the people and infrastructure to support the ICT deployment is in place, perhaps, it is not correct to suggest that the e-governance is really facilitating democratic governance. In the case of developed nations, the argument for e-governance is conflicting with the principles of democracy itself. In the name of security and involvement in the democratic process, e-governance necessitates that citizen data is gathered and stored. In the globalised
world, where dual citizenships exist, the question of data sharing amongst nations as well as misuse of their information is causing privacy concerns. Conversely, the power of e-governance in facilitating or inhibiting democracies through elections process is seemingly different. It has been manipulated (thereby inhibited) democracy in one nation, it seem to have succeeded in another nation in facilitating democracy.

Enabling a better quality of life in a democracy and citizen empowerment seem noble ideals that are fundamental in the deployment of e-governance. However, we find that as the world is becoming increasingly globalised, developing nations are progressing rapidly, and migration of people is common – the concept of democracy itself might need critical assessment. How can e-governance facilitate democracy in a developing nation where it is unable to reach every citizen? Conversely, in a developing nation, where every citizen data is collected and used for identifying ‘potential terrorists’ in the name of security, how does the e-government deployment facilitate the democracy? It is doubtful if e-government and democratic principles are really progressing together or enabling each other. From another perspective, is democracy or enabling it via the use of ICTs really the answer for progress and stability of nations? We argue that it is perhaps time to move on to a new concept in governance, a new world where ICTs and e-governance may really empower citizens, reaching every citizen in adequate manner, without interfering with their freedom to be themselves – without the violation of human rights in the name of enabling democracies.

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E-government: Macro Issues


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E-government Governance Framework

Uma Kumar1* and Ramesh Gupta1

ABSTRACT
Although basic tenets of government and governance have not changed with the coming of internet, there are trends towards new forms of organizational structures and relationships needed to support the ‘government-as-a-whole’ character of e-government. The role of governance is examined to manage change and impacts due to transformation caused by e-government. An e-government governance framework is proposed to assess the sustainability of e-government initiatives and change interventions. The framework is grounded in actor network and institutional theories and virtual state concepts. The paper concludes with a research plan to continue with the work presented here.

Keywords: E-government; governance; institutional theory; network theory; virtual state; developing countries.

1. Introduction
The advancements in ICT and specifically internet picked the imagination of governments in many countries around 2000 for creating new channels for delivering service to publics2, and improving its administrative structures. This led to many countries establishing e-government programs to enhance the services to publics. Over the five year period thereafter, e-government programs mainly became learning grounds for defining and managing new relationships within the bureaucratic structures and between the bureaucracy and the publics; these relationships arising largely due to increased emphasis on horizontal and vertical integration of business processes and ‘self-service’ mode of delivering government services.

In our experience, the basic tenets of government and governance have not changed with the coming of internet and communications technologies in the last decade. Governments have been providing services to citizens and businesses due to their inherent nature of business, and have been dealing with other governments and organizations from many jurisdictions. Governments’ obligations to public and national security (economic and political) remain the same. The use of ICT in the government machinery for achieving efficiency and effectiveness objectives is not new and pre-dates the today’s version of e-government.

One therefore asks the question, what has changed with the coming of e-government. There are trends towards new forms of organizational structures needed to support e-government programs, and new

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2 We have used citizens and publics interchangeably in this paper. Publics include citizens, businesses, governments and other recipients of government services, and intermediaries involved with channels of government services delivery
relationships between governments and key stakeholders who influence government programs. These trends are a significant departure from the traditional silo-forms of hierarchical bureaucratic structures and modes of government operations. The governance of this change, what we call e-government governance, has been challenging.

E-government governance, for this paper, has an identity of its own. By doing so, we purposely exclude discussions on other aspects of e-government governance covered in literature which link it to democratization, economic and political governance, parliamentary reforms, and the likes. In this paper/presentation, we focus on the changes in government operations, their impacts and the governance of the change management. We call this e-government governance for the purpose of this discussion.

We first outline below significant changes brought by e-government implementation based upon our field experience and research. The changes are examined using the actor-network theory, institutional theory and virtual state concepts to get some explanations and an assessment of the sustainability of such changes. The paper ends with a framework for e-government governance and some suggestions for its implementation. Some of the outstanding issues for further research are also listed at the end.

2. Changes due to E-government

Based on our experience, the significant changes caused with the coming of e-government include:

• Focus of government services for publics are becoming publics-centric and demand-driven. This is departure from the previous typical business model where government departments operated in silos and services were largely supply-driven.

• The notion of government as an institution is getting strengthened. This puts a new emphasis on strengthening common institutional infrastructure (e.g. policies, standards, performance objectives, regulatory compliance) which underpins operations of individual government agencies. This is a departure from relative autonomy enjoyed by individual government agencies in the past.

• The above two lead to the advocacy for ‘government-as-a-whole’ mode of government operation, requiring significant transformation of the nature of its business and services, requiring integration across jurisdictions. This reinforces the need for governance networks to oversee the design, implementation and operations of holistic government business. This is a significant departure from past practices where accountabilities for performance were well defined and exclusively assigned to individual agencies.

• It was quickly recognized by many governments that ‘government-as-a-whole’ mode of operation is feasible only with extensive deployment of ICTs in building a common ubiquitous robust ICT infrastructure which underpins ICTs used in individual applications (common and agency-specific). This is a major departure from the traditional roles of CIOs serving individual agencies, now having to conform to or use the common ICT infrastructure which previously formed a significant part of the total agency ICT budgets.

The ‘government-as-a-whole’ concept is a significant departure of traditional hierarchical model of bureaucracy and its accountability structure, moving towards collaborative and shared accountability model.

3. Issues

With the advent of e-government, most attention was directed to ICT deployment and not towards creating robust business models backed up by theoretical research, particularly in the areas of collaborative programming, risk management, performance, evaluation and governance. This created a lag between ICT deployment and bureaucracy transformation in the race to meet anticipated e-government objectives, and demonstrated the weakness of governance of e-government implementation.
In our engagement with more than 90 participants from 30-32 developing countries over a period of three years (2002-2004) on discussions around the subject of e-governance and ICT for development (ICTD), we discovered the recurring issue, experienced by participants in their home countries, was the lack of e-governance framework. This was because their governments had not incorporated the principles of horizontal consultation, ‘government-as-a-whole’ community outreach, knowledge-sharing, collaboration and co-operation. In many of these countries, common institutional infrastructure (e.g. policies, standards, human resources development, organizational readiness measures, compliance, etc.) underpinning e-governance was found to be lacking. The emphasis in these countries was much more on technology than business transformation.

In our review of national ICT strategies and e-government strategies of several countries, we found that although most strategy documents were visionary, they lacked ground floor realities, were heavily ICT-biased, and overcommitted governments that could not be delivered in a reasonable time frame primarily due to lack of governance frameworks, processes and resources. The raising of citizen expectations without delivery capability, we found created many issues and hurdles in implementing e-government programs, and caused significant citizen frustrations.

E-government governance is also a significant subject due to large ICT expenditures being incurred by governments annually; Canadian federal government alone spends over $5 billion annually on ICT and USA federal government spends over $50 billion annually. This amounts to approximately $180 per capita annually in Canada/USA. The ICT expenditures at other levels of government are over and above the above figures. These expenditures are growing in spite of declining cost of ICT hardware and software, pointing towards increasing deployment of ICT services to meet the demands of e-government implementation and operations.

The sustainability of e-government initiatives is a major concern, particularly in the developing countries where resources are limited. There are numerous examples of exciting e-government projects documented and distributed through Development Gateway (World Bank, Washington), Global Knowledge for Development (Educational Development Center, Boston) and similar sources. In our experience both in developed and developing countries, we find many of the documented e-government projects take the form of pathfinder projects and not necessarily a part of routine government services supported by routine operational and maintenance budgets and organizations. Heeks also confirms that most reporting of successes is due to positivist nature of the reporting agency. Although such projects proved to be excellent for learning about challenges of e-government, their integration into the routine government business is relatively a new phenomena and very demanding.

4. Objectives

Significant governance efforts are needed to manage the high intensity of changes because the risks are high. Good governance assures sustainability of change and anticipated outcomes.

Our objective is to assess the sustainability of change in the management of government services and ICT infrastructure underpinning the ‘government-as-a-whole’ service model, and build a governance framework that could provide some guidance to implementers.

5. Process

We examined the issues with the lens of our international consulting experience in e-government governance. In addition, theoretical explanations of factors that impact the change due to e-government

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3 The participants took part in Canadian International Development Agency (CIDA)’s Strategic Information Management Program (SIMP) that we managed from 2002 to 2004.
implementation were explored. Primary constructs of actor-network theory, institutional theory and virtual state concepts were examined because we consider them relevant for the discussion on e-government governance.

The actor-network theory focuses on relationships that shapes and reshapes among stakeholders in a changing environment. The institutional theory provides a basis for viewing ‘government-as-a-whole’ as an institution where individual government agencies comply with institutional governing values and principles, and using and reusing common institutional regulations, information and processes. The virtual state concept addresses organizational and operational aspects of ‘government-as-a-whole’ structures. The three theoretical foundations, we believe, can be linked together for explaining issues associated with change management, and building an e-government governance framework.

6. Actor-Networks

The actor-networks theory have two constructs that we consider are relevant for the current discussion. One construct addresses the organizational structure issue and the other addresses the role of ICT within the ‘government-as-a-whole’ environment.

6.1. Organizational Structure

The ‘government-as-a-whole’ environment provides capabilities for providing publics ‘one-stop’ service. This requires integration of government processes and information that spans many jurisdictions with specific accountability and responsibility for parts of the service. This leads to the formation of a bureaucratic network, highly integrated in business processes but with a complex accountability and governance framework; each actor in the network having to comply with regulations that are outside of his/her normal jurisdiction in addition to his/her own. In this fashion, the actor-network relationships fall outside of the traditional bureaucratic hierarchical organizational structures.

In addition to the above service delivery operational network, a number of other networks get formed which influence the definition and performance of the service delivery. This includes networks representing citizens, politicians and funding agencies.

Citizens: One of the primary values of e-government is empowering citizens to achieve more with limited resources, create new opportunities and enable increased interactions between citizens and their governments. Therefore, citizens become stakeholders in the governance process for change brought by e-government initiatives.

Politicians: The second set of stakeholders is formed of politicians who generally align themselves with citizens’ demands to win votes, and have a significant influence on funding the change, the rationalization of competing priorities at the vision level of the change trends, and the new value systems that emerge out of the technological revolution brought by ICTs. The individual ministers who previously managed government programs in silos now have to share power with other ministers who are accountable for some segments of an integrated service to citizens.

External: The third set of stakeholders, particularly in the developing countries, are the international financing organizations (IFIs), donor countries and other external agencies. They create a powerful external governance network which, in our experience, is often not aligned with the internal (host country) networks due to lack of sufficient understanding of environmental elements prevailing in internal networks.

6.2. Role of ICT

In all of the above mentioned networks, ICTs are influential participants. The design, delivery, performance of an integrated service is not insulated from ICTs. The achievement of e-government objectives would not
be feasible without appropriate role definition and implementation of ICTs. This makes ICTs as important as humans in e-government initiatives. Although there is a debate amongst researchers whether information technologies are given the role of actor in e-government networks, it is sufficient to recognize that information technology is significantly inter-twined with the role of human actors in the actor-network theory.

Since information technologies are integral part of emerging networks within the e-government construct, we examined changing phenomenon in this area during our consulting practice since 1981. We have observed two major shifts during this period: movement towards creating a government-wide common ICT infrastructure; and the changing role of chief information officers (CIOs) in individual agencies.

Common ICT Infrastructure: Although the interest in common government-wide ICT applications and infrastructure got started in late 1980s and early 1990s, it was largely driven for achieving efficiencies in growing ICT expenditures. We were directly involved in developing common information management strategy and common telecommunications management strategy for the Canadian federal government in 1989-91 period, with objectives to define opportunities for savings with the use of common administrative applications and networks across government. In addition to meeting these efficiency objectives, these two projects became foundation projects for government-wide common ICT infrastructure, and were followed by a series of related initiatives and establishment of the office of the CIO in the central agency for directing and facilitating common ICT infrastructure (technical and institutional) across the federal government. Although we experienced positivist attitude towards having a common institutional infrastructure (policy, standards, etc.), there were significant governance, accountability and financing issues regarding operational aspects of common ICT technical infrastructure. Many of the issues still remain largely unresolved, and the sustainability of common ICT technical infrastructure for network organizations as anticipated has not been achieved.

Changing Role of the CIO: We have also observed a trend in the changing role of CIOs within government agencies in last five years. Generally, an agency CIO role may be viewed as having three components: (a) delivering ICT infrastructure services; (b) participating in the agency’s efforts in service transformation and information management using ICTs; and (c) participating at the agency’s political level governance network for influencing and facilitating strategic use of ICTs in the agency’s business networks and government-wide collaborative networks. Until about year 2000, we observed most CIOs priority was in the order of (a), (b) and (c). However with the big push on e-government thereafter, we notice a trend in the priority change to (c), (b) and (a), with an assumption that (a) would be largely delivered though a government-wide common ICT infrastructure service agency.

The above trend is leading towards establishing an organization for delivering common ICT infrastructure and application services including telecommunications networks, data center management, server farm management, desktop environment, help desks, common portal, ICT security, records management, and other related elements. The individual agency CIOs may share the accountability with this central organization for delivering ICT infrastructure services (a) to respective agencies, and highlighting increasing responsibility for participating in government-wide political governance of ICT (c).

6.3. Institutional Theory

As we covered earlier, the main vision of e-government is contained in many concepts including “one-window service”, citizen-centric service model based on a person’s life time, federated architecture for connectivity and information management across government, web services through a government portal, and many more. All of these concepts were directed to break the silos of individual government agencies, and create a ‘government-as-a-whole’ operating model. The existing structures of government as an institution began to feel the impact with this trend.

We examined institutional theory to get some explanation of the impact of e-government phenomena.
Greif (2006) defines an institution as “a system of rules, beliefs, norms, and organizations that together generate a regularity of social behavior”. He elaborates that the institutional elements guide, enable, and motivate individuals to follow a behavior among the many that are technologically feasible in social situations.

The theorists’ views of institutions and changes in institutions vary. Peters (2000) in his literature review of institutional theory identifies three approaches to view institutional behavior: normative, rational and historical. The normative approach suggests a logic of appropriateness that individuals acquire through membership in institutions. This implies that institutional values constrain individuals working within the institution. The rational choice approach suggests that individuals within the institution have their sets of preferences that are minimally impacted with institutional standards (normative values). Historical institutionalism suggests that policy and structural choices made at the inception of the institution continue to have influence on its behavior for the remainder of its life.

Rational Choice: Government silos can be explained with the rational choice theory. Each minister is responsible and accountable for achieving a specific set of political goals and is resourced appropriately by the political system. He/she responds to opportunities and constraints and is relatively unaffected by the institutional constraints because his/her performance is based on the outcomes achieved by his/her organizational structure.

Normative Approach: The ‘government-as-a-whole’ can be explained by the normative approach where there is an emphasis on collective political goals and common standards. The change from rational choice to normative behavior model of operating is significant on the governance and operating processes because the latter requires consultations and consensus horizontally amongst institutional members. The rational choices for operation may be different from choices that emerge out of normative approach impacting control structures, resources, relationships, incentives, and political ownership. The reconciliation of the differences between the two on an on-going routine basis, we find in our experience, is a significant challenge and major hurdle in the implementation of e-government. There are also situations where normative approach creates irrationality in decision making on ICT investments. For example, a government may decide to have a single financial system for government-wide use which may cause extra-ordinary additional expenditures for some individual agencies for conversion from the agency-specific to the common system without much benefit accrued to these agencies. Rationalities of such situations are not always clear to managers.

Historical Elements: Although in most changing environment, there are residual components of historical influences that stay with institutions, developing economies face additional complexity. In many of these countries, historical elements of institutions are being disbanded in favor of new forms of political governance (e.g. democracy). The question now arises: would they follow normative or rational choice form of institutional structure in the new environment? In our exploration of this question through informal discussion with senior bureaucrats in several countries, we observe that most are following the rational choice form which is largely silo oriented and allow individual controls. This appears to be natural choice in the absence of capacity for operating with normative behavior. Although most developing countries are intuitively aware of the value of network operating models of government machinery, and often launch initiatives assuming that networks will sustain themselves once installed, the lack of readiness and capacity for operating with normative institutional approach continues to be a significant constraint.

7. Virtual State Concept

The virtual state concept is a natural extension of networked organizations and normative institutional behavior arising from ‘government-as-a-whole’ situation because the boundaries between government agencies become obscured when government programs and administrative processes are integrated. What was before a well defined accountability and responsibility of a government agency (in a silo form) now gets distributed over multiple agencies, and sometimes spills over to the private sector and non-government
organizations. The state becomes more defined by a network of organizational units engaged to deliver a specific service, members of the network not necessarily accountable to one single agency head for the service as was before.

The virtual state concept got on to firmer grounds with the wide availability of internet, supporting technology and infrastructure, and increase emphasis on government to citizen services. In many jurisdictions, largely in developed countries, the elements of virtual state concept can be seen in action through one stop service kiosks, government information services, police and enforcement services, licensing services, customs and foreign trade services, procurement services, etc.

As Fountain (2001) illustrated in her four case studies that organizational structures and processes, and political relationships and not ICT exerted a strong influence on how virtual state elements were implemented. She observed that “even the most innovative uses of ICT typically work at the surface of operations and boundary spanning processes and are accepted because they leave the deep structure of political relationships intact”. She argues that virtual state implementation has little to do with ICT governance and has most to do with the governance of political relationships that underpin the realities of new organizational structures and processes.

Private and Public Sector: The notions of virtual organization in the private sector and virtual state in the public sector are quite apart. There is a significant difference between the public and private sector organizations. The government operation is focused on achieving democracy objectives unlike the private sector which is largely focused on efficiency and profit. The notion of efficiency is very different in government (Stein, 2001). The government’s programs are influenced by multiple constituencies and are therefore governed by political and budgetary cycles, separation of powers, national traditions and culture, and other institutional values.

Restructured Accountability: Therefore fundamental restructuring of government from traditional formal hierarchical structures to relatively less formal horizontal structures is a significant change and requires different approaches for its governance. For example, an interagency common government portal must address the issues related to ownership and use of government information, security and privacy, information quality and credibility, the meaning of citizenship, accountability for information management, and technology integration.

8. E-government Governance Framework

Based on the above discussion, a framework for e-government governance is proposed for the purpose of assessing the degree of success of e-government initiatives. The success depends upon two set of factors

- Behavioural factors of networks, virtual state and normative institution, and
- Influencing factors that impact behavioural factors on an on-going basis.

Some of the behavioural factors include the following:

- Normative institutional factors: Institutional values, policies, regulations and standards
- Virtual state factors: Multi-agency structures, accountability, resources, political affiliations
- Networks management factors:
  - Internal networks: Relationships, service delivery, performance
  - External networks: Financing, oversight, evaluation

The influencing factors include the following:

- Readiness
- Capacity
- Sustainability
- Context
- Service Transformation
E-government: Macro Issues

- ICT Management

The e-government governance framework is displayed in Figure 1.

A brief discussion on the influencing factors follows:

![Fig. 1: E-government Governance Framework](image)

8.1. Readiness

Based on our field work, we find that the development and implementation of governance frameworks is an evolutionary process and there are not many 'quick fixes'. Actually, it is beneficial to be this way because the evolutionary process creates learning organizations and encourages innovations in local environments. The evolutionary process becomes highly engaging requiring the involvement of stakeholders and interested communities; in some sense actor-networks become operationalized for achieving e-government outcomes.

In many developing countries most public sector officials do not get an opportunity to become actively involved with the design and implementation of e-government programs. They need to build awareness of ICT potentials, create organizational readiness, and become involved in preparing and implementing e-government plans with high value projects. The political enthusiasm and sponsorship of ICT for country development needs to percolate down to the grassroots level in the public sector. Power sharing is relatively a less developed concept in developing countries and nations in transition. Therefore an evolutionary process enables capacity development for actors for them to become effective players in the network.

The change path for institutional development from historical to normative via rational choice behavior is a long path and explains why developing countries are struggling, as we have observed, with the implementation of e-government using 'government-as-a-whole construct. They need to build the capacity for operating in a normative institutional behavior. Attempts to build e-government are contingent on having modern bureaucratic institutions in place. It is not clear if such nations have the capacity to do both, i.e. create modern bureaucratic institution and normative institutional behavior concurrently through e-government initiatives.
8.2. Capacity

Although the concept of virtual state became visible after e-government drive in last five–six years, many developed countries have been building capacity for network relationships for over ten years. For example, Canadian federal government had several initiatives promoting horizontal collaboration in mid 1990s. This included the Canadian Centre for Management Development (now called Canada School of Public Service) sponsoring an action-research round table on horizontal management in 2000 to create knowledge-base for providing guidance for managers on the how and the when of effective horizontal management. The impetus for this came out of a Deputy Minister’s task force report in 1996 on managing horizontal policy issues and Consulting and Audit Canada’s report in 1998 on impediments to partnering and the role of the Treasury Board. Canada also created a reference business model for integrated government services for citizens based on the life cycle needs of a person, for it to underpin integration of government services and information management. There were several other initiatives on the same subject.

In the ICT area, we were involved in developing a couple of strategies for managing ICT government-wide as mentioned earlier. The CIO office in the Treasury Board of Canada established in 1993 directed and facilitated the development of government-wide ICT infrastructure and carried out an extensive program to promote shared information, applications and infrastructure. Both the Canadian and US Government created federated architecture for ICT to underpin the rationalization of government-wide ICT investments. Canada also established a CIO Council with representation of CIOs from multiple levels of government for exploring opportunities for multi-jurisdictional one-stop service to citizens.

The Canadian government therefore built capacity for e-government governance and common ICT infrastructure before e-government initiatives were launched in 2000/2001. This proved highly useful for achieving accelerated uptake of innovative ideas on e-government subject leading to the implementation of elements of a virtual state. The capacity building efforts are on-going, and the Canadian federal government has transformed itself into a learning organization on this front.

In the United States, the Gore Report on Reinventing Government, published in 1993, set a trend for streamlining the federal bureaucracy in the USA. The federal government began to consider the idea of having a single point of entry for government services and information. With the integration efforts, the views on traditional jurisdictions came under the microscope. The notion of networks of organizations spanning multi-jurisdictions began to emerge leading to the implementation of elements of virtual organizations. All such initiatives at a minimum developed the capacity of the US government to become ready for e-government.

8.3. Sustainability

Fountain (2001) reports four case studies which illustrate significant organizational issues in achieving service transformation using network form of organizations. Accenture (2004) reports the trend towards business case processes and service transformation underpinning e-government initiatives. The Canadian Government now has disbanded its e-government drive in favour of service transformation to achieve the sustainability of e-government goals.

8.4. Context

E-government governance is highly contextual. Heeks (2004) explains through several case studies that there is a ‘complex interwaving between the technology and context of e-government’. We examined e-government strategies developed by different consultants Ethiopia and Mozambique. Both lacked ground floor realities, and were perhaps better suited for a developed country. Although the target (theoretical) factor values in the governance framework may be the same for most jurisdictions, the current values would differ from one jurisdiction to another because of varying levels of readiness, capacity, political environment, ICT
enablement, and resources availability. The governance of e-government would therefore be also directed to managing the progress from the current status to the target.

8.5. Service Transformation

In most documented business cases (Jane Fountain 2001; Lynch, Lynch & White, 2000), it is recognized that e-government governance (i.e. governance for achieving e-government objectives) efforts needs to be more directed at the transformation of government services and their sustainability as new style of operation on an on-going basis. The availability of multiple service channels for service delivery (e.g. kiosks, web portal, email, telephone, etc.), degree of citizen participation in policy development, and the potential of transforming e-government services into routine operation (e.g. resources availability, process re-engineering, skills, etc.) influence successful e-government implementation. The attention is also needed to address associated accountability, resourcing and performance issues. While internet and web technologies excited the imagination of reformists in early 2000, the ground floor realities have now hit focusing on the urgent need to manage change in policymaking capacity, organizational structures and human resources development needs for achieving e-government objectives.

8.6. ICT Management

The ‘government-as-a-whole’ implementation of government services are feasible only with the availability of common ICT infrastructure and application services that are reliable, ubiquitous, accessible and cost-effective, and are delivered by a central common service agency. This opens up the need for political governance of ICT government-wide. This can lead to the redefinition of the accountability and responsibilities of individual agencies’ CIOs in meeting ICT needs of their respective agencies.

9. Concluding Remarks

Starting from 2004 onwards, many governments especially in the developed economies have come to realize that ‘e-government’ and ‘government’ are essentially one and the same and business process transformation is the key to effectively exploit the opportunities offered by ICT for achieving basic tenets of government. Efficient and effective public sector management is a key to attain the goals of good political governance such as accountability, transparency, legitimacy, openness, and enabling environment for citizen services. E-government is all about exploiting ICTs to build capacity of the public sector to deliver and sustain good political governance. Therefore the governance of e-government implementation is on the centre stage. E-government transformation process can be best served with concepts drawn from the actor-network theory, institutional theory and virtual state constructs. The proposed e-government governance framework includes these theoretical behavioural constructs. We have also identified six influencing factors that impact behavioural factors: readiness, capacity, sustainability, context, service transformation, and ICT management. The framework can be used as an assessment tool for a government’s readiness and capacity for transformation to function as an e-government, and for assessing the sustainability and performance of its efforts. Our research plans are to quantify the framework for different country environments reflecting contextual influences on its factors. This would not only create country-specific assessment tools but would also provide an insight into the behaviour of each factor in different environments.

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E-lecctoral Reforms in India

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ABSTRACT

Elections empower citizens. Their fairness and legitimacy are crucial to the success of democracies. India is a democratic success story, but certain flaws are increasingly affecting its electoral process. To correct these flaws, government and civil society are harnessing technology to bring in electoral reforms that enhance the effectiveness, transparency, and citizen-friendliness of elections. We describe how technology has been utilized in India for: 1) voter registration; 2) political mobilization and party formation; 3) disclosure of information about candidates; and 4) voting. We also consider technological initiatives that can truly empower citizens and further reform the Indian electoral system.

Keywords: Information and Communication Technology, Elections, India, Citizens Empowerment, Reform

1. Introduction

Six decades ago, the founders of modern India cast their vote for democracy with universal adult franchise. This was a leap of faith in a newly integrating polity with tremendous disparity in income, deep-rooted illiteracy, differences in religion, language, and ethnicity, and diverse methods of managing society drawn from caste, religious, tribal and historic traditions. The founders’ faith has been rewarded by Indian democracy’s record of success—regular elections with widespread participation, peaceful transfers of power, and empowerment of marginalized peoples (Yadav, 1999; Khilnani, 2004).

However, there are growing concerns that the electoral system has developed various flaws over time. These flaws include barriers to entry to new political parties, the entry of criminals into electoral politics, election fraud, and omissions of citizens from electoral rolls. Scholar-activists such as Narayan (2004) assign blame for such developments to the electoral system in place in India—first-past-the-post, plurality voting system. Narayan (2004) argues that since political parties have to garner localized support in constituencies, they turn to locally powerful vested interests or criminals who may be able to deliver support and votes. The plurality system also rewards parties with a geographic concentration of support and prevents parties with more diffuse support from succeeding electorally. Therefore, Narayan (2004) suggests that India move to a proportional representation system to overcome these flaws in the electoral process.

Given India’s success as a democracy, it is unlikely that such a radical transformation of the political system would find wider support. Further, the same first-past-the-post, plurality voting system is credited

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with ensuring a stable democracy and centrist political consensus (Sridharan and Varshney, 2002, Yadav, 2001, Rudolph and Rudolph, 1987). Therefore, we may need other methods that can improve electoral politics. We examine whether technology is the answer to bring about the desired electoral reforms.

We focus on India’s electoral processes—voter registration, political mobilization by parties, awareness of candidate credentials, and the actual voting process—to examine how their effectiveness, transparency, and citizen-orientation can be enhanced through the use of Information and Communication Technologies (ICTs). We report on how ICTs have been, and can be, harnessed by government and civil society in India to reform electoral processes and thus truly empower citizens. In particular, we examine:

- E-registration efforts undertaken by the Election Commission and a civil society group, Citizens Initiative, in Bangalore, the hub of India’s information technology industry.
- E-mobilization, leading to the emergence of a new political party, Lok Paritran, which has substantially and effectively used the Internet to gain political traction on the ground.
- E-disclosure, about candidate credentials and how this information is shared online.
- Electronic Voting Machines (EVMs): their installation, potential flaws, and performance.

2. Technology and Voter Registration

2.1. Electronic Registration and the Election Commission of India

The first step in ensuring free and fair elections is to make sure that all eligible voters are registered (Kumar, 2002) and that electoral rolls are free of errors. In India, electoral rolls are kept up to date by the government through house-to-house visits by officials every few years. However, errors creep into rolls due to deaths or migration, or negligent enumeration (Chamaraj, 2004). Some minimal level of error is bound to arise, (and can be expected to be higher in urban areas that witness substantial migration and residential relocation), but Kumar (2002) points out that omissions can also be deliberate and politically motivated. Such actions can undermine the legitimacy of the electoral system, and must be guarded against carefully.

The voter enrollment process can also be made more citizen-friendly. It is cumbersome for citizens to enroll themselves if they miss out on being included in the government’s updating and revision process (Kumar, 2002). In response to these concerns, the Election Commission has launched well-publicized drives to facilitate the enrollment process. Most significantly, it has recently initiated electronic registration of voters (Hindu, 2005). Citizens can now fill voter enrollment forms electronically, using their e-mail addresses as their unique online signatures. Government officials then visit the applicants’ addresses physically to confirm that the applicant is indeed real and eligible to vote.

Preliminary data obtained from the Election Commission indicates that 13,000 applications were received during the trial of the online enrollment system in Bangalore. However, some applicants submitted their forms multiple times; some left fields unfilled, particularly that of their legislative constituency; and citizens were often not available when officials went to their residence for verification. Such teething problems are surmountable: technology can ensure that a person submits only one form; better information would enable citizens to identify their legislative constituency accurately; and using email addresses, officials can fix appointments to ensure that citizens are available at home for the verification process. Thus, e-registration may be able to smoothen the enrollment process for citizens substantially.

But whether e-registration will substantially impact India overall is questionable, given the country’s very low Internet penetration. Keniston (2003) estimated that only 1 million out of 200 million households had Internet access and pointed to other “Digital Divides,” such as citizens’ unfamiliarity with English—the dominant language on the Internet. However, a comprehensive survey of Internet usage in India (Press Trust of India, 2006) reveals that the total number of Internet users had risen from 33 million to 37 million and the number of “active users” had increased from 21.1 million to 25 million between March and September
2006. Youth and people under 35 were the most active users. Interestingly, smaller cities and towns
demonstrated a 142% growth in Internet usage year on year, and now represented 25% of all Indian Internet
users. Given that a third of India’s population was below 15 years in 2000, and in 2020, India’s average age
will be 29 (Chandrasekhar, 2006), we can expect that there will be substantial takers for e-registration.
Local language content is also easy to provide for e-registration. Therefore, the move by the Election
Commission to allow e-registration is a positive step in the direction of empowering citizens.

2.2. Citizens Initiative and the Bangalore Graduates Constituency

Karnataka is one of only five Indian states to have a bicameral system, possessing a Legislative Council
in addition to its directly-elected Legislative Assembly. Among the ways in which a person can be elected to
the Council is through a Graduates constituency, whose electorate comprises of graduates from any university
in India who reside in its geographic jurisdiction. The Bangalore Graduates constituency geographically
comprises the administrative districts of Bangalore Urban and Bangalore Rural.

Bangalore Urban district has a population of 6.5 million according to the 2001 Census. Data on the
number of graduate residents are unavailable. However, because Bangalore has a concentration of knowledge-
intensive industries, there could be at least a million graduates residing in this region. The previous time this
election was held, in June 2000, only 25,000, or about 2% of the potential graduate voters of Bangalore
voted. In contrast voter turnout in elections to parliament and state assemblies have historically averaged
about 60% nationwide (Ministry of Statistics and Programme Implementation, 2004). The phenomenally
low voter turnout by educated voters in a constituency uniquely available to them is intriguing.

On investigation, it turned out that there is a crucial difference between being a voter in a general election
versus being a voter for the Graduates constituency election. For the former, voters are registered directly by
the government; for the latter, voters have to register on their own initiative. Every six years, the list of voters
for the Graduates constituency is prepared afresh. The government publishes an advertisement in newspapers
announcing the election, the procedures for enrolling as voters, and the locations where this can be done. Yet
enrollment numbers are very low. This may be because the registration process for the Graduates constituency
is cumbersome. A potential voter has to apply along with proof of graduation. Government employees alone
have it easier; they are able to enroll as voters merely with a certification from their supervisors that they are
graduates, as noted in their employment files.

The theory of rational voting (Downs, 1957) suggests that people weigh the benefits and costs of voting
before deciding to vote. The benefits of voting are diffused over a large number of voters while the costs are
borne by the individual, and an individual is rarely the decisive voter in an election. Therefore it is rational
for that individual not to participate as a voter. But, empirically, voters do participate in substantial numbers,
and hence voting is regarded as paradoxical behavior from the perspective of strict economic rationality. In
the Bangalore Graduates constituency, however, given the abysmal rates of participation, it appears that the
rational voter has truly come alive.

In order to increase participation by educated voters a voter mobilization campaign was launched in
Bangalore using both online and offline efforts. This campaign was run by a neutral, non-partisan platform
called Citizens Initiative (www.citizensinitiative.org). Under this banner, five eminent citizens of Bangalore
endorsed a voter enrollment campaign aptly titled "End the Apathy." Citizens Initiative concentrated
significantly on the online component of the campaign, particularly for cost reasons, as theirs was a voluntary,
non-funded effort. Offline strategies were used to enable comparison of different tactics’ effectiveness and
to ensure that more voters were enrolled. Ultimately, as the exercise evolved, numerous practical challenges,
including the difficulty of tracking information flows, or the entangling of online and offline efforts, made
it difficult to obtain precise data on the strategies and their results.

Citizens Initiative decided to focus on locations where large numbers of graduates could be easily reached.
Hence companies and corporations were the first targets, for the following reasons

- Companies are an ideal location to find large numbers of graduates.
- It is possible to obtain all necessary documents for enrollment from the company’s Human Resources department making the registration process less cumbersome.
- Employees typically have access to the Internet, thus making companies the perfect setting for the E-voter mobilization experiment.

However, entry into these companies involved a great deal of preparation on various fronts. To begin with, most companies were wary of allowing any kind of political mobilization/activity on their campuses. This is where the Citizens Initiative banner opened doors, and its appeal to voters to enroll was circulated through Chief Executive Officers (CEOs) to employees through official e-mail channels.

In parallel, Citizens Initiative launched a website (www.citizensinitiative.org): 1. To spread awareness about the Graduates Constituency election and thereby improve voter enrollment; and 2. To e-enable the registration process partially, by providing a form that could be filled online. Citizens Initiative also collected contact information, including e-mail IDs, after inserting a disclaimer that this would be used to inform people about the date of the election and to provide non-partisan information on all candidates.

E-registration did not result in a dramatic drop in political and logistical activity compared to traditional methods of mobilizing voters but communications were substantially online and this resulted in lower costs. Citizens Initiative sent an e-mail to CEOs along with four attachments: 1. Background on the registration drive; 2. A model letter to employees; 3. A list of Frequently Asked Questions; and 4. A copy of the registration form and a link to the online form. CEOs, in most cases, delegated the task to colleagues. Execution typically began after discussions with these internal representatives, and involved considerable time and coaxing before implementation. In some companies, e-mails were redrafted internally, while in others a publicity campaign was conducted using posters and drop boxes to collect forms were placed at convenient locations. Voters interested in registering had the option of directing the Human Resources department to provide a copy of their degree certificate or enclosing a copy themselves before submission.

Citizens Initiative took on the responsibility of submitting the forms to the appropriate election returning officer. Once the completed forms were collected from the companies, volunteers at Citizens Initiative ensured the document was complete, sorted the forms according to jurisdiction and submitted them. Thus volunteer and company officials generally managed most of the activities of the voter enrollment drive. Overall, the process was designed to be as smooth and effortless as possible for company employees.

Table 1 lists the results of the enrollment drive within companies, distinguished by size. In the companies marked by an asterisk, internal teams put in significant efforts to promote the voter enrolment drive. In the small companies, CEOs strongly urged eligible employees to enroll and participate in the election process.

In comparison with these innovative online methods, traditional political parties utilized large numbers of party cadres or volunteers to conduct voter enrollment drives. They started the process four months earlier.

<table>
<thead>
<tr>
<th>Company</th>
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<td>100</td>
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<td>Large S*</td>
<td>2000</td>
<td>350</td>
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<td>Large B</td>
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<td>10</td>
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<tr>
<td>Large B2*</td>
<td>600</td>
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<td>Large P*</td>
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<td>Small V</td>
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<td>Small P</td>
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than Citizens Initiative, and devoted substantial efforts to enroll government employees for whom the registration procedure is simpler. Without a grass roots mobilization effort of the scale employed by political parties, Citizens Initiative’s drive was limited in its impact. Overall, Citizens Initiative was able to trigger the enrollment of about 3-4,000 voters, compared to about 60-70,000 enrolled overall by all parties. This represented a small fraction of the potential voters reached by the “End the Apathy” e-mail campaign.

On analysis, one reason for the failure of Citizens Initiative’s drive to e-enable registration is that graduates had a low level of awareness about the existence of this constituency (Shile, 2006). Further, the “End the Apathy” campaign essentially had a general, “do-good, be-an-active-citizen” type of message. But this was a message without a messenger, in the sense that there was no candidate for the potential voter to identify with. Potential voters also felt that the enrollment process was cumbersome and they were often confused about why they had to enroll separately for this poll when they were already on the electoral rolls for the general elections. Hence, voters did not generally put in the effort to register, even though the process was made as simple as was feasible. In contrast, regular parties enrolled voters on behalf of known candidates, personally clarified doubts, and were able to elicit focused commitment from their target voters.

3. Technology and Political Mobilization: The Emergence of the Lok Paritran Party

Political parties are crucial to democracies because they are the mediating institutions that channel citizens’ preferences into policy agendas and tangible outcomes. Healthy competition between political parties is essential to a vibrant democracy. However, over time, stable democracies may find that economic or political circumstances may not encourage the emergence of new political parties. Other implicit barriers to entry may emerge due to the costs of organizing people around a new alternative. It is this cost barrier that the Internet can overcome, because it is a “disruptive technology” (Christensen, 1997), with the potential to break the grip of established political parties and interest groups on an existing political system.

This possibility was illustrated by the campaign by Howard Dean for the United States Presidency in 2004. Dean’s campaign, led by Joe Trippi, used the Internet to mobilize supporters, to generate funds through small but widespread contributions, and to trigger a “high-energy grass-roots movement like nothing before seen in American politics” (Fleischer, 2004). Other candidates have adopted these tactics too and now blogs, e-fundraising, grassroots mobilization through the website www.meetup.com, etc., have become standard features of American political campaigns. In 2006, the Democratic primary to select the party candidate for the Senate election in Connecticut saw an Internet-driven challenge by a political newcomer, Ned Lamont, lead to the ouster of the party’s former Vice Presidential nominee and incumbent Senator, Joseph Lieberman. The final day of the election campaign witnessed controversy over the crash of Lieberman’s website and accusations that this was triggered by supporters of Lamont (Balz and Murray, 2006), thus heralding the emergence of the online world as a new arena for political combat.

India is not lagging behind the USA. The Internet has already helped a new party emerge that mobilizes support, funds and publicity through the Internet—Lok Paritran (www.lokparitran.org). This party was formed by a few well-educated urbanites who came into contact with one another in elite institutions such as the Indian Institute of Technology and New York University. They shared a common motivation to bring about social transformation but were dissatisfied with their individual experiments with voluntary work or with Non-Governmental Organizations (NGOs) because of the limited scale and impact of such operations. While none of them had any history of political involvement, they decided that the best way to pursue their transformational agenda was through active electoral politics. They formed a political party, applied for recognition from the Election Commission in November 2005, and were registered on February 24, 2006. (Information on Lok Paritran is based on a personal interview with one of its founding team, Ajit Shukla).

The unique feature of this party is that it has decided to bypass the typical stages in the emergence of political parties and plunge into electoral politics directly. The party has chosen to go to states where elections
are scheduled, recruit candidates and campaign, even without any prior presence in that state. The party leadership’s argument is that elections represent pivotal events akin to the “samudra manthan” (the churning of the ocean in Hindu mythology), from which capable leaders will emerge to take on the leadership mantle in the future. Elections also bring focus to the party’s efforts at voter and fund mobilization, and the excitement generated by involvement in active competition helps attract volunteers.

The Internet, along with traditional mass media, played a crucial role in spreading awareness about this fledgling party. The first article about the party appeared in the print media, in the Mumbai edition of the Times of India on January 20, 2006; an article in the Bangalore edition of the newspaper followed soon after. Coverage typically focused on the novelty of graduates of the prestigious Indian Institutes of Technology—who until then were more likely to turn into entrepreneurs in Silicon Valley—entering the political arena. These articles also triggered television coverage on national and regional news channels.

The digital version of the first story in the Times of India was passed around innumerable times around the world through the Internet phenomenon of “chain mail.” Chain mail is the process whereby an e-mail is forwarded by one person to his/her circle of friends, who, in turn, pass it on to their corresponding circles. Within a few iterations, the mail circulates exponentially and has the potential to reach millions of e-mail users. (However, unless the e-mail content is embedded with some sort of counter, it is not possible to track the reach of such chain mails). Lok Paritran claimed that wherever they went or campaigned, people had heard of them; this was also the case across the state of Tamil Nadu, where they had embarked on fielding candidates for elections to the state legislature held in 2006.

The number of hits on their website also showed a rapid rise after the publication and broadcast of news stories and the circulation of chain mails, and the e-mail address listed on the party’s website also registered substantial traffic. In the first three weeks after the media coverage, the party received 5,000 e-mails at that address. During the election period, the e-mail traffic shot up to 1,000 a day. The party found its resources stretched to even attempt to respond to these e-mails. However, most e-mails were more of a supportive nature urging the party to go ahead with its good work, and did not necessarily require active responses. A number of e-mails were emotionally charged in their content indicating that the party had touched a chord among citizens around India and abroad.

Another development was the emergence of online communities focused on the party. The Internet has recently spawned social networking sites such as Ryze and Orkut. These, along with older community sites such as Yahoo! Groups, allow people with common interests to come together online to share ideas and information. According to Shukla, one online community set up by a Lok Paritran volunteer on Orkut has reached 7,500 members. Various Yahoo! Groups have also been formed, with some geographically focused on the actual legislative constituencies where Lok Paritran candidates were contesting the polls; some online groups opposed to the party have also emerged. Lok Paritran also embarked on an online membership drive. Now, online membership of the party all over India is 12,000. Party leaders travel around the country to conduct meetings where online members are invited to formally join the party.

Lok Paritran also used the Internet to raise funds for the elections. Volunteers circulated appeals for funds on different online groups and communities. According to Shukla, this resulted in the party being able to raise nearly Rs. 200,000 online (Rs. 25,000 was the single largest contribution and Rs. 300 the smallest). During the actual elections, the party spent only Rs. 400,000 in total in all the seven constituencies in which it fielded candidates. These election expenditure figures are minuscule when compared to the resources devoted to elections by mainstream political parties. For example, Sridharan (2006) states that credible candidates spend an average of Rs. 7,500,000 for similar elections, an order of magnitude larger than that spent by Lok Paritran. While Lok Paritran likely has sympathizers among the Indian diaspora, the party was not in a position to raise funds using e-payment platforms such as PayPal, as the party did not have the requisite permission from the Foreign Currency Regulation Board to receive funds from Indian citizens.
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abroad (Only Indians are permitted to contribute to Indian political campaigns).

In its electoral debut, Lok Paritran fielded candidates in seven legislative assembly constituencies in Tamil Nadu state: five in Chennai city, and two in rural parts of the state. Through Internet-based mobilization, the party was able to secure numerous volunteers who took time off from their jobs to campaign door-to-door. The party also conducted roadside public meetings as well as bicycle and pedestrian rallies. Shukla opined that while the e-media and print media primed the voters, it was vital for the party to connect directly with voters on the ground, as people wanted to see their candidates in person. The campaign also witnessed significant circulation of SMSes (short message service or text messaging feature on mobile phones) through volunteers, as bulk text messaging is prohibited in the state for political purposes.

In three of the seven constituencies that Lok Paritran contested, the votes they polled turned out to be decisive in affecting the results, leading to the defeat of candidates from mainstream parties regarded as favorites (Sify.com, 2006). In two constituencies, their candidates secured more votes than a national party, the Bharatiya Janata Party. Overall, the party secured 34,000 votes across the state.

After the elections, the party continues to concentrate on membership drives and on upgrading their online presence through planned official blogs and forums. Currently, there are many unofficial blogs and communities that discuss the party and its activities. A fall out of the election has been that some of the party’s candidates in Tamil Nadu have left the party alleging caste discrimination. As is typical on the Internet, blogs announcing this split in the party, along with the detailed allegations, surface as easily as blogs and news items supportive of the party when web searches are conducted. The party continues to use its website for its announcements and reports. This suggests that the party will continue to target e-enabled individuals around the country, while also being accessible to the Indian diaspora. These are sections that do not ordinarily participate in the electoral process but could emerge as a significant source of support over time. Overall, the party seems to have had a successful debut and for this it owes a lot to the Internet and to electronics and communication technologies.

4. Technology and Voter Information about Candidates

In order for voters to select their representatives carefully, it is important that they have as much information as possible about the candidates competing for their support. This is even more important in India because an increasing number of criminals have been contesting the polls, fielded by parties across the political spectrum (Sastry, 2004). Civil society’s concern about the growing criminalization of politics took the form of a public interest litigation filed by the Association for Democratic Reforms. When this case eventually reached the Supreme Court in 2002, the Court ruled in favour of citizens’ right to know about candidates’ credentials. After some significant exchange of views on the judgment and its implications between the President, Parliament, and the Supreme Court, (Sastry, 2004) Parliament passed legislation mandating that candidates file affidavits along with their nomination papers containing information on their education, financial position (assets and liabilities), and criminal record, if any.

Candidate affidavits represent a potent tool of electoral reform because criminal records can no longer be hidden from the public. While this represents significant reform, in the Indian context the issue of candidates’ criminal record is not black and white, as sometimes, legitimate political protests can result in the filing of criminal charges if they are formally unlawful though otherwise part of the Gandhian tradition of civil disobedience, e.g., gheraos, demonstrations, hartals, etc. (Kumar, 2002).

The Election Commission has set up a website where information on candidate affidavits can be accessed easily (wwweci.gov.in). Civil society groups, e.g., Lok Satta, have also set up user-friendly “Know Your Candidates” section on their websites (www.indiaelectionwatch.com). The easy and timely accessibility of this information online is a contrast to the delays faced in obtaining information from India’s bureaucracy. Once this information is available online, we can expect that the news media and competing candidates will
ensure that it reaches the public at large, enabling voters to make better-informed political choices.

However, one flaw remains. Candidate affidavits are not subject to formal verification, and hence their veracity is unproven. Technology could help overcome this flaw. For example, the Election Commission could coordinate with government departments such as Income Tax to ensure that the information in the affidavits matches with what is in their records. The recently-passed Right-to-Information legislation in India enables citizens and civil society groups to cross-check candidates’ affidavits more easily. The ready access to such information on the Internet, across elections and over time, should also make it easier to prevent false declarations by candidates. Ultimately, this use of ICTs will lead political parties away from fielding candidates with dubious track records, and thus improve the quality of political leadership in India.

5. Technology and Voting: Introduction of Electronic Voting Machines

Flaws can sometimes arise in India’s mammoth election exercises. One set of flaws arises from local politicians’ attempts to intimidate voters and rig the vote at the polling booth level—a phenomenon termed “booth capturing” (Weiner, 2004). Another flaw arises from the casting of invalid votes—where voters do not follow instructions and end up wasting their ballot. (Sometimes the total invalid votes are more than the margin of victory in the election, leading to tedious recounts of all votes). In order to overcome these flaws and to lower the costs of elections, the Election Commission has turned to EVMs.

After a series of trials in select state-level elections, EVMs were utilized everywhere in India during the 2004 general elections. A total 1,025,000 EVMs were used across more than 688,000 polling booths around the country, thus enabling the Election Commission to cut down on the expenditure involved in printing, storing and transporting the ballot paper; e.g., the use of 8,800 metric tons of security paper was avoided (Krishna Murthy and Patidar, 2005). The voting exercise was relatively free of glitches. EVMs enabled the accurate tallying of votes in just a few hours when compared to nearly 2 days under the earlier system. EVMs also eliminated the problem of invalid votes, which occurred under the paper balloting system.

The EVM technology used in India is designed to be low-cost and tamper-proof, and have been sourced from two government companies, Bharat Electronics and Electronic Corporation of India. The EVMs are stand-alone units and are not networked, thus avoiding attacks from viruses or hackers. They run on a 6 volt alkaline battery and are not vulnerable to power failures. The memory chip on the EVMs can only be written on once, and machines can be disabled by a command from the official supervising the election. Further, the EVMs are designed to allow only 5 votes a minute, thus preventing “booth-capturers” from casting all the votes before police reinforcements arrive in response to an alarm from the booth supervisor. Thus India seems to have arrived at a workable, secure EVM solution at a fifteenth of the cost of EVMs introduced in the United States of America (Weiner, 2004). The one concern that could affect Indian EVMs is the lack of a paper trail—redundant paper ballots that would enable a recount in case of a malfunctioning machine or a legal challenge, a practice followed in other countries (Krimmer and Volkamer, 2006).

Other concerns about the introduction of EVMs have been raised. Hegde (2004) quotes a leading social activist, Bunker Roy, who asserts: “By introducing EVMs they have ensured that voting will never be fair and free. The EVM will work if everyone is honest. But because the political system is corrupt the EVM has made it easier to rig on the spot and all evidence of rigging is wiped out.” Sastry (2004) suggests that non-literate voters, when they ask for help, may be manipulated by partisan officials to vote in favour of a particular candidate. Further, EVMs are transparent with regard to how particular polling booths voted, unlike in the paper ballot system where votes were mixed up before counting. In this case, transparency can actually hurt voters because candidates may target areas that did not vote for them with retaliation. This concern can be addressed technologically, by totaling votes at a master counting facility and announcing only the constituency totals, rather than polling booth-level data.

Krimmer and Volkamer (2006) point out that the transparency of the electronic voting system is critical to
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its societal acceptance. The transparency of the Indian EVMs can be improved further by ensuring that the source code and hardware used in them are open to inspection and testing, as demanded by Frederick Noronha, founder of Bytesforall.org, an NGO. The Indian Supreme Court has asked the Election Commission to open the source code and hardware for public testing and the Election Commission is in the process of implementing this process. (Srinivasan, 2004). Once that is accomplished, the widespread success of the Indian experiment with EVMs should enhance people’s faith in the electoral process, and empower them to exercise their choices freely.

6. Concluding Remarks

The Internet has immense potential to strengthen Indian democracy in multiple ways. It empowers citizens by enabling them to access information, communicate, and debate over policy issues to ultimately reach informed decisions. The Internet also has the potential to enable individuals to overcome the challenges of collective action (Olson, 1965) that come in the way of fuller participation in the policy process. The development of newer social networking technologies can enable citizens to create virtual communities to pursue political agendas, and thus enhance social connectedness and create the social capital so critical to the success of countries and economies (Putnam, 1995). Ultimately, as digital divides are overcome, the Internet can allow some decision making through referenda, moving India toward direct democracy.

The Internet can also enrich representative democracy in India. Elected representatives can use it to be more responsive, interactive, and accountable, as they can remain engaged with voters even in the period between elections. The Internet also empowers voters by helping them to provide inputs to enrich policy decisions. Such features of the Internet’s use in politics can ensure that outcomes from the political system are truly considered legitimate because they have emerged from an open, transparent, interactive process.

The Internet can also empower citizens by helping to overcome the influence of moneyed interests. As the Supreme Court of India observed in Common Cause, A Registered Society Vs Union of India, Writ Petition (Civil) No. 24 of 1995, dated 4 April 1996: “When the elections are fought with unaccounted money, the persons elected in the process can think of nothing except getting right by amassing black money. They retain power with the help of black money and while in office collect more and more to spend the same in the next election to retain the seat of power. Unless the statutory provisions meant to bring transparency in the functioning of the democracy are strictly enforced and the election-funding is made transparent, the vicious circle cannot be broken and the corruption cannot be eliminated from the country.” (Krishna Murthy and Patidar, 2005). An Election Commission mandate that candidates publish their sources of funding and expenses online could help stem corruption and the decline of democratic institutions.

The Internet also has the potential to help halt this downward slide by lowering the costs of elections. For example, given that e-mail is practically free, candidates who communicate with voters through e-mail will be able to transform the economics of politics, and overcome their dependency on political contributions and organized special interest groups. ICTs also lower the economic barriers to entry faced by people eager to foray into electoral politics. Therefore, in a manner similar to the electoral reform proposals to provide free air time to political parties, (Sridharan, 2006) the Election Commission may find it useful to collect voters’ e-mail IDs and mediate candidates’ constructive communications with voters. It may be appropriate for the Election Commission to undertake this exercise as the costs of collecting such information from voters and establishing the online infrastructure may be beyond the reach of all but wealthy candidates.

In sum, the creative use of ICTs can move Indian democracy closer to the ideal of a legitimate process proposed by the political philosopher Jurgen Habermas, and can help realize the Habermasian ideal of “mobilized citizenries (Forbath, 1996).” It can make India the laboratory for achieving Habermas’s vision of “a substantial renovation of our existing public spheres, and the creation of many new spaces and institutional forms for citizenly engagement in the processes of lawmaking and governance (Forbath, 1996).” Or in an
ironical Indian twist, technology could turn out to be the driver for achieving the Gandhian ideal of an empowered citizenry. Only time, technology, citizens’ ingenuity and public initiatives, will tell.

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E-governance: Resolving Disputes Electronically

Anurag K. Agarwal

ABSTRACT

The Indian judicial system has all the good features of one of the best systems in the world, however, delay sometimes makes a mockery of the system. Of late, the courts are increasingly using computers and internet to serve the populace in a better, efficacious and speedy manner. Online Dispute Resolution (ODR) – a special form of Alternative Dispute Resolution (ADR) – is now the need of the hour. This paper examines the hurdles faced by ODR in India and suggests methods for using this tool for resolving disputes electronically in the era of e-governance.

Keywords: Arbitration, Delay, Justice, ODR (Online Dispute Resolution)

1. Introduction

In a vibrant democracy difference of opinion is always accepted. As rule of law – and not the fiat of a dictator – is the guiding principle, judiciary is held in high esteem. Besides the basic role of interpreting the law enacted by the legislature, judiciary in India, has a much larger role. It is that organ of governance which makes the common man feel confident. It shows the light at the end of the tunnel – though the tunnel is very long, yet the light is bright enough to keep the hopes of the citizenry alive and kicking. There is no doubt that the people of India have reposed their utmost faith in the judicial system of the country in general and in the higher judiciary in particular. This is evident from the ever-increasing number of matters being filed in the courts. People may like, at times, to get their disputes resolved by using extra-legal methods, however, by and large, there is faith and trust in the judicial system. One problem faced by the judiciary is to achieve a balance between disposal of cases filed and dispensation of justice. There has to be a judicious blend of quality and speed. Now, this is asking a bit too much from a system which is following age-old practises and traditions and which is crippled because of regular supply of good quality personnel to man the key positions. Even with the best of intentions, the system is unable to cope with the burgeoning number of cases. Due to the overflowing dockets, judges find it extremely difficult, well nigh impossible, to satisfy the seekers of justice. The clichéd saying, “justice delayed is justice denied” has been quoted so often that it has lost its meaning. This, however, is not a recent phenomenon. Setalvad (1952), the first Attorney General of Free India, wrote, “A burning problem which the citizens, lawyers and judges face alike is that of the congestion of Courts of law and the consequent inordinate delays in the administration of justice…”

1.1. Law, Courts and Justice

Movements and changes in society create social gaps. Justice seeks to bridge these gaps. Therefore, the horizon of justice keeps changing and is ever-expanding. The courts are required to do social justice, by using the concept of ‘social engineering’ propounded by Dean Roscoe Pound of the Harvard Law School.

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Social engineering has several manifestations in the form of ‘social justice’, ‘economic justice’, ‘discriminative justice’ and ‘distributive justice’, which casts a much bigger role for the judiciary – not to be contended with a regulatory role, but to play a more pro-active role of constructive and progressive adjudication. A heavy responsibility is cast upon judges to evolve laws and tools in consonance with changing needs and aspirations of society and to serve the requirements of social justice. ‘Judicial activism’ and ‘judicial restraint’ have to be balanced in application.

A court of law cannot render justice unless the ultimate decision is based on the contemporary law as prevailing in the society. A decision based on an old law, which does not satisfy the requirements of the present situation, and environment should be avoided. In such a situation the efforts of the courts should be to give the law a “purposive, updating and an ongoing interpretation”. This position makes the interface of justice delivery system with the information technology inevitable and unavoidable.

Law must therefore constantly keep on adapting itself to the fast changing society and not lag behind. Justice is supreme and justice ought to be beneficial for the society so that the society is placed in a better-off situation. Law courts exist for the society and ought to rise up to the occasion to do the needful in the matter, and as such ought to act in a manner so as to sub serve the basic requirement of the society. It is a requirement of the society and the law must respond to its need. The greatest virtue of the law is its flexibility and its adaptability; it must change from time to time so that it answers the cry of the people, the need of the hour and the order of the day.

2. Governance and E-governance

Governance is the outcome of politics, policies, and programmes. Governance is distinct from government in that it concerns longer-term processes rather than immediate decisions. By governance, we mean the processes and institutions, both formal and informal, that guide and restrain the collective activities of a group. Government is the subset that acts with authority and creates formal obligations. The promotion of good governance is widely accepted as a prerequisite for development (Sen, 1999). But defining the principles of good governance is difficult and controversial. The United Nations Development Programme (1997) enunciates a set of principles that seem to have a universal recognition and are given below:

- legitimacy and voice (focus on participation and consensus orientation);
- direction (focus on strategic vision);
- performance (focus on responsiveness, efficiency and effectiveness);
- accountability (focus on accountability to public and transparency); and
- fairness (focus on equity and rule of law).

“E-governance”, meaning “electronic governance”, has evolved as an information-age model of governance that seeks to realise processes and structures for harnessing the potentialities of information and communication technologies (ICTs) at various levels of government and the public sector and beyond, for the purpose of enhancing good governance (Bedi et al., 2001; Holmes, 2001; Okot-Uma, 2000).

E-government is not only modernising public administration through ICTs (information and communication technologies), but is a key enabler in the building of citizen-centric, cooperative, “seamless” but polycentric modern governance (Leitner, 2003).

According to Riley (2001):

... E-governance is the commitment to utilize appropriate technologies to enhance governmental relationships, both internal and external, in order to advance democratic expression, human dignity and autonomy, support economic development and encourage the fair and efficient delivery of services.

At the level of service, e-governance promises a full service available 24 hours a day and seven days a
week, greater accessibility, the capability to obtain government services without visiting government offices, and reduced service cost. Despite economic restructuring in many developing countries, such as India, public administration in developing countries still continued to remain highly bureaucratised and extremely centralised (Saxena, 1996).

E-governance is used as a synonym for an Information Technology driven system of governance that works better, costs less and is capable of servicing people’s needs. It is also broadly defined as the use of Information Technology for efficient delivery of Government services to the people, business world and industry. The term e-governance involves the computerization and networking of all government departments and linking each district, block and village panchayat with the State headquarters. The objective of e-governance in India goes beyond mere computerization of government offices. It fundamentally means changing the way the government operates and implies a new set of responsibilities for civil servants, business world and the public. Plans such as online services will give an average citizen access to Government services, with faster responses at more convenient hours. These services include providing information, collecting taxes, granting licenses, administering regulations and paying grants and benefits.

Open and democratic administration under the rule of law Government administration under the rule of law shall contribute to ensuring predictability and equal treatment, and emphasising openness and the right of access to information or decision-making in government activities. This statement again ensures that in addition to being purpose-driven, this purpose itself should be governance-centricity to have excellence.

3. E-governance and Dispensation of Justice

In the developed world, dispensation of justice involved the role of technology from the very beginning. As the technology developed the role became larger and larger. The advent of internet triggered the availability of almost all government records, including those of the judiciary (which were meant for the public) easily available. It became possible to access government agencies remotely and inexpensively. However, in the case of developing countries, including India, use of ICT and internet in the government and public sector was very small. This led to very low use of technology and continuing poor ICT infrastructure, if any was available (Bhatnagar and Bjorn-Andersen, 1990; Yong, 2003).

For India and other developing countries, e-government’s first stage was the computerisation of internal operations and services. Government departments realised that the so-called “e-governance” was a significant, expensive, infrastructural change. It required switching from totally paper-based systems and services to totally computer- and internet-based systems and services. Judiciary is in a very peculiar situation as far as its finances are concerned. All the finances of lower judiciary are controlled by the State governments and the expenses of the High Courts and the Supreme Court is charged upon the Consolidated Fund of India. Hence, for judiciary, particularly lower judiciary, funds were seldom available to upgrade the prevalent paper-based system. What to talk of complete computerisation, there have been occasions when courts have encountered problems to procure sufficient stationery. Thus, the judiciary has control neither over the sword nor the purse. This is the situation not only in India but elsewhere also. As one of the framers of the Constitution of the U.S. put it, the judiciary itself would have neither the power of the purse nor of the sword. The judiciary could field no army or police to enforce its decrees, nor could it withhold the budgets of the other branches. All it could do was show itself to be so politically independent, so protective of the peoples’ rights, that both politicians and citizens would feel constrained to obey its decrees (Strum 2000). Incorporating e-governance in judiciary in India and other developing countries is a challenge. E-governance in developing countries must accommodate certain unique conditions, needs and obstacles (Heeks, 2001). For instance, developing countries may have poor infrastructure, corruption, weak educational systems, and unequal access to technology. It is undoubtedly true that the Indian judicial system is one of the best in the world, however, lower courts are dogged by corruption, inefficiency and inordinate delay.
Information technology has been used by the Supreme Court and other courts for the purposes of delivering justice in its true and practical perspective. A special reference needs to be made to the Information Technology Act, 2000. Dabbling in this law shall provide an insight of the possible uses of e-governance for a sound justice delivery system. Today, the justice delivery system cannot afford to take the information technology revolution lightly.

3.1. The Information Technology Law in India

To meet the challenges posed by the information technology, the Parliament enacted the Information Technology Act, 2000. The aim of the Act is to provide a sound base for e-governance and e-commerce. The principles and tools of e-governance can be effectively utilised for dispensation of justice and maintaining a sound justice delivery system. The various requirements, which are inevitable for the smooth functioning of the justice system, are adequately, economically and safely taken care of by the e-governance. For instance, electronic records are legally recognised, digital signatures have been given the status of signature in writing, a notification in electronic gazette is considered to be a valid notification, etc.

Legal recognition of electronic records: According to section 4 of the Information Technology Act, 2000 provides that where any law requires that information or any other matter shall be in writing or type written or in printed form, such requirement shall be deemed to have been satisfied if such information or matter is rendered or made available in electronic form and accessible so as to be usable for a subsequent reference.

According to section 2(1)(t), ‘electronic record’ means data, record or data generated, image or sound stored, received or sent in an e-form or microfilm or computer generated microfiche. As an alternative to paper based record, electronic record has been recognised as a medium of communication and storage of information. The new law has made it possible to keep electronic records and not only hard copies. Storage of electronic records is easy and inexpensive. Retrieval is also simpler vis-à-vis hard copies. Moreover, chances of tampering get reduced.

Legal recognition of digital signatures: According to section 5 of the Act, if any information or any other matter is required by law to be authenticated by affixing the signature, then such requirement shall be deemed to have been satisfied if such information or matter is authenticated by means of digital signature affixed in the prescribed manner.

Use of electronic records and digital signatures in Government and its Agencies: According to section 6 of the Act, the use of electronic records and digital signatures is recognised in government and its agencies for filing, issue, grant, receipt or payment of money as a legally valid transaction.

Retention of electronic records: According to section 7 if any of the documents, records or information are required to be retained for any specific period, then, that requirement shall be deemed to have been satisfied if the same is retained in electronic form.

Publication of rule, regulation, etc., in Electronic-Gazette: Section 8 of the act permits publication of official gazette in electronic form. Thus, where any law requires publication of rule, regulation, order, bylaw, notification or other matter in the gazette, publication thereof in electronic form is permitted. The requirement of publication in the official gazette is deemed to have been fulfilled by publishing in electronic form.

To give effect to these provisions appropriate amendments have been made in the I.P.C, 1860, the Indian Evidence Act, 1872, the Bankers’ Books Evidence Act, 1891 and the Reserve Bank of India Act, 1934. These amendments have made these statutes compatible with the “e-justice system”.

4. E-governance and Online Dispute Resolution (ODR)

Litigation was never the method of choice for resolution of disputes, particularly business disputes. Alternative Dispute Resolution (ADR) methods, like negotiation, mediation, arbitration and conciliation,
were favoured. With the use of internet, a new method has evolved – Online Dispute Resolution. According to the American Bar Association Task Force on E-Commerce and ADR, “Online Dispute Resolution has only one overarching feature – it takes place online.” Further, “ODR encompasses many forms of ADR and court proceedings that incorporate the use of the Internet, Web sites, e-mail communications, streaming media and other information technology as part of the dispute resolution process.”

There are three current approaches to ODR: cyberspace, non-adjudicative ADR, and arbitration. The first centres on the Internet and information technology. The principle underlying the cyberspace approach is to find better, faster and cheaper ways to resolve disputes with the aid of technology. The non-adjudicative ADR approach to ODR focuses mainly on negotiation and mediation, and how to improve both communications and relationships between parties. The arbitration approach emphasises rights and applications of law to resolve the dispute with an arbitrator’s decision. According to Kaufmann-Kohler & Schultz (2004) the impetus behind this approach is the success of traditional arbitration. If it works so well offline, then it should be adapted online, the reasoning goes.

Globally, the use of ODR is growing and has been well documented over the years and consumer disputes are seen as the main area of growth, together with human resources, government and employment disputes also a fertile ground for this type of technology (Rule, 2002).

All the three approaches mentioned above may be used in India. However, currently the third approach – arbitration approach – is used by National Internet Exchange of India (NIXI) and with success. The other two approaches may work when the system develops and the thinking evolves. At present, there is no use of these approaches in India. The use of ODR shall be to supplement the offline dispute settlement system (Katsh & Rifkin, 2001).

For a large number of disputes with low value and having disputants at geographically far places, ODR seems to be the best bet. The salient features of ODR which make it ideal for such disputes in India are:

i) Speed

One of the most attractive features of ODR is its speed. Litigants in India are used to getting matters resolved through the court system in years or decades. Even a suggestion that this can be done by ODR in months or weeks is music to their ears. Businesses will do anything to get their matters resolved speedily. And, this is precisely the reason why business litigants use the services of extra-legal institutions (even mafia) to get a speedy settlement. Private Banks are known to use the services of muscle-men to get the loan amounts back. It was noticed by the Supreme Court and it came down heavily to hold that banks or for that matter no one can use force to get the money back.

ii) Convenience – Necessity

ODR is surely much more convenient than the normal ADR or litigation. It would be a very attractive feature for the people who already have access to the other systems of dispute resolution, for instance, ADR and litigation. However, for have-nots, who do not have access to justice due to several reasons – poverty, illiteracy, lack of awareness, etc. – convenience is not the deciding factor. They want to get their disputes resolved and for them speedy and efficacious decision is much more important than convenience. Thus, convenience is an additional advantage for the elite class of the society. However, in case ODR achieves tremendous success vis-à-vis business disputes in India, it is sure that this convenience shall become a necessity.

iii) Ease of access

Anyone with access to internet can have access to ODR. And for access to internet, one does not have to have a computer and internet facility at home or business. Access is available through a very large number
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of cyber cafés, which are mushrooming in every nook and corner of India. The charges are as low as Rupees
10 for an hour (approximately 20 cents). There are plans by the government to have internet facility in each
and every village. Local Self Government is the model to be followed after amendments in the Indian
Constitution about fifteen years ago. The 73rd and 74th amendments to the Indian Constitution in 1992 are
milestones in establishing democratic decentralised administration through local self government in India.
Even a low cost simple computer – called ‘Simputer’ – has been developed for use in remote areas where
even electricity is not available. Indian computer companies are selling a few models of the usual desktop
for even less than Rs. 10,000 (approximately USD 200) and used desktops are available for as low as USD
40. These can very well be used by ‘Gram Panchayats’ (local governing body in villages) for providing
access to internet. Several telecommunications companies have made the latest technology available for
internet through cellular phones. Thus, access should not be such a major problem in the years to come.
However, it will definitely take some years, may be five, before it can be said with confidence that internet
is available to the remotest village in India.

iv) Efficient time management

In face to face (F2F) proceedings, the disputants with their lawyers have to be physically present at every
date scheduled in the court or other tribunals. ODR does not require travel and attendance, hence, the
business executives are available for the company. The same is true for customers or even in non-commercial
disputes for other persons. This flexibility allows efficient time management and also gives a chance to
prepare the case well and make an argument as compared to the court where oral arguments have to be made
and rebutted at the same time.

v) Cost Savings

Since, no travel is required in ODR, there is a significant saving in travel costs directly and a more
significant saving indirectly in terms of availability of the disputant for the major portion of time which
would have otherwise been lost in travel. This saving is most evident in cases involving international business
disputes. Additional costs of board and lodging in another city where the court is situated are also saved
from being incurred.

vi) Easy storage of digital data

Storage of documents is pathetic in lower courts in India. With rooms and rooms full of papers from floor
to ceiling, it often becomes impossible to find a particular file in time. There have been instances when court
files have been destroyed by termites, seepage of rain water, excess humidity through the walls or destroyed
due to short circuit of electric wires resulting in avoidable fire. Not to mention the natural calamities like floods
which recently happened in Mumbai in 2005. Thus, this is not a phenomenon in villages of small towns but
can also happen in a metro like Mumbai. Digital storage shall secure the data in a neat manner and can be
retrieved as and when required. With a large number of software engineers and computer companies, there is
no dearth of talent or hardware for such storage.

vii) No geographical barriers

In India, the Supreme Court has its seat in New Delhi and the High Courts have their Principal Seats and
Benchs in the capital or another important city of the provinces. Besides these higher courts, each district
has a District and Sessions Court which is the highest court in the lower judiciary. Many times, it becomes
very difficult for litigants to travel from remote villages even to the district courts, what to talk of the High
Courts and the Supreme Court. The inconvenience of frequent travel to the courts without any or very little
forward movement in the matters has a toll on the litigants and a large number of them get frustrated by
sheer waste of time, effort and money. Thus, more often than not, it results in not having access to justice for
a large section of the Indian population. Moreover, for disputes having subject value too low, disputants are
not even interested to waste their resources knowing it fully well that it is better to ‘forgive and forget’ rather than be ‘penny wise and pound foolish’.

Since ODR does not require any travel, a disputant living in the remotest area of India can take part in the proceedings from his home itself, provided internet is accessible. This feature of ODR makes it one of the most easily available systems of dispute resolution. It is also true for international disputes. Thus, availability of getting disputes resolved by ODR shall encourage disputants to get their disputes resolved rather than suffer silently.

5. Suggestions for Using ODR as a Useful Tool in E-governance

There are a number of hurdles in the path of ODR to be used as a useful tool in e-governance. It is easier said than done. It requires a perceptible change in the mindset of people. The problems and suggestions to tackle them are listed hereunder:

i) Trust and Confidence

Trust is the *sine qua non* of any dispute resolution system. India’s Supreme Court and High Courts are independent and command enormous respect. This respect emanates from the trust the citizenry have in them. It is not sure how much trust and confidence the people have for ODR institutions. A foolproof system of ODR providing consistent and impartial dispensation of justice will go a long way in creating trust and confidence. It shall take time and has to be done with perseverance and patience. There is no short-cut to attain the confidence of the people of India.

ii) Technology

People in general have distrust in technology. Some people in India do not even use bank ATMs as they fear that in case the machine does not give them the correct amount, there is no person available at that time to whom they can complain. There is a phobia for technology also because of unfamiliarity and a sense of foreign involvement. It is true that ODR system was not devised in India and hence, the technology associated with it also comes from west. This feeling gives a sense of insecurity and fear that one may become a slave to this technology. This is truer for the older generation. Younger people are more adept at using technology. They are much more confident as they, in fact, create this technology. Indian software engineers write a substantial amount of global software including legal software. Thus, there is a clear case of age bias. User-friendly technological solutions will help in removing the age bias. There is no dearth of experts in India who can do this job with perfection. Initiative has to come from the government, including the judiciary, to solicit such experts and take their services for development of simple technological applications.

iii) Lawyers

Shakespeare had written in one of his plays, ‘The first thing we do, let’s kill all the lawyers’. Advocates of ODR will surely agree with it. The lawyers are one of the biggest hurdles with their mindset of adversarial methods of dispute resolution. Also, there is a potential conflict with the fee earning of lawyers if ODR is followed. Lawyers in general are not trained for ODR in law schools. This makes the task difficult for the disputant to take a decision to go for ODR when the lawyer is strongly in favour of litigation. The primary task of a lawyer is to advise his clients on appropriate remedies and courses of action. Advise by lawyers is fine for the court matters, but without any proper training for ODR, who will advise them for ODR mechanisms. Thus, dependence on lawyers should be reduced which means more awareness for the businessmen and masses.

iv) Virtual world

There is no face-to-face interaction, which makes it difficult to fix an identity in mind. One never knows whether the person on the other side is male or female, young or old, naïve or experienced, etc. Such
information makes a lot of difference in court rooms and matters have been won or lost on the degree of capability or personality of one’s counsel or disputant himself. The virtual world has an environment of anarchy. There may be method in madness but it is quite chaotic. In such a virtual world the uninitiated feels lost and it has a tremendous negative effect on his psyche. It results in lowering of confidence and thereby results in loss of trust. There is a much greater chance of such a thing happening in India with almost half of its population illiterate. A long-term solution can be to spread literacy as fast as possible. In the mean time, exposure needs to be provided to people regarding virtual world. These concepts are spreading fast in large cities, however, smaller cities and towns will also pick it up slowly but surely.

v) Access

The digital divide between IT haves and IT have-nots makes access at this time more difficult for the weaker sections of society. Issue of access to ODR shall broaden this gulf. People with all the resources generally have familiarity with the system and they can with some effort use the system for their own use. This makes the case for empowerment of the weaker sections by providing them access stronger.

vi) Barriers

Educational barriers shall prevent the uneducated from accessing ODR. Language also becomes a barrier. English is generally the language used for internet and ODR, while a large portion of work in lower courts is done in vernacular. The preference for English shall put the locals at a disadvantage. Cultural barriers may also pose a problem. ODR system transcends national boundaries as well as different cultures. This fact must be taken into account. India – a country known for its ‘unity in diversity’ – is of continental dimensions and a large number of different cultures thrive under the common umbrella. This fact is taken care of in different courts in India, however, it is not certain how these differences shall be factored in ODR. There has been an increase in websites offering information in vernacular, particularly government websites. This is welcome. Ideally, information should be available in more Indian languages, as the case is in China and Japan. Dependence on English is not much.

vii) Personnel

Adequate number of qualified personnel to man the ODR institutions and provide counsel to consumers and businesses is one of the major obstacles. The lawyers who have been trained for decades together for the traditional form of practice would find it next to impossible to switch over to the new trend of dispute resolution called ODR. Arbitrators (decision makers in any role – negotiator, mediator, conciliator, etc.) in ODR need to be specially trained for this special task. Teaching is not at all done for ODR in universities and professional schools. Even ADR lags behind. Law schools have very few courses on ADR and hence, it is difficult to get good law graduates with sufficient knowledge of ODR. It should be taught at colleges, particularly to law students.

viii) ODR not suitable for all disputes

Like ADR, ODR is also not suitable for all disputes. Questions of intricate legal complexity are best decided in a court of law. Matters of criminal nature, matrimonial disputes, and matters involving rights of citizens as against the State are some of the examples which cannot be decided by ODR system. The matters which can best be decided are business disputes – B2C and B2B. The rest of the disputes may be resolved in the years to come by some suitable modifications in the model used. However, it can very well lessen the burden of courts and allow them to devote more time to other disputes which cannot be resolved by ODR.

6. Perspective of Courts

The courts are encouraging the use of technology, like video conferencing, for speedier resolution of disputes. Thus, the judiciary is in favour of the use of latest technology. One of the fundamental rule of
interpretation is that the legislature intends the courts to apply an ongoing legislation a construction that continuously updates its wordings to allow for changes since the law was initially enacted. An enactment of the former days is thus to be read today, in the light of the dynamic processing received over the years. This rule of interpretation has been properly appreciated and adequately applied by the Indian judiciary in the context of information technology. In a catena of judgments, the courts have held that new technology should be used for speedy resolution of disputes.

In State of Maharashtra v Dr. Praful B. Desai (Supreme Court of India, 2003), the Supreme Court observed: “The evidence can be both oral and documentary and electronic records can be produced as evidence. This means that evidence, even in criminal matters, can also be by way of electronic records. This would include video conferencing.”

In Sakshi v U.O.I (Supreme Court of India, 2004), the Supreme Court observed: “The whole inquiry before a court being to elicit the truth, it is absolutely necessary that the victim or the witnesses are able to depose about the entire incident in a free atmosphere without any embarrassment……. Rules of procedure are handmaiden of justice and are meant to advance and not to obstruct the cause of justice. It is, therefore, permissible for the court to expand or enlarge the meanings of such provisions in order to elicit the truth and do justice with the parties. Thus, in holding trial of child sexual abuse or rape a screen or some arrangements may be made where the victim or witness (who may be equally vulnerable like the victim) do not see the body or face of the accused. Recording of evidence by way of video conferencing vis-à-vis Section 273 Criminal Procedure Code is permissible”. Thus, understanding the importance of e-governance tools, the Supreme Court gave a futuristic verdict.

Earlier, in Basavaraj R. Patil v State of Karnataka (Supreme Court of India, 2000), the question was whether an accused need to be physically present in court to answer the questions put to him by the court whilst recording his statement………The majority held that the section had to be considered in the light of the revolutionary changes in technology of communication and transmission and the marked improvement in the facilities of legal aid in the country. It was held that it was not necessary that in all cases the accused must answer by personally remaining present in the court. The same may be achieved by video conferencing.

7. Concluding Remarks

It can, thus, be safely concluded that the courts in India are aware of the developments in technology and are keen to use the latest technology to deliver speedy justice. Several judgments of the Supreme Court bear testimony to the fact that the tools of e-governance have the potential to seek help of those witnesses who are crucial for rendering the complete justice but who cannot come due to “territorial distances” or even due to fear, expenses, old age, etc. Moreover, it is a step in the right direction to instill the feeling of confidence among the people of India who have utmost faith in the judicial system. Once, they start getting the taste of speedy justice using the tools of e-governance and ODR, it is quite a possibility that they would not prefer to go to the regular courts for getting the matters resolved. The future looks bright. However, it all depends on the will of the legislature and judiciary. Dissemination of information about electronic redressal of disputes may not be taken so welcome in the initial phase, but, it is going to be “the method of resolution of disputes” in the future.

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A Case Study on the People Politician Interface in Uttar Pradesh

Pallav Pandey1* and Naveen Kumar1

ABSTRACT

Better People Politician Interface is required for a stronger democratic framework. The ideal situation is where political leaders reach out to the masses and work for them and in turn get their votes. However in a society where the caste identity is one of the key drivers of the voters, the politicians are wary of experimenting and looking at options of innovation. Understanding the existing mechanism of interfacing with the electorate gives insights on its limitations and repercussions on the political career of the leaders. A software solution designed keeping in minds the priorities of the leader is not only more acceptable to him but it goes a long way in aligning the political interests with the interest of the Common Man.

Keywords: People-Politician Interface, Constituency Management Software, Vested Interest, Common Interest, Uttar Pradesh.

1. Introduction

For making India a developed country in 2020, there is need to focus on the standard of Political processes and the output coming out of it. Without making the effective machineries of democracy, it is erroneous to think about developed India because the process of development in our country is not dependent upon one centre of power and authority but on the entire decentralized Political system. Since Political system is most important mechanism in democracy to cause economic and social development, before thinking over the other problems, the course of politics and delivery mechanism of political system must be corrected otherwise the people will lose faith that will hamper the process of becoming a developed country.

In democracy, political system decides the quality and the quantity of output and, people decide the relevant input. However, this relationship in India is very weak. There is a relationship between people and politicians but it has not been directed towards mutual benefits. Within the framework of an open society and an open economy, the empowerment of people and the battle against poverty, ignorance and disease depend upon the People’s representatives who decide the policies and direction of development. Political representatives must be responsive to the people so as to ensure the good governance and in turn get benefited by winning the mandate of the people in subsequent elections.

2. People-Politician Interface

In the age of growing awareness of people at every level, it is much more relevant to talk about close relationship between government and people. However, it is a crude fact that governments in their regulatory
role have not been proved effective to solve the basic problems of human society. It is worthwhile to quote former US President Ronald Reagan from his first inaugural speech in January 1981: “Government is not the solution to our problem. Government is the problem.” Nowhere in the world has this held truer than in India. Therefore in most of the liberal democratic states including India, the minimal state concept has come into vogue but still the state has a challenging task in its hand to remove the poverty, unemployment, etc. or to develop the social and economic indicators. In a democracy, this responsibility depends upon the political system which must be out of the clutch of bureaucratic red-tapes.

However, the public discourse is littered with the paraphernalia of redemption. The worst aspect of the redemption paradigm is that it perpetuates “the culture of poverty.” In this backdrop, it is need of our age to correct the process of our Political System rather than criticizing it while watching T.V. news. To correct the delivery mechanism of government, the measures of E-governance, citizens’ charter, dissemination of information, right to information and decentralization have been taken up. Similarly, the people should come closer to politicians and vice versa to improve people-politicians interface that will bring out gradually the era of more responsive political system to peoples’ concern without which the government-people interface will be confined to bureaucracy-citizen interface.

The people-politician interface can be improved only by the means of linking the vested interest of politicians with the common interest of masses. It can be achieved when politicians will understand the electoral importance of works of development in their constituencies. If the politicians graduate to this level, the ultimate gain will reach to the people, and political system will get more stability. In this situation, when electioneering will largely depend upon development works and redressal of peoples’ grievances, the more educated, energetic and dedicated persons will enter into politics. It will replace the criminalization of politics and politicization of crimes.

In absence of better people-politician interface, criminalization, caste and religion have become the basis of winning the election. Criminalization of politics has become an acknowledged reality of contemporary politics. According to an estimate, “of the 4092 representatives in our legislature, as many as 700 have a criminal background”, reflecting of the growing interplay between crime and politics. Moreover, communal and caste based strategy has been used successfully as a tool to sideline the importance of development issues. It is reported that a sharp rise of the BJP support base in Gujarat and Uttar Pradesh have shown the maximum polarization on caste and communal lines in the past few years (See Appendix I and II). In an attempt to garner caste based support for electoral purposes, political parties have widened and strengthened the age old divisions in Indian society. This is obvious at the state level. UP is divided between Yadavs, Lodhs, Rajputs, Brahmins and Scheduled Castes, while Bihar is divided among Rajputs, Yadavs, Kurmis and Bhumihars.

These caste fragmentations have hampered the civic culture of Indian society, which ultimately takes its toll on India’s political culture. The obvious outcome of social fragmentation is political instability. This is evident from the emergence of regional parties in state politics and the coalition politics at the Center. Many Indian states are going through a phase of political uncertainty as no party finds it impossible to gain a clear majority. UP is perhaps the best example of this uncertain situation.

Thus the present situation calls for a pragmatic shift to accommodate the concerns of the common people who are suffering the brunt of bad power politics. The remedy lies in the use of technology which promotes people-politician interface and, finally make the democracy vibrant.

3. Contemporary Strategy

A polling booth level analysis of the election results and caste composition in UP indicates a very strong correlation of the caste composition of an area with the voting pattern. Over the years Political Parties have split the total electorate along the caste identity. The success of the political parties in UP working solely on
social engineering at a macro level has impressed the political leaders at the local level so much that they do not subscribe to the notion of working for the electorate anymore.

There are two major problems in the way the Politicians interface with the Electorate. Firstly, the politicians are dependant on a group of people who comprise of political workers of the same party, influential businessmen or elected post holders of the local self-government. These people are driven by their self-interests and they try to develop a coterie around the leader to shield the leader from the masses and derive benefits of power-by-proximity. The position was worse before 1998, when in the absence of Electronic Voting Machines, ballot papers were mixed before counting and it was not possible for the leader to know definitively the mandate of the people at the micro-level. The leader had no recourse but to rely on the inputs of the political workers who have vested self interests.

Secondly, since the leaders are not inclined to work for the masses, the sense of helplessness engulfs the voters which results in lesser turnout of supporting castes and tactical voting by non-supporting castes, a phenomenon which is more commonly referred to as anti-incumbency.

In order to make its legislators more organized and efficient, the Government of Uttar Pradesh released an IT Budget of Rs. 0.15 million per legislator through which a laptop and other computer hardware was given to them. However poor educational background, little or no computer literacy and cynicism towards use of technology proved to be an insurmountable barrier.

The defeat of Bhartiya Janta Party (BJP) led National Democratic Alliance (NDA) front in 2004 General Elections, in which BJP invested massively in technology based campaigns, is seen as a failure of technology in Indian Political scenario.

The typical politician has grown cynical of the benefits of technology in creating a better People-Politician interface and therefore has no option but to rely on his political party workers.

4. Work done by Viplav to improve the interface

Research team of Viplav Communications has worked on the concept of Voter Relationship Management since 2003. Starting in March 2003, our proposals to various individual elected representatives were continuously rejected for 9 months. We realized that advocating technology solutions for efficient People-Politician Interface will not be successful unless the politician, who is both the beneficiary and buyer of the solution, sees benefits directed towards furthering his/her political career.

We then approached the problem from client’s perspective and demonstrated that it is in the interest of the politician to implement a system that works for the betterment of the people, by giving the leader feedback on needs of the people, names of important and influential people, demographical constitution. The data points for this feedback is gathered by field work done by the organization in all polling booths (pockets of 1000 voters) across the constituency of the Politician. The data on elections are super-imposed on the map to give a micro-level understanding of weak and strong areas within the same constituency (as shown in Figure 1).

The research work is done much before the time when the elections are scheduled. The input-output relationship between people and their standing or aspiring representatives is facilitated. Even though the research team does not take any assignment involving extra-constitutional means, the politicians feel benefited because they get unbiased feedback on their position in the constituency and a comprehensive action plan on how to improve it.

By aligning the self-interest of the Politician to the betterment of the common masses a practical reward-based people-politician interface has been established, wherein the Politician is informed on the area and the nature of development activity to be done. The dependency of the leader on the party workers and vested interest groups is minimized and anti-incumbency is tackled by working for the electorate.
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The Software gives input to the level of where to conduct tour programs (shown in Figure 2) in the constituency to reach out to all pockets of interest and how to use election analysis to identify these pockets (shown in Figure 3).

Our research team has worked with politicians across the party lines. The clients include Stanford graduate on one hand and high school dropouts on the other. The response to the work has been quite varied. For instance, Bharatendra Singh, (Graduate from St. Stephens College, Delhi) the Member of Legislative Assembly (MLA) from Bijnor (UP), after using the software developed by the company had realized that in 4 years of

![Fig. 1: A Screen Short of the Interface](image1)

![Fig. 2: Software helpful in tour program](image2)
winning the election he had not visited the area which had voted as much as 90% for him in the election. The company highlighted that the development works that were allocated from the MLA Local Area Development (LAD) Fund were used mostly on building approach roads or installing hand-pumps in villages of close aides. By using the software, the MLA decided to re-allocate the LAD fund for the final year based on genuine needs of the people and has started visits to ensure that all areas, especially those which had polled well for him.

The interest of the MLAs was also sparked in using the software supplied by the company when they realized it will help them in improving their election performance. For instance, Anoop Gupta (son of the sitting MLA from Misrikh-UP Om Prakash Gupta), who is a High School dropout learnt how to use the software to know his constituency better. Anoop Gupta, who manages the constituency affairs on his father’s behalf, used his LAD funds to develop 70% of roads mentioned in the report prepared by the company, irrespective of the caste of the people who got benefited by it. Another MLA, Ram Pal Yadav from Biswan has asked his son to learn computer and assist him in micro-management and election planning of the constituency.

Most of the clients are incumbent MLAs and they use the services of the company to fight against anti-incumbency. They use the database prepared by the company to know in which parts of constituency there is severe need of works like drinking water supply, electricity supply, roads, schools, health etc and more importantly the number of voters affected by each problem. The clients get inclined to work on these problems because they see a direct impact of non-performance in terms of the votes lost. In this way the politicians serve their interest to maintain power but in accordance with the company’s objective of the ultimate gainer being the people of India and particularly those who are at the bottom of society. In other words, the vested interest of politicians is linked with the development of people and vice versa.

On the other hand, those politicians who are aspiring or have lost prior elections are also using the service to increase their chances to win the next election. In this course, they are helped to go for constructive programs which infuse competition among politicians to serve the people in better way rather than manipulating...
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the voters. In this way, a constructive opposition in the political system is created, which further strengthens the democratic framework.

The work being done by us so far, however is not removed from challenges. Certain MLAs and MPs do not wish to acknowledge the true picture and prefer to be in the comfort zone created by their coterie. For instance, Devendra Nagpal, independent MLA from Hasanpur, refused to believe that there is a possibility of his loosing the election. Infact he was so disturbed by the inputs of the company that instead of working on the findings he refused to fulfill the monetary commitments with respect to use of software and services.

5. Further Work

By mitigating the anti-incumbency factor, stability is introduced in the political system. It helps the educated and dedicated persons to come into politics and helps them to survive longer. At the stability level, typically a large number of elections in India, both for the Lok Sabha and the state assemblies, are decided by a very small margin. As a result the political party suffers a lot of avoidable losses in elections at all levels. The parties manage to get the votes from their political niches but the votes are divided between the parties such that in many seats there is no clear winner. There are a lot of seats nationwide that are decided by a small fraction of voters. 120 seats (22% of 543) are decided by a margin less than 4% and all the efforts of the political parties notwithstanding these seats have remained marginal (decided by a small percentage of votes). The result on these seats can be changed by a little systematic effort and this in turn will change the political landscape of the country.

At the level of quality of politics and Political standard, the election process and the campaigning have become so haphazard that a righteous person, even with the best of intentions, is afraid of contesting an election. Even if he/she manages to gather enough strength to contest an election, his/her chances of winning it are very slim. As a result the young and the bright are running away to land of better opportunities, leaving it to others to do the dirty job of politics. Other than the fact that the good people are missing from the political playground, the major reason for the rampant corruption is the inherent insecurity associated with the job of an elected representative. Considering the amount of money one has to invest in order to win the election, and with no guarantee that he will be re-elected the next time, one tries to get rich as quickly as possible. Without worrying about the implementation, the solution is simple. Create a mechanism by which people start taking interest in the political process and start making their political choices judiciously. This will simplify the political process tremendously. On one hand it will eliminate the job insecurity from politics, in the sense that if a candidate performs well, people will recognize him/her and his reelection is guaranteed. On the other hand righteous people will find it easier to contest election, because the new mantra shall be “if you work you win”.

Further work is required both in terms of replicating the work in other parts of the country as well as with political parties at national and state level. More dimensions need to be added to the work to benefit the politicians who are not able to afford the professional services to build a better people-politician interface.

Acknowledgements

The authors are grateful to the Viplav Communications Pvt Ltd, for allowing them to use proprietary software and client feedback for public domain.

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About the Authors

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Naveen Kumar: Is an M. Phil from JNU and is heading the research team at Viplav Communications Pvt Ltd.

Appendix I

Vote share (%) in national elections 1984-1991, for Congress and BJP in the major states where the BJP vote has increased

<table>
<thead>
<tr>
<th>STATE</th>
<th>YEAR</th>
<th>CONGRESS</th>
<th>BJP</th>
</tr>
</thead>
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<tr>
<td>Bihar</td>
<td>1984</td>
<td>51.8</td>
<td>6.9</td>
</tr>
<tr>
<td></td>
<td>1989</td>
<td>28.1</td>
<td>11.7</td>
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<tr>
<td></td>
<td>1991</td>
<td>23.6</td>
<td>15.9</td>
</tr>
<tr>
<td>Gujarat</td>
<td>1984</td>
<td>53.2</td>
<td>18.6</td>
</tr>
<tr>
<td></td>
<td>1989</td>
<td>37.0</td>
<td>30.4</td>
</tr>
<tr>
<td></td>
<td>1991</td>
<td>29.0</td>
<td>50.4</td>
</tr>
<tr>
<td>Karnataka</td>
<td>1984</td>
<td>51.6</td>
<td>4.7</td>
</tr>
<tr>
<td></td>
<td>1989</td>
<td>48.9</td>
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</tr>
<tr>
<td></td>
<td>1991</td>
<td>42.1</td>
<td>28.8</td>
</tr>
<tr>
<td>Madhya Pradesh</td>
<td>1984</td>
<td>57.1</td>
<td>30.0</td>
</tr>
<tr>
<td></td>
<td>1989</td>
<td>37.7</td>
<td>39.7</td>
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<tr>
<td></td>
<td>1991</td>
<td>45.3</td>
<td>41.9</td>
</tr>
<tr>
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<td>10.1</td>
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<td></td>
<td>1989</td>
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<tr>
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<tr>
<td></td>
<td>1991</td>
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<td>32.8</td>
</tr>
<tr>
<td>ALL INDIA</td>
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<td>48.1</td>
<td>7.4</td>
</tr>
<tr>
<td></td>
<td>1989</td>
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<td>11.4</td>
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<tr>
<td></td>
<td>1991</td>
<td>36.6</td>
<td>20.0</td>
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### Appendix II

Support for BJP by caste and class hierarchies, 1999

<table>
<thead>
<tr>
<th></th>
<th>Very High Income</th>
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<th>Medium Income</th>
<th>Low Income</th>
<th>Very Low Income</th>
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<tr>
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<td>44</td>
<td>39</td>
<td>22</td>
</tr>
<tr>
<td>Hindu Dominant Peasant Caste</td>
<td>37</td>
<td>33</td>
<td>36</td>
<td>21</td>
<td>12</td>
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<tr>
<td>Hindu Upper OBC</td>
<td>23</td>
<td>27</td>
<td>19</td>
<td>20</td>
<td>14</td>
</tr>
<tr>
<td>Hindu Lower OBC</td>
<td>28</td>
<td>18</td>
<td>19</td>
<td>20</td>
<td>14</td>
</tr>
<tr>
<td>Scheduled Caste</td>
<td>26</td>
<td>23</td>
<td>17</td>
<td>11</td>
<td>7</td>
</tr>
<tr>
<td>Scheduled Tribes</td>
<td>53</td>
<td>44</td>
<td>22</td>
<td>17</td>
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The Success Model of Evolution from Government to E-governance

Sundresan Perumal1*, Premma Rajarethinam1 and Zulikha Jamaluddin1

ABSTRACT

As the world is streaming into the electronic world there are still huge communities which don’t understand the revolution of government which already switch into the era of e-government. There are still huge community which till now does not understand what is actually e-government and e–governance. And at the same time they don’t understand what is actually the transmission between the old government and the new e government framework model. The actual positive idea to develop this model is to understand the e-governance better and at the same time this will avoid from possible problem during the period of transition. Towards introducing the new model we also will identify new model we also will identify few unique cases of e-government. As fast as WWW (World Wide Web) concern it grows beyond the limitation line, this made a considerable attention to be focused on the adoption of web-based technology to the business to business (B2B) and business to consumer (B2C) sector. As the heat of this sector goes on another few are also entering into the picture whereby involving government such as government-to business (G2B) and government to citizen (G2C) this wont be a shocking if the government whether local, regional, national, or even supranational have been slower to clamber onto the web enabled bandwagon. The concepts of the traditional government are more conservative entity, slower to change into new initiatives, than operators in the commercial fields.


1. Introduction

As the world is streaming into the electronic world there are still huge communities which don’t understand the revolution of government which already switch into the era of e-government. Even this happen but it is leak of a great model which can explain the transition from a manual government to the great tremendous e-government process. As fast as WWW (World Wide Web) concern it grows beyond the limitation line, this made a considerable attention to be focused on the adoption of web-based technology to the business to business (B2B) and business to consumer (B2C) sector. As the heat of this sector goes on another few are also entering into the picture whereby involving government such as government- to business (G2B) and government to citizen (G2C) this wont be a shocking if the government whether local, regional, national, or even supranational have been slower to clamber onto the web enabled bandwagon. The concepts of the traditional government are more conservative entity, slower to change into new initiatives, than operators in the commercial fields. Due to this consideration e-government movement is now building with a number of national governments taking extensive measure to engage the extreme transformation of their portfolio. In this paper we are going to look and illustrate a transition model from the traditional government to e-

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government process. The actual positive idea to develop this model is to understand the e-governance better and at the same time this will avoid from possible problem during the period of transition. Towards introducing the new model we also will identify new model we also will identify few unique cases of e-government. In this paper we are going to look at how does "Improved public management" and at the same time how e-government is implemented in various communities worldwide. Then we are bringing in 3 model of e-government maturity as well as strategic alignment model of Henderson and Venkodraman (1993), from the previous reading we fill further up the exploration of the transition process of government to e-government, this will also implication’s on the model introduced. The focus of e-government is directed into the web technology. If we look at few years back there is no literature standing on the area of public management (Bevir et al., 2003) and the reinvention of government that in many ways lay’s the groundwork for the e-governance initiatives that were to follow. The was a idea submitted by Osbourne and Gaebler (1992) to consider citizen’s as a customer and the entire government service should be focus on customer’s need’s. But mintzberg (1996) have come out with another powerful point challenging Osbourne and Gaebler saying that we does not need to call citizen as customer because customer buy product’s, clients buy service but citizen have rights and the priority for them is more than a customer or client in the government sector. This does not mean’s that the necessary to reinvent government is not there, but the limit extent to which the nomenclature of B2C relationship parallel that of G2C relationship.

The stereotypical image of a Government is of a slow-moving bureaucracy, unwilling or unable to change and years behind other industry sectors in its use of new technology and new business models (Accenture, 2000). In this model, citizens and businesses engage with government in many areas, creating vast amounts of paperwork – an inconvenient and confusing process. Stereotypes are by nature unspecific – there are always exceptions. Yet the image here is one that will be familiar to many citizens who do not have access to an e-government.

A public sector organization planning to adopt an e-government initiative and formulate its IT strategies must evaluate its business models and select appropriate technology solutions that deliver on central government policy. Although there are significant differences in the composition of organizations, there are a number of technologies and systems infrastructure that many organizations need to adopt in common to provide facilities for the integration of their systems in a way that enables them to build a platform for sharing their knowledge resources. For example, an e-government portal requires a common and integrated architecture framework that allows different organizations, provinces, and municipalities to share and exchange data, independent of formats, devices and underlying architecture (Sharma and Gupta, 2002). Therefore, organization must have a clear understating of architecture frameworks from both the technical and information management level. The e-government architecture defines the standards, infrastructure components, applications, technologies, business model and guidelines for electronic commerce among and between organizations that facilitates the interaction of the government and promotes group productivity. Since e-government is a relatively new research area, its architecture and adoption strategy have not been widely discussed. Therefore the concepts from other relevant areas such as e-business, e-services, and e-commerce notwithstanding, a number of studies have discussed the architecture or components of e-government, such as Cabinet Office(2000), Heeks (2001), Sharma and Gupta (2002), Office of Information Technology (2001) and Daniels (2002). However, these studies did not address the aspect of business management model and how it is aligned with the IT infrastructure. Since e-government goes beyond the IT infrastructure, the significance of integration technologies have been discussed and classified under the e-business layer section since these technologies and approaches are often and need to be used in e-government projects.

2. Framework Layers of E-government

The reason is that they are designed to support e-business and e-commerce applications. The framework is structured into four layers connected through two-direction arrows which present the hierarchical level of
e-government implementation and portray the logical connection of each relevant layer that allow two-way transmission of data and services. The top level of the framework represents the access layer that illustrates who might use the government services and what are the channels of access. Throughout these channels, the e-government portal should integrate all government information and services from disparate departments and Organizations, which represent the e-government layer. In connection to the e-government layer, the e-business layer is emerged to manipulate and integrate government data sources across government bodies and make information and services available to the e-government portal in real-time. In the bottom level of the framework, the ICT infrastructure of e-government should be built to reach out all parts of government and hence, support the e-government operation and provide effective and reliable e-government services. This section now discusses the architecture that forms the framework of e-government architecture project. Figure 1 show the architecture framework of e-government which is divided into our Layers: access layer, e-government layer, e-business layer, and infrastructure layer.

Early adopters of web-enabled technology applications tended to automate existing business processes, with little redesign or innovation. Typical approaches involved automation of the front-end web presence so as to spark e-commerce activity, but failed to integrate and redesign the business as a whole in order to make it truly web-centric. The same was true of early e-government initiatives – there was a scramble to get as many services or web pages up with little regard to quality, service level or appropriateness for the citizenship. However, as Burn and Robins observe, “Government is not just about putting forms and services online. It provides the opportunity to rethink how the government provides services and how it links them in a way that is tailored to the users’ needs.” This rethinking must necessarily include disavowal of the “build it and they will use it” mentality that infiltrates much web-enabled thinking. The failure of many dot.coms to garner business, and indeed the proverbial failure of the horse to drink the water proffered, should alert governments to the risk that e-government initiatives may also go hideously wrong. Consequently, “government must develop a far more sophisticated view of the people it is there to serve and devolve real power as an integral part of its approach to e-government And provide more freedom of information” (Burn and Robins, 2003). If the governments can achieve this radical new conception of their role, then there is the potential for e-government to transform “not only the way in which most public services are delivered, but also the fundamental relationship between government and citizen. This implies, of course, not only e-government but also e-governance – if real power is really to be devolved to citizens. There are many opportunities for e-government applications, whether they involve the provision of information, handling complaints and queries electronically, processing applications for permits/licenses electronically, paying taxes, duties, and fees electronically.

3. The Limitation of E-government

Themistocleous and Irani (2001) and Shung and Seddon (2000) propose a model to classify the limitation that derived from IT infrastructure such as ERP. These models are considered adaptable for the classification of e-government limitation, since the main purposes of e-government adoption is to automate business processes and integrates IT infrastructures in public sector organizations. Figure 2 analyses e-government limitation and then classifies them accordingly in order to provide a comprehensive insight to those barriers restricting the adoption of e-government. Many e-government initiatives are in their strategic phase of implementation (infancy), however, some key problems and limitation are already beginning to emerge. There are a number of limitations experienced in public sector organizations that prevent the realization of anticipated benefits and degrade successful adoption of e-government projects. This section analyses and summarizes the limitation of e-government adoption experienced in public sector organizations. Technology itself would not guarantee success with e-government but, it is necessary that any e-government initiative must ensure that it has sufficient resources, adequate infrastructure, management support, capable IT staff, and effective IT training and support. Despite the cost of IT going down, an adequate IT infrastructure still represents the key limitation for e-government adoption. The infrastructure is composed of hardware and
software that will provide secure electronic services to citizens, businesses, and employees. Bonham et al. (2001), Bourn (2004), Dillon and Pelgrin (2004), McClure (2000) and National Research Council (2005), in their research, agree that governments view a lack of technical infrastructure as a significant barrier to the development of government organizations’ capabilities to provide online services and transactions. They
also agree that unreliable IT infrastructure in public sector organizations will degrade e-government performance. Practically, Layne and Lee (2001) and Dillon and Pelgrin (2002) emphasize the importance of network capacity and communication infrastructure layer) as an important foundation for integrating information systems across government organizations. It should be in place before e-government services can be offered reliably and effectively to the public (McClure, 2000). Therefore, the key to success in an e-government strategy is to implement an adequate IT infrastructure that will support a users’ experience of easy and reliable electronic access to government. For example, as discussed in earlier section, intranet and extranet should be maintained in public sector organization to provide reliable groundwork for required information systems and applications. As Figure 2 illustrates, many examples of limitation exists that associate with IT infrastructure, and as discussed in earlier section that LAN, reliable server, and internet connections are important to build a strong foundation for e-government infrastructure. A barrier frequently cited is the need to ensure adequate security and privacy in an e-government strategy (Daniels, 2002; James, 2000; Joshi et al., 2001; Lambrinoudakis et al., 2003; Layne and Lee, 2001; Sanchez et al., 2003). Bonham et al. (2001) and Gefen et al. (2002) agree that one of the most significant limitations for implementing e-government applications is computer security, privacy and confidentiality of the personal data. One of the sophisticated applications of e-government is e-voting, which uses electronic ballots that allow voters to transmit their vote to election officials over the internet. This application requires extensive security approaches to secure the voting process and protect the voter personal data. In addition, government organizations at all levels use, collect, process, and disseminate a wide range of sensitive information on personal, financial, and medical aspects. Hence, IT departments in organizations should aware that security and privacy are not only critical for the availability and delivery of government services but also to build citizen confidence and trust in the online services and transactions.

Open the transition process from the government to e-government transition process offers the government a unique opportunity to enhance not only their operational transparency, clarity of purpose and responsiveness to citizens (Marche and McNiven, 2003), but also their own internal efficiency and effectiveness, important concerns in times of economic downturn and increasing public pressure for internal accountability. However, achieving transparency requires significant “internal process redesign that hides the internal complexity of transactions” (Marche and McNiven) from citizens who really don’t care which department provides a particular service, or who they are paying, so long as they can get it. This transparency is likely to increase citizen empowerment they will be able to access information of their own choosing, rather than merely accepting whatever explanation is provided (if any) by the (in)competent authorities. There are both similarities and differences between .com and .gov, both of which bear closer attention. Individual B2C customers will have a general experience of the 24/7 world where they can do anything, any time and anywhere. As citizens, it is likely that they will expect a similar level of service from e-government a one-stop shop service that is simple and capable of personalization. Achieving such a service requires changes in the way government functions it needs significant inter-departmental cooperation. Citizens are more likely to develop loyalty towards those e-government portals that are citizen-centric, that are designed to address their needs. The Australian Centrelink.gov.au is a good example of an early portal that did integrate across agencies within government. A key difference between e-government and e-business concerns loyalty businesses have tried to develop customer loyalty with customer relationship management (CRM) so as to encourage customers to return time and again to buy their services or products. So long as customers need to buy, they may indeed return.

However, with e-government, loyalty is rather different. E-governments should encourage digital loyalty, i.e. the preference of citizens to use digital services over other forms (e.g. counter, mail, fax, telephone), since digital services should be much cheaper to provide. Yet at the same time, since governments by definition operate as a monopoly, they may perceive that they don’t need to spend extra effort to compete with other providers. That said, some government services such as the Post Office (not a government service in all countries) may well face private-sector competition in the form of courier and parcel delivery firms, so it
## Analyses of e-government Limitation Concept

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>IT skills</td>
<td>Lack of IT training programmes in government Shortage of well-trained IT staff in market Lack of employees with integration skills Developing web site by unskilled staff Unqualified project manager Shortage of salaries and benefits in public sector Flow of IT specialist staff</td>
</tr>
<tr>
<td>Operational cost</td>
<td>Cultural issues Resistance to change by high-level management Time consuming for reengineering business process in public organizations Operational cost Main supply come from central government Shortage of financial recourses in public sector organizations High cost of IT professionals and consultancies IT cost is high in developing countries Cost of installation, operation and maintenance of e-government systems Cost of training and system development</td>
</tr>
<tr>
<td>IT infrastructure</td>
<td>Shortage of reliable networks and communication Inadequate network capacity or bandwidth Lack resources standards and common architecture policies and definitions Existing systems are incompatible and complex Existing internal systems have restrictions regarding their integrating capabilities Lack of integration across government systems Integration technologies of heterogeneous databases are confusing Lack of knowledge regarding e-government interoperability High complexity in understanding the processes and systems in order to redesign and integrate them Lack of enterprise architecture Availability and compatibility of software, systems and applications</td>
</tr>
<tr>
<td>Organizational</td>
<td>Lack of coordination and cooperation between departments Lack of effective leadership support and commitment amongst senior public officials Unclear vision and management strategy Complex of business processes Politics and political impact</td>
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</tr>
</tbody>
</table>

*Fig. 2: Analyses e-government Limitation*

is unwise to assume absolute monopoly status. At a higher level, a government can also be considered to be in competition (e.g. for investment or human resources) with neighboring governments, whether in nearby cities, regions or countries. In this sense, Singapore and Hong Kong compete with each other for international business: the quality and extent of their e-government services are part of the competitive environment. Nevertheless, e-government services should be designed so as to help citizens get in, find their information or transact their business, and then get out as efficiently as possible. It is useful here to refer to “stickiness”. In an e-business context, “stickiness” suggests keeping a customer on a web site as long as possible, in the
hope that the customer will buy something. In consequence, web sites are often designed to be maximally sticky. In contrast, few e-government web sites need such levels of adhesiveness. In most cases, it is more appropriate that the citizen can easily access the service, complete a transaction, and get out. This suggests that optimal stickiness rather than maximal stickiness is desirable.

4. E-government maturity models

Accentor started its annual surveys of e-government development in 2000, characterizing e-government progression via a multi-stage “publish, interact, transact” model. Later, the model was extended to incorporate the notion of the transformation of government – redesigning processes so as to put the citizen at the centre (Accenture, 2004). This transformation involves structural and cultural change within government. In 2003, the model was further revised to five stages:
(1) Online presence;
(2) Basic capability;
(3) Service availability;
(4) Mature delivery; and
(5) Service transformation.

Considering the transitions between stages, Accenture (2003) commented we find that at the start of each stage countries make large steps and, often, rapid development. As each plateau is approached, the limitation to further progress become apparent and the rate of development slows. In moving to the highest stage of e-government (i.e. service transformation), Canada demonstrated its ability to apply leading-edge practices, such as involving customers in service development and identifying/focusing on high-value services. A similar staged development model was articulated by Chen (2002), who argues that e-government delivers its content and services through the continuum of the four levels of interaction:

- **By enabling information search by citizens via the internet;**
- **By evolving into providers of two-way communication services such as simple groupware functionalities like web forms, e-mail and bulletin boards;**
- **By facilitating transaction services for businesses and citizens; and by transforming practices and services from government to the agents and the community (e.g. e-voting or opinion poll).**

He further argues that most e-government initiatives are moving upwards in the continue. Both these development models focus on the service delivery or “e-commerce” side. However, another transformation model (Hodgkinson, 2002) suggests that e-government progresses through a learning curve for its back-end (e-business) activities, similar to the learning curve of data processing maturity of a six-stage growth model proposed by Nolan (1979). While these staged models tend to help identify “where you are”, they usually fail to “guide you to the next stage”. This requires a more comprehensive maturity model, such as Galliers and Sutherland’s (1991) six-stage model (i.e. adhocracy, starting the foundations, centralized dictatorship, democratic dialectic and cooperation, entrepreneurship opportunity, and integrated harmonious relationships), which associates the characteristics of each of the stages with the seven “S” framework (i.e. strategy, structure, systems, staff, style, skills and super-ordinate goals). Similarly, the strategic alignment maturity matrix proposed by Luftman (2000) consists of five conceptual levels (i.e. initial, committed process, established focused process, improved/managed process, and optimized process) and six IT business alignment maturity criteria (i.e. communication, competency/value measurement, governance, partnership, scope, and architecture and skills). As Hodgkinson (2002) observes, reports from various knowledge management initiatives suggest that islands of automation can exist long after databases have been established within the various agencies, and that cultural issues will hinder interoperability long after technological interoperability has become feasible. In the end, mature e-government is characterized by high levels of capability and performance on multiple dimensions. Performance dimensions include the government’s ability to offer the vast maturity of suitable services with an e-delivery option, and a large number of citizens and organizations making use of
E-government: Macro Issues

them. Capabilities include the ability to share data and information across government units, reduce process times through workflow and ERP systems, and the ability to capture and share knowledge of government employees. It also includes the ability to assess performance, through monitoring systems such as a balanced scorecard. A mature e-government will also differ from a less mature one in other areas, such as IT management by senior CIOs, an effective management structure, regular planning and re-engineering activities to determine areas for improvement and making the changes to capitalize on the improvement potential, and by an IT (ICT) architecture that fosters integration, enables government-wide standardization, and offers the above-mentioned performance.

5. E-governance and E-government

There is an important distinction to be made between “government” and governance. Government is the institution itself, whereas governance is a broader concept describing forms of governing which are not necessarily in the hands of the formal government. Corporate governance, for example, refers to how the private sector structures its internal mechanisms to provide for accountability to its stakeholders: while government may be involved in this through company law, there are aspects which it does not control. According to Keohane and Nye (2000): By governance, we mean the processes and institutions, both formal and informal, that guide and restrain the collective activities of a group. Government is the subset that acts with authority and creates formal obligations. Governance need not necessarily be conducted exclusively by governments. Private firms, associations of firms, nongovernmental organizations (NGOs), and associations of NGOs all engage in it, often in association with governmental bodies, to create governance; sometimes without governmental authority.

6. E-governance in developing Countries

Implications of e-governance are slightly different for developing countries. Whereas Public sector reforms or the NPM movement in industrialized countries was internally driven (as in the UK, USA, etc.), in most developing countries the public sector reforms were externally driven, through the World Bank and other donor institutions (McGill, 1997) in some countries such as Turkey, there were no pressures to accept these reforms (Sozen and Shaw, 2002). Consequently, in spite of economic restructuring in many developing countries, such as India, public administration in developing countries still continued to remain highly bureaucratized and extremely centralized (Saxena, 1996). Another difference between e-governance in industrialized and developing a country is in the available ICT infrastructure. The e-governance movement in industrialized countries was largely triggered by the availability of internet technology, through which it became possible to access government agencies remotely and inexpensively. But, for their internal operations, government organizations were already using ICT-based systems. However, in the case of developing countries, ICT use in the public sector was very small, and therefore they had poor ICT infrastructure, if any (Bhatnagar and Bjorn-Andersen, 1990; Yong, 2003). Consequently for developing countries, e-government’s first stage was the

Computerization of internal operations and services. Thus, for many government departments, “e-governance” was a significant, expensive, infrastructural change, as they had to plan switching from totally paper-based systems and services to totally computer- and internet-based systems and services. But e-governance is not a shortcut to economic development, budget savings or clean, efficient government. Instead, e-governance is an evolutionary process and often a struggle that presents costs and risks, both financial and political (Pacific Council on International Policy, 2002). These risks can be significant (Heeks, 2003). Therefore, if e-government initiatives are not well conceived and implemented, they can waste resources, fail in their promise to deliver useful services, and thus increase public frustration with government. Moreover, e-government in developing countries must accommodate certain unique conditions, needs and obstacles (Heeks, 2001). For instance, developing countries may have poor infrastructure, corruption, weak educational
systems, and unequal access to technology.

**7. The Meaning of Excellent E-governance (e-governance)**

Excellence in organizations has been perceived to have the following attributes (Emersen and Harvey, 1996) purpose-driven (i.e. goal-centric) Customer (i.e. citizen)-centric. Process-oriented and Structure-supported. To some extent this is confirmed by the definition of “e-government” used by the Ministry of Labour and Government Administration (1999) that defines excellence in governance in terms of fulfillment of the following goals. Efficient and result-oriented administration Government administration shall, to the greatest extent possible, achieve “results” in accordance with stipulated goals, and these goals shall be attained without any unnecessary use of resources. Thus, excellence involves goal-centricity or is purpose-driven. Provide user (citizen) oriented administration Government administration should acquaint itself with the needs and desires of the users (citizens), and adapt its way of working whenever possible in accordance with their desires. Open and democratic administration under the rule of law Government administration under the rule of law shall contribute to ensuring predictability and equal treatment, and emphasizing openness and the right of access to information or decision-making in government activities. This statement again ensures that in addition to being purpose-driven, this purpose itself should be governance-centricity to have excellence. Politically manageable administration Government administration shall be an adaptable and flexible tool for implementing Government’s policies. Though not explicitly, but this statement attempts to ensure that the processes and the structure of government (which constitute “administration”) should support implementation of Government’s policies, i.e. should be “outcome-driven”. Thus, excellence in e-governance is characterized by exploitation of governance processes, structure and technology to provide an administration, which is efficient, effective (outcome-driven), politically manageable, and open and democratic (governance-centricity). This is essentially what we have called as “governance-centric” e-governance

**8. Issues in Bringing excellence to E-government Applications**

Bringing a governance-centric focus, though very much desirable, is often difficult as it requires addressing a number of critical issues, some of which are given below. Defining a citizen-centric or governance-centric vision for the e-governance projects. Often e-governance projects lack a clear vision in terms of their effectiveness focus, and are treated merely as “computerization” projects for service efficiency. Developing a process-oriented view of government work. Government work is generally performed through vertical and rigid “silos” of departments (or agencies), that get on with their jobs without any collaboration between them. Such a fragmented view of government work results in mere computerization of individual or a few of the activities in individual departments rather than of the end-to-end integrated work process which is necessary to promote effectiveness and governance-centricity. Developing a performance management system for efficient and effective service delivery, which continuously measures and monitors service performance. Since such a measurement system also focuses on service effectiveness, it also ensures that the service outcome is aligned with the governance-centric vision. Defining a flexible technology architecture that is secure, provides easy access to users, and is scalable for high-volume operations as well as being cost-effective for the government. Many of the vendor-driven solutions for e-governance are rigid and/or poor in one or more of these dimensions and therefore not appropriate in the long run. Thus, implementing “excellent e-governance” is a reform process, and not merely the computerization of government operations. Only in this way will it contribute to building an “information society” in which the lives of citizens are empowered and enriched by access to information and the social, economic and political opportunities that it offers. Consequently excellence in e-governance is rapidly becoming a key national priority for all countries, rich or poor, developed or developing.
9. Concluding Remarks

The transition from government to e-government appears to be inevitable for many governments around the world. In this paper, we have developed and illustrated a layer of the government to e-government transition process. This incorporates a number of preferred and less preferred transition strategies. We suggest that future research should assess the extent to which this model is validated by e-government reality, in particular the way in which e-government develops from initial rhetorical intentions through strategic planning, systems development, integration and finally transformation. It may well be that a post-transformation stage will emerge, since strategic planners are unlikely to be content with any current position: it is in their blood to be generative, to conjure up new services, new dynamics, and new forms of transformation, new ways of involving citizen participation. Such innovations may well change government as we know it today, though this may be little more than wishful thinking in the case of the more authoritarian governments that do not tolerate political opposition. Nevertheless, we expect that the increased dissemination of information that is inevitably associated with e-government can only have a positive.

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Role of E-governance for Competitiveness of a Country: An Exploration to Identify Strategic Management Issues in Indian Context

K. Momaya

ABSTRACT

With many advantages and achievements, India can aim to march faster on competitiveness journey so that developmental aspirations articulated in visions such as Vision2020 can be realized. E-Governance promises to enhance environment (economic and other) and thus contribute to competitiveness. Recognizing the potential, several leaders in governments, industry and academia in India initiated some pioneering projects. Some of them have been in operation for few years and successes should start contributing to competitiveness. Beginning is made with macro picture of competitiveness at the country level and trends. Then attempt is also being made to understand trends in criteria related to e-governance. Slow progress for India, despite some unique comparative and competitive advantages, on those criteria; hint at huge opportunity for innovations in e-governance. Attempt is being made to identify root causes using the technique of problem structuring. The exploratory findings hint at root causes that need to be addressed.

Keywords: E-governance, Country Competitiveness, Strategic Management Issues, India

1. Competitiveness Opportunities for India

With many advantages and achievements, India can aim to march faster so that developmental aspirations articulated in visions such as “Vision 2020” can be realized. With a one-time opportunity of demographic complementarity, that is surplus in working age population in India and skill shortages in many developed countries, India has a huge advantage that must be leveraged very fast as it will last only for a limited period. Achievements in software and outsourcing services have created brand equity for India and many countries are now open to consider India for value-added services and products.

Available indicators hint at the need to accelerate and balance the competitiveness journey. While quite remarkable for a country of the size of India, with associated challenges, the journey cannot be called very satisfactory in light of aspirations. Several visions in India (e.g. Vision 2020) have articulated aspirations to make India a developed country. While there is some acceleration in growth, the per capita income below Rs. 40,000 (less than US $ 1,000), rising divides (e.g. income, literacy and now digital) and worsening deficits (trade as well as investment) hint at fundamental problem of slow competitiveness enhancement. India’s low ranking in popular competitiveness reports (Table 1), despite more than a decade of liberalization is indicative of huge competitiveness opportunities.

East Asia has made the best competitiveness strides in second half of the 20th century and has been
leverages e-enablement quite well. Strategic review of competitiveness gains (measured as share of a country/region in World) over the last half century hints that best gains were made by East Asia (Table 2). Lead by Japan and followed by Asian Tigers (Korea, Taiwan, Singapore and Hong Kong), and now China, the East Asia was contributing 26 per cent in 1998 to emerge as the growth engine as well as manufacturing hub. The share has even increased by now and the contribution of USA and Western Europe is shrinking. East Asia seems to be leveraging ICT industry quite effectively for e-enablement. An excellent account of East Asia’s changing industrial geography in the journey towards a knowledge-based economy has been given by Masuyama and Vandenbrink (2003). With aggressive programs of e-enablement in most countries (e.g, e-Japan Strategy), the countries are moving quite effectively on e-governance also.

While most in India look towards the “West” for any learning, the real achievements on economy, management and even e-enablement may come from the East. Overview of ICT status in key countries in East Asia, their efforts to nurture network-readiness and regionalization of the internet economy (Masuyama and Vandenbrink, 2003), hints at enormous efforts and achievements on e-enablement front in East Asia. Huge projects such as e-Japan hint at massive efforts these countries are making. Remarkable part is the competitiveness capabilities of these countries to innovate indigenously to build infrastructure for e-enablement. Not only that, they have contributed to global economy massively, specifically in hardware, by contributing to as high as 60-80 percent of global output, and benefited themselves immensely. Such leverage of a new paradigm (e.g. e-governance) for country competitiveness has many learning for aspiring large country such as India.

Table 2: Rising Competitiveness of East Asia as reflected in share of GDP

<table>
<thead>
<tr>
<th>Country/Continent</th>
<th>1950</th>
<th>1998</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>USA</td>
<td>27</td>
<td>22</td>
<td>-5</td>
</tr>
<tr>
<td>Western Europe</td>
<td>24</td>
<td>18</td>
<td>-6</td>
</tr>
<tr>
<td>East Asia</td>
<td>10</td>
<td>26</td>
<td>+16</td>
</tr>
<tr>
<td>India#</td>
<td>&lt;2</td>
<td>About 1.6</td>
<td>&lt;1</td>
</tr>
</tbody>
</table>

Source: Adapted from Sugihara (2005)
2. Governance Opportunities

Governance is a vast subject having relevance on many dimensions and levels. It seems that a lot of attention of governance has focused on governments at different levels: centre, state, local and their departments. Strategic trends in emerging market economy hints that share of governments (centre as well as local) in economic pie has shrunk considerably in many countries incl. in India since 1990s. Mostly, the gains have been made by private firms/corporations, but government corporations (e.g. public sector) can also play a vital role. Hence, certain governance aspects in corporate world also provide an opportunity. For instance, huge scandals in many countries have brought corporate governance practices under close scrutiny. Regulation such as Sarbans-Oxlay (SOX) is just an example of governance opportunities in corporate world. While we some times focus excessively on information dimension of governance, other dimensions should not be lost sight of. Many challenges on information (e.g. how information is stored, accessed, retrieved, distributed and used; specifically real needs of users) front have encouraged return of focus back to information (Marchand et al., 2000) and importance of human issues as compared to technological obsession. Our ongoing research on the East Asian countries indicates the more balanced focus on industry, organizational, human and technological dimensions in their efforts for e-enablement under the bigger theme of knowledge-based economy (e.g. Masuyama and Vandenbrink, 2003).

Developments in information and communications technology (ICT) are transforming the world quite fast. Given its reach and breadth, even a single component of the ICT—telecom—alone is capable of impacting almost everything (Gautam, 2006). He has given some interesting perspectives on the emerging digital imperative. Without getting into the intricacies of technology, he has outlined the bigger concerns that must be addressed in context of important area of governance.

Corporate governance is other area of huge opportunity for India. Corporate governance represents the relationship among stakeholders that is used to determine and control the strategic direction and performance of organizations (Hitt et al., 2001). In modern corporation, there can be four internal governance mechanisms (ownership concentration, board of directors, executive compensation and multidivisional structure) and one external governance mechanism (market for corporate control). The mechanisms are a vital, but imperfect, part of an organization’s efforts to develop and implement successful strategies for competitiveness. As Indian firms try to aim for higher stages of competitiveness journey, better governance provides a huge strategic opportunity.

3. E-governance Opportunity

E-Governance promises to enhance environment (economic and other) and thus contribute to competitiveness. Recognizing the potential, several leaders in governments, industry and academia in India initiated some pioneering projects. Sound foundations for e-governance research and extension activities in India have been laid by pioneers such as Gupta (2004a, 2004b). An excellent snapshot of management challenges towards e-governance has been provided. Several ideas on topics related to e-governance opportunities and challenges, incl. strategies and leadership have been given by Gupta, Kumar and Bhattacharya (2004). Governments, at the centre, state and local levels are waking up to the power of leveraging IT for good governance and several projects have been implemented.

Some of the famous e-governance projects have been in operation for few years and successes should start contributing to competitiveness. Excellent aggregation of many such examples can be found at the web pages of a leading society (ICEG, 2006). While successful projects have certainly benefited some stakeholders in some states, their percentage in comparison to failed projects may be too small to have very positive impact on competitiveness. Even for such successful projects, little data is available about their real cost benefits and competitiveness impact (e.g. foreign trade).

Having got a glimpse of the huge competitiveness opportunity at the country level (Table 1), an attempt
has been made to understand the position of India and select countries on e-governance related criteria. Direct indicators that give precise picture of situation of e-governance in each country are rare. Hence, surrogates that are as close to reality as possible are selected. India was at position 46th in e-readiness ranking in 2004 and slipped to 53 rank in 2006 (EIU) out of 68 countries (Table 3). Vast gaps between India and competitive countries such as Germany, Japan and the US are quite understandable. While India seems to be ahead of China in e-readiness as well as governance, the real issue is about economics. E-business index of China is indicative of the huge lead China has over India in terms of economy, trade, investment, manufacturing and technology. Slow progress for India on competitiveness and economic progress, despite some unique comparative and competitive advantages, hint at the huge opportunity for innovations in e-governance that can contribute to competitiveness.

Sometimes indirect performance-related indicators can also provide useful insights. Glimpse at the data indicates that India has a long way to go on many fundamentals needed for e-governance. While some cities and states have achieved high levels, the averages at the country level remain very low, indicating vast divides. Record trade deficits is an issue of concern and e-enablement in the country can worsen the situation, if indigenous solutions fail to contribute to domestic as well as global needs. Rapid increase in quality of bureaucrats (compare with China, Table 3), politicians and professionals is needed to improve governance practices; then only e-governance can start becoming effective.

Table 3: Position of India and Select Large Economies on e-Readiness and Related Criteria

<table>
<thead>
<tr>
<th>Criteria \ Country</th>
<th>China</th>
<th>Germany</th>
<th>India</th>
<th>Japan</th>
<th>United States</th>
</tr>
</thead>
<tbody>
<tr>
<td>Telephone Mainlines (per 100 people), 2004</td>
<td>20.92</td>
<td>66.87</td>
<td>4.63</td>
<td>55.83</td>
<td>62.13</td>
</tr>
<tr>
<td>Personal Computers (per 1000 people)</td>
<td>27.6</td>
<td>431.3</td>
<td>7.2</td>
<td>382.2</td>
<td>658.9</td>
</tr>
<tr>
<td>E-readiness</td>
<td>3.96 (52)</td>
<td>7.83 (13)</td>
<td>4.45 (46)</td>
<td>6.86 (25)</td>
<td>8.04 (6)</td>
</tr>
<tr>
<td>E-readiness Score 2004 (rank)</td>
<td>4.02 (57)</td>
<td>8.34 (12)</td>
<td>4.25 (53)</td>
<td>7.77 (21)</td>
<td>8.88 (2)</td>
</tr>
<tr>
<td>E-readiness Score 2006 (rank out of 68)</td>
<td>84.94</td>
<td>55.84</td>
<td>44.70</td>
<td>59.07</td>
<td>64.20</td>
</tr>
<tr>
<td>Bureaucrats as Leaders of society, Index</td>
<td>53.77</td>
<td>62.27</td>
<td>20.04</td>
<td>70.11</td>
<td>77.43</td>
</tr>
</tbody>
</table>

Sources: NCR (2005) and EIU (2006)
Notes: 1. Index is on scale of 1-100. Score is on scale of 1-10.

4. Strategic Questions

The exploratory research to understand the role of e-governance for competitiveness helped evolve critical questions that need careful review, if e-governance is to be leveraged for competitiveness. While teams and professionals managing e-governance projects often try to resolve many operational and technological issues, the root causes of huge problem of “Slow Progress and Limited Impact of e-governance Projects done by Indian organization” may be strategic. Glimpse of the strategic questions that can encourage deep thinking is given below:

- Are the philosophy, systems and mechanisms of strategic governance at higher levels balanced enough to contribute to competitiveness across levels (Momaya, 2001)?
- Can there be good governance with many gaps in quality in leadership, including leaders as individuals? Much higher score for bureaucrats as leaders of society in China (Table 3) is quite interesting and
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indicative of the constructive role they are playing in enhancing competitiveness and prosperity of the country.

- Since real paying capacity for citizens in India remains quite low (due to less than Rs. 40,000 per capita income in absolute terms, a small fraction of developed countries even after five decades of independence and more than a decade and half of liberalization), India on average cannot afford current high-cost e-governance projects prevailing in many places. Unfortunately, if there are not competitive hardware and software (particularly products) industries, how can we reduce the cost of e-governance?

- High and rising deficits of governments in India (centre as well as states) indicates that subsidies to e-governance programs may not be sustained. Much lower costs of e-governance is a more pragmatic thrust area to focus. How can we reduce cost of e-governance projects in India to a fraction of what it costs in developed countries, while still maintaining high value and quality commensurate with unique needs of India?

- While low cost of HR in India (as compared to many developed countries, despite ongoing debates about quality, rising costs and productivity of HR in India) can help reduce the costs of e-governance projects, hardware and infrastructure costs still are quite high. How can we reduce cost of hardware without vast indigenous innovations and manufacturing/service bases?

One reason for high lifecycle cost of e-governance may be excessive dependence on borrowed inputs (ideas, theories, technology, products) without adequate balances. While recent efforts on governance and e-governance research in India are admirable, most of the decision-makers, implementers, service providers and users are excessively focused on information (or so called knowledge) available from Anglo-Saxon world. One wonders if the ignoring of Mandarin, the India, the South East Asian, the Middle Eastern or the Japanese intellectual traditions in such matters is a fair or responsible response towards creation of viable futures (Gautam, 2006). This is important when Asia has proven itself by contributing more than 60-70% of world output in so many industries, including technology-based industries such as ICT hardware.

- India has been breaking records of trade deficit. What kind of adverse impact on trade balance the e-governance projects have, if their import content remains very high?

- Success of e-governance projects depends heavily on quality of users. How can we rapidly enhance education levels and quality of users?

- Unique situations in India often demand innovative (often indigenous) on many levels? Does the environment support such innovations? Which stakeholders (e.g. Firms, institutes, governments, developers...) are the most appropriate players to invest for innovation and reap reasonable rewards for their risks?

- Can firms from India secure larger e-governance or related projects abroad, particularly in developed countries, if they have inadequate challenge projects executed that contributed massively to competitiveness of the government (state/centre).

5. Areas of Further Research

One of the objectives of this exploratory paper was to identify areas of further research. Exploratory research has its own limitations, never the less it has some useful value. Here are few areas for researchers interested in doing work in areas related to e-governance for competitiveness.

- There is urgent need for studies that establish relationships among different components of e-governance and specific factors of competitiveness, so that areas of focus of e-governance can be identified depending on the context.
• Context of India is quite unique and hence will demand indigenous innovations to implement and sustain scalable projects. The projects should bring benefits to masses at the costs that are fraction of the same in the developed world. Significant indigenous inputs can enhance value multifold. Study of relationship between such input costs and benefits and competitiveness of e-governance projects can provide useful learning. Hence, databases that capture costs of e-governance projects, including import content should be developed.

• Simple framework to evaluate competitiveness of e-governance projects can have lot of applications and uses.

• States play a key role in some domains of e-governance. Framework to evaluate e-governance competitiveness of states on select parameters can be of use.

6. Concluding Remarks

The exploratory research hints at huge e-governance opportunity for India, if the contribution of e-governance to competitiveness can be evaluated and enhanced. That will demand deeper understanding of the role of e-governance for competitiveness in context of India. Historical trends in competitive large countries clearly indicate that economic progress is a necessity for scale-up in modern approaches of e-governance. At this stage of competitiveness journey of India, e-Business & e-Commerce may provide superior opportunities for increasing wealth creation through exports and development of sophisticated related and supporting industries in India. Hence, business-focused e-governance projects can have better chances of generating revenues to support other type of e-governance projects. E-Governance can also be of value, if very effective and efficient projects are executed to take benefits to masses. Strategic questions that have been evolved can provide insights for sustainable contributions of e-governance for competitiveness. Ultimately, e-governance projects must contribute to rapid scale-up in competitiveness for relevant departments, governments—state as well as centre—and country as a whole. All the advantages that governance and technology offers in improving quality of life for masses can be sustained, if we have balances and global contributions in development of systems and technology also. Enlightened and capable teams have a vital role to play in leveraging e-governance and many such opportunities of e-enablement for competitiveness across levels.

Acknowledgement

I am thankful to several faculty colleagues who have encouraged research in strategy and competitiveness at the Department of Management Studies, IIT Delhi. I am also grateful to Dept. of Scientific and Industrial Research (DSIR) for financially supporting a Competitiveness project. Technical support from members in the Strategy and Competitiveness Lab, particularly Ms. Anuprita Singh and Mr. Pravat Nayak is appreciated.

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Teams and E-governance

Sameer Prasad1* and Jasmine Tata2

ABSTRACT
Nations are deploying e-governance solutions in order to provide more efficient, effective, transparent and democratic method to process transactions and provide information to its citizens. Such technologies alter the very nature of government function from a bureaucratic/hierarchical structure to a more distributed one. As such, the role of groups/teams becomes significantly more important. In this research, we develop a model that is potentially of value to government officials as it prescribes critical dimensions of team structure, the use of technology, and the problem domain to ensure successful services are provided to its citizens.

Keywords: E-governance, technology, groups, problem-domain.

1. Introduction
E-governance is expected to usher in a new world where services are provided more efficiently and effectively to government entities, citizens and businesses (Basu, 2004). The process is expected to make government services more transparent and accountable to its citizens. However, nations need to be careful on expecting large returns on e-governance investments, and ensure that the services can indeed be delivered effectively and still be cost efficient (Saxena, 2005). In some cases, services can be delivered quite effectively thru relatively simple technology.

Policy makers need to be better informed about the costs, benefits, risks and outcomes associated with e-governance (Foley, 2005), given that more than half of the e-governance projects have failed (Prattipati, 2003). Therefore, it is imperative to understand how to avoid waste and ensure successful e-governance systems (Prattipati, 2003), especially in developing countries where the resources are extremely limited. In this research, we attempt to uncover the critical dimensions of e-governance as they relate to teams.

One of the basic tenets of e-governance is the way transactions, processes and citizens are distributed allowing for the formation of teams that span across departments and regions (Olson & Olson, 2000). Hence, one of the ingredients that needs to be analyzed is the role of teams/groups in such an environment. The literature suggests that teams can result in numerous positive outcomes, including improved performance, increased creativity and commitment, higher quality of products, less absenteeism, and reduced turnover (Donnellon, 1993; Harris, 1992). Teams allow individuals in locations around the country to interact and solve operational problems; they help ministries bridge barriers and combine efforts.

As researchers, it is important for us to examine and extend the literature on groups/teams in the E-governance context by identifying salient factors and interactions, and by developing theory. In this paper,

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we attempt to lay the groundwork for such an examination and extension by uncovering patterns in the literature on the role of teams and e-commerce, and by identifying interactions between teams and various areas in Information Systems (IS). Based on this literature we also develop a model that describes the relationships among team structure, problem complexity, technology match, and e-governance outcomes. As such, this paper can be of value to researchers, in that it can help them identify core areas of research that are yet to be undertaken and areas of the literature that are expected to flourish. This model can also be of value to government officials in that it provides an understanding of how to improve outcomes of e-governance applications as a function of team structure, problem complexity and technology use.

Next, the literature is reviewed and synthesized. Following this analysis we develop a corresponding model for teams and e-governance. Finally, in the conclusion section, the key findings and their implications are briefly summarized.

2. Literature Review

The literature in relationship to teams and e-governance is very limited. Hence, we need to borrow concepts refined in the general IS and e-commerce literature.

E-commerce and e-governance is expected to bring connectivity to the masses (Watson & Akselsen, 1999), but will require coordination of information technology management and connections to team-based structures and computer-based communication systems (DeSanctis & Jackson, 1994). The various topic areas in the literature on teams and e-commerce/e-governance can be grouped into three meta-categories: decision making (artificial intelligence, decision support systems, expert systems, knowledge-based systems), human interactions (human factors, human-machine, inter-organization, intra-organization) and technologies (networks, project management, systems design, telecommunications, software). Next, the literature is analyzed within these three meta-categories.

Decision Making

A number of benefits are expected to accrue in light of e-commerce/governance (Massey & Clapper, 1994). Specifically, when organizations are faced with multi-objective problems spanning multi-organizational settings (Huxham, 1991), e-commerce improves decision making processes (Iz & Jelassi, 1990) and increases the focus on groups/teams and meta-process (Pizey & Huxham, 1991). In addition, it allows groups/teams to master the complexity of large applications (Powell, 1996). There is also evidence that e-commerce/governance can yield more unique, quality comments (Aiken & Vanjani, 1997) and faster response times (Reed & Giles, 1997; Tung & Turban, 1998).

On the other hand it is important to carefully structure the group/team communication modalities to suit the specific environment (van der Samgt, 2000). For example, there is evidence to indicate that traditional communication methods are better for building new ideas, whereas computer-mediated communication technologies work in established contexts (Zack, 1994; Zack, 1994). Indeed, some studies indicate that face to face and traditional communication systems yield the most satisfied users.

The propensity and satisfaction of the use of e-commerce/governance as a group decision aid is a function of a number of factors. E-commerce should be fine-tuned to the task and setting to be used (Gallupe & McKeen, 1990). The use of new communication technologies is often less than expected - due to the lack of effectiveness (Hatcher, 1992). Other variables affecting usage include organizational size (Beauclair & Straub, 1990), physical design, software, organizational culture, management (Hatcher, 1992; Sosa, Eppinger, Pich et al., 2002), cross functional behavior among departments (Kotor-ov, 2002), degree of interdependence of team members (Sosa, Eppinger, Pich et al., 2002).

Satisfaction with these new technologies can also be affected by the extent to which the IS staff has a background in the respective functional areas (Hawk & Barrif, 1993), the use of only one technology (Galegher
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& Kraut, 1994), and the relationship among team members prior to communication transactions (Hightower & Saveed, 1996). However, location, formalization, evolutionary methods of implementation, and top management support have not been found to be significant factors (Hawk & Barrif, 1993).

Human Interactions

When setting up e-commerce/governance systems, it is essential to mold them to the proper task-technology fit and to provide adequate facilitation (Chidambaram & Jones, 1993; van der Samgt, 2000). Difficulties do arise on account of control issues (Euske & Dolk, 1990) and owing to fewer social interactions among the users of such technologies. On the other hand, such distributed systems allow the group decision making process to be much more democratic (Meeks, 1997).

Factors affecting trust within virtual teams are a function of the integrity of the individuals and to a lesser degree their ability (Jarvenpaa, Knoll & Leidner, 1998). In addition, it has also been reported that individuals are quite apt to adjust to leaner and less media-rich technologies — surprisingly producing higher quality output than in media-rich environments (Kock, 1998). This naturally has implications for the designs of e-commerce/governance systems. Also, vital to any successful system are trust (Olson & Olson, 2000), the communication style of the team leader (Barczak & Wilemon, 1991) and the degree of social support they provide (Cummings, Butler, Kraut, 2002; Shani, Sena, Stebbins, 2000).

Technologies

One of the major barriers to e-commerce/governance is the tendency of developers to focus on technology rather than on solving real problems (Kamel & Davison, 1998). However, significant benefits can accrue if such systems are properly configured. For example, using appropriate configurations increase group performance by an average of 55% with even greater reductions occurring in project calendar time (Grohowski & McGoff, 1990). In addition, e-commerce/governance helps bring together people who might be in a different time or space (i.e., in a different time zone or geographical location) (Bly & Harrison, 1993).

One of the key lessons learned from earlier research on groups/teams is that a combined communication medium yields better results than only one medium (Ocker, Fjermestad, Hiltz & Johnson, 1998), especially if the combined medium is tailored to the specific environment. For example, face-to-face channels of communication are more effective when the shared context is deficient, and electronic media are more effective when a shared interpretative context exists (Zack, 1994). In addition, e-mails allow for deeper problem analysis, while group support systems generate more ideas in groups/teams (Shirani, Tafti & Affisco, 1999). Also, Group Decision Support Systems (GDSS) increase consensus, confidence and satisfaction in groups while Group Computer Support Systems (GCSS) decrease cooperation and confidence, at the same time increasing the time required to reach a group/team decision (Pinsonneault & Kraemer, 1990). Finally, the literature indicates that face-to-face settings yield greater team productivity relative to videoconferencing (Andres, 2002).

3. A Model of Teams and E-governance

From this literature review, we can derive a model for e-governance. The literature points to a number of key constructs including team structure, problem type, team process, and technology match. These constructs affect e-governance outcomes in terms of efficiencies, ideas generated and individual outcomes. The model developed in this paper suggests that team structure and problem complexity affect team process. These relationships are moderated by the technology match construct (Figure 1). Team process, in turn, affects e-governance outcomes (efficiencies, effectiveness, ideas and usage, and individual outcomes). Team structure and problem complexity can also directly influence outcomes as indicated by the dotted lines in our model.

The team structure construct refers to characteristics of teams and can be defined by a number of
operational variables (Table 1) including: culture/management, relationship among members, communication styles of team leaders, integrity of individuals, degree of control, IS staff background in functional areas, size of team, distribution of team members in time and space, and degree of shared context. The problem complexity construct (Table 2) consists of size and multi-objective nature of the problem. Team process (Table 3) is operationalized by the degree of democracy, consensus, and cooperation within the team, decision-making process and communication patterns. The moderator, technology match (Table 4), is defined by software match, task/technology fit, leanness of content, focus on technology as opposed to a real problem, and reliance on single versus multiple media. The three outcomes in our model are efficiency, effectiveness, ideas and usage, and individual outcomes. The efficiencies (Table 5) of e-governance are measured by the resources used and response time, where as the ideas emanating from such applications is measured (Table 6) by number of ideas, depth of analyses, and quality of ideas and analyses. Finally, individual outcomes are

Table 1. Team construct and corresponding operational measures.

<table>
<thead>
<tr>
<th>Team Structure</th>
<th>Inappropriate</th>
<th>Appropriate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Culture/management</td>
<td>closed</td>
<td>open</td>
</tr>
<tr>
<td>Relationship among members</td>
<td>poor</td>
<td>good</td>
</tr>
<tr>
<td>Communication style of team leader</td>
<td>poor</td>
<td>good</td>
</tr>
<tr>
<td>Integrity of individuals</td>
<td>low</td>
<td>high</td>
</tr>
<tr>
<td>Degree of control</td>
<td>low</td>
<td>high</td>
</tr>
<tr>
<td>IS staff background in functional areas</td>
<td>little</td>
<td>significant</td>
</tr>
<tr>
<td>Size</td>
<td>small</td>
<td>large</td>
</tr>
<tr>
<td>Distribution of members in time and space</td>
<td>concentrated</td>
<td>dispersed</td>
</tr>
<tr>
<td>Degree of shared context</td>
<td>little</td>
<td>significant</td>
</tr>
</tbody>
</table>

Table 2. Problem construct and corresponding operational measures.

<table>
<thead>
<tr>
<th>Problem Complexity</th>
<th>Low</th>
<th>High</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size</td>
<td>small</td>
<td>large</td>
</tr>
<tr>
<td>Multi-objective</td>
<td>single</td>
<td>multiple</td>
</tr>
</tbody>
</table>

Table 3. Team processes construct and corresponding operational measures

<table>
<thead>
<tr>
<th>Team Processes</th>
<th>low</th>
<th>high</th>
</tr>
</thead>
<tbody>
<tr>
<td>democracy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>consensus</td>
<td></td>
<td></td>
</tr>
<tr>
<td>cooperation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>decision-making process</td>
<td>ineffect</td>
<td>effective</td>
</tr>
<tr>
<td>communication patterns</td>
<td>ineffect</td>
<td>effective</td>
</tr>
</tbody>
</table>
operationalized by the amount of satisfaction and confidence among team members (Table 7).

Team structure is conducive to e-governance when the culture/management is open, the relationships among members are good, communication style of the team leader is effective, the integrity of individuals is high, the degree of control is high, the IS staff has sufficient background of the functional areas, the team is large in size, the members are distributed in time and space and the degree of shared context is significant. The problem complexity that is conducive for e-governance tends to be large in size and have multiple objectives. A highly complex problem coupled with an appropriate team structure will yield more democratic processes with greater consensus and cooperation among the team members, as well as effective decision-

Table 4. Technology construct and corresponding operational measures.

<table>
<thead>
<tr>
<th>Technology Match</th>
<th>Low</th>
<th>High</th>
</tr>
</thead>
<tbody>
<tr>
<td>Software match</td>
<td>low</td>
<td>high</td>
</tr>
<tr>
<td>Task/technology fit</td>
<td>low</td>
<td>high</td>
</tr>
<tr>
<td>Leanness of content</td>
<td>excessive</td>
<td>lean</td>
</tr>
<tr>
<td>Focus on technology vs. real problem</td>
<td>technology focus</td>
<td>problem focus</td>
</tr>
<tr>
<td>Reliance on single vs. multiple media</td>
<td>single</td>
<td>multiple</td>
</tr>
</tbody>
</table>

Table 5. E-governance efficiency construct with the corresponding operational measures

<table>
<thead>
<tr>
<th>Efficiency</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>resources used</td>
<td>high</td>
</tr>
<tr>
<td>response time</td>
<td>long</td>
</tr>
</tbody>
</table>

Table 6. E-governance effectiveness, ideas and usage constructs with the corresponding operational measures.

<table>
<thead>
<tr>
<th>Ideas</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>number</td>
<td>low</td>
</tr>
<tr>
<td>depth of analysis</td>
<td>shallow</td>
</tr>
<tr>
<td>quality</td>
<td>low</td>
</tr>
</tbody>
</table>

Table 7. Individual outcomes construct with the corresponding operational measures.

<table>
<thead>
<tr>
<th>Citizen outcomes</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>satisfaction</td>
<td>low</td>
</tr>
<tr>
<td>confidence</td>
<td>low</td>
</tr>
</tbody>
</table>
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making and communication processes. This relationship is moderated by the extent of technology match. A poor software match, lack of task/technology fit, excess content, focus on technology rather than the problem on hand and relying on only one medium might decrease the size of the relationship between team structure, problem complexity, and team process, whereas a good technological match might enhance the relationship. When the team structure and problem complexity are appropriate for e-governance and there is a good technological match, positive outcomes in terms of efficiencies, ideas generated and individuals outcomes should occur. Specifically, there will be relatively fewer resources used, a faster response time, a greater number of ideas generated, a greater depth of analysis, higher quality of ideas, and more satisfied and confident officials and citizens who are part of the e-governance system.

Next, the patterns found in the literature and the e-governance model are examined relative to needs for government officials and academicians.

4. Concluding Remarks

As nations push e-governance to improve communications and services to it citizens, it is critical to understand the type of applications, the role of technology, the design and composition of groups/team that are more likely to succeed. The model developed in this research provides just such a prescription. For example, at the design phase officials can decide whether the team structure and problem complexity in the system are suited for e-governance. Specifically, this might require establishing training programs to encourage an open culture, foster healthy relationships among members, improve the communication patterns among team members, and so on. In addition it is imperative that technologies are designed carefully to meet the specific group/team environment within which they operate. A good team structure and problem domain might be invalidated by a poor software match and a focus on technology rather than the real problem on hand. In contrast, a properly designed team structure with a complex problem structure and supporting technology should facilitate team process, resulting in more efficient e-governance applications, with better ideas and more positive individual outcomes. In addition, given that we provide specifications (items) to measure each construct, government officials can monitor and control each element to ensure the most
effective outcomes for its citizens. For example, officials would need to monitor and manage the culture/management, relationship among members, communication style of team leader, integrity of individuals, degree of control, IS staff background in functional areas, size, distribution of members in time and space, and the degree of shared context.

This model has been developed by examining the current literature, but as of yet has not been empirically validated. The salient constructs have been identified with their respective items to measure and the relationships among them specified. These four constructs need to be tested in order to check whether the operational variables (items) align within them. Once the constructs have been empirically established the overall model can then be tested.

References

E-government: Macro Issues

Sameer Prasad and Jasmine Tata / Teams and E-governance


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E-governance and Information Overload: It is Time to take Cognizance

Sushil Kumar and Vivek Gupta

ABSTRACT

One of the major objectives of e-governance is timely dissemination of accurate information. Literature reports number of beneficial outcomes associated with increased availability and accessibility of information. This paper argues that, in the absence of appropriate strategies, e-governance may lead to information overload. The paper draws heavily from the findings of various studies on information overload, in many disciplines. Decision-making processes of user groups are analyzed and effect of information overload on decision-making and performance is examined. The paper also makes some suggestions for avoiding information overload.

Keywords: E-governance; Information Overload; Information Processing Capacity (IPC); Decision Accuracy

1. Introduction

Information and knowledge are very important for education and development of people living in the rural areas of developing countries such as India. Recent initiatives by governments across the world have focused on the use of information and communication technologies (ICT) for improving effectiveness of governance systems (e-governance). These initiatives focus on transmission of information in order to elucidate issues, resolve conflicts, provide services, facilitate transactions of agriculture inputs and produce, assist in opinion-forming and decision-making on matters of common interest. Government of India has formulated an ambitious National e-governance Plan (NeGP) which identifies 25 mission mode projects to be implemented through different ministries at Center as well as State levels. In addition, many private enterprises have also started providing different services using ICT intensively. Prominent among private initiatives include e-choupal of Indian Tobacco Company (ITC), Shakti by Hindustan Lever Ltd. (HLL), Hariyali Kisaan Bazaar (HKB) from DCM Shriram Consolidated Ltd (DSCL), Information Kiosks by Drishtee and many more. These ICT centers provide four kinds of services: (i) information dissemination, (ii) advisory services, (iii) transaction enabling services, and (iv) other auxiliary services like photography, photocopying etc. Many researchers suggest that the use of ICT through e-governance systems has helped agrarian community in improving performance by facilitating timely availability of critical information. It has also helped to improve the quality and relevance of information supplied, and has offered more cost-effective methods for empowering and ensuring feedback from previously marginalized communities. Further, e-governance has also provided employment opportunities to the local entrepreneurs thereby checking rural-urban migration.

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All e-governance initiatives share common objectives of improving the productivity of people, enhancing the quality of their work lives, and improve individuals’ decision-making skills/processes. While literature on e-governance is replete with its positive outcomes, it does not pay adequate attention to the effects of overabundance of disparate/conflicting information emanating from various sources, both government and private. We, in this paper, argue that the e-governance system’s capacity to produce information far exceeds the rural people’s capacity for processing. This mismatch between the volume of information available and the processing capacity of an ordinary person living in rural India, we refer to as Information Overload².

With the emergence of information media, including email and the internet, issues related to information overload have drawn attention of researchers in the fields of organization science (e.g., Galbraith, 1974; Tushman and Nadler, 1978), accounting (e.g., Schick et al., 1990), marketing (e.g., Jacoby, 1984; Malhotra, 1984), and management information systems (e.g., Ackoff, 1967). In a comprehensive review of studies related to information overload, Eppler and Mengis (2004) point out that all studies related to information overload deal with the effect of exposure to amount of information on the performance (in terms of adequate decision) of an individual. Researchers across various disciplines report that the performance of an individual, in terms of quality of decisions or reasoning in general, correlates with the amount of information he or she receives.

This study tries to critically analyze performance (decision making) of rural end-users and how the abundance of information generated through various ICT enabled public and private initiatives are likely to influence the performance. The study draws heavily from many existing studies on information overload in various fields and integrates findings of these studies in the context of e-governance. We further argue that burdened by information overload, the rural people might feel stress, strain and anxiety, thus impairing performance/productivity (Franklin, 1997).

The paper is organized in 6 sections. Section 2 comprehensively describes the concept of information overload. In section 3, we elaborate four stages through which the data gets transformed into wisdom. Understanding of these four stages is critical for understanding and appreciating the linkages between information overload and performance. The next section focuses on the relationship between information overload and information processing capacity of an individual. In section 5, we discuss about e-governance initiatives and how these are likely to contribute to the problem of information overload. An overview of decision-making processes in the agrarian communities is also provided in this section. Finally, the last section presents some suggestions and recommendations for overcoming the inevitable problem of information overload in the context of e-governance initiatives.

2. What is Information Overload?

Eppler and Mengis (2004), in an exhaustive literature survey on information overload, refer to “information overload” as receiving too much information. However, they further argue that the research community perceives this term by using various constructs, synonyms, and related terms, such as cognitive overload (Vollmann, 1991), sensory overload (Libowski, 1975), communication overload (Meier, 1963), knowledge overload (Hunt & Newman, 1997), and information fatigue syndrome (Wurman, 2001). These constructs have been applied to a variety of situations, ranging from auditing (Simnet, 1996), to strategizing (Sparrow, 1999), business consulting (Hansen & Haas, 2001), management meetings (Grise & Gallup, 1999/2000), and

² According to Farhoomand and Drury (2002), information overload can be characterized in two broad ways. The first has to do with the absorption capacity. This means that information overload occurs when people are given more information than they can absorb. Second, information processing demand on an individual’s time exceeds the supply or capacity of time available for such processing. Further, information overload results if the user or collector of the data does not have the prerequisite knowledge to identify that what type of data is needed to meet one’s requirements.
supermarket shopping (Jacoby et al., 1974; Friedmann, 1977), to name but a few overload contexts. Meyer (1998) argues that information overload occurs when the volume of the information supply exceeds the limited human information processing capacity. Dysfunctional effects such as stress and confusion are the result. In the same vein, Iselin (1993) puts that information overload occurs when the information-processing requirements exceed the information-processing capacity. Not only is the amount of information (quantitative aspect) that has to be integrated is crucial but also the characteristics (qualitative aspect) of information.

These definitions of information overload are based on two major premises: amount of information being disseminated and the processing capacity of the information receiver. Russell Ackoff, a systems theorist and professor of organizational change, points out that data (mere facts) evolves into wisdom through a four stage process, each stage requiring processing of the previous stage outputs. Cognitive theory of knowledge suggests that information lying dormant/ unused can be effectively put to use in decision-making only if it can be comprehended/ understood and applied after thorough processing/sifting. Many previous studies have explored the relationship between quantity of information supplied and the level of performance (for a comprehensive review see Eppler and Mengis, 2004). Performance of an individual, in terms of efficient and effective decision-making or in other words ‘decision accuracy’, increases with increase in information supply. However, after a threshold level, any more quantity of information leads to declination in performance. Thus, the relationship between quantity of information and performance of an individual forms an inverted ‘U’ curve (Figure-1). Information supply beyond threshold level is Information Overload (Eppler and Mengis, 2004). This information can not be integrated by the user into his or her decision-making process and can lead to generation of stress, strain and anxiety in the mind of the user.

Ho and Tang (2001) treat information overload as a multidimensional construct. In their view, the quantity of information received in excess to the cognitive ability of an individual, forms only one dimension of

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3 Decision accuracy, also referred to as decision quality in the literature (e.g., Jacoby, 1977; Hwang and Lin, 1999), would depend on the use of appropriate criteria. It may be defined as likelihood of achieving a predetermined outcome within an acceptable time framework using given resources and available information. Criteria to judge accuracy or quality of decision are subjective in nature. One approach may be to ‘have experts identify what constitute best decision and then to assess the extent to which the subject is able to achieve this objective standard (Jacoby, 1977).’ Thus the parameters for judging decision quality are the standards set by the experts.
information overload. The other two dimensions of information overload, according to Ho and Tang, include: information quality and information format. However, of the three dimensions, information quantity is reported to be widespread and the most critical dimension of information overload (Ho and Tang, 2001).

3. Data, Information, Knowledge and Wisdom

In order to understand and appreciate the concept of information overload, it is critical to clarify the terms data, information, knowledge and wisdom. The three terms – data, information and knowledge – are generally used interchangeably. Data, information, knowledge and wisdom can be defined as below (Spiegler, 2003):

- **Data** are symbols inscribed by human hands or by instruments
- **Information** is a judgment, by an individual or groups, that given data resolve questions, disclose or reveal distinctions, or enable new action. Information, thus, exists in the eyes of the beholder; the same data can become nonsense to one person and gold to another
- **Knowledge** is the capacity for effective action in a domain of human actions
- **Wisdom** is the knowledge and experience needed to make sensible decisions and judgments, or accumulated knowledge of life or in a particular sphere of activity that has been gained through experience

Figure-2 indicates that for the data to be effectively used in improving performance, it first needs to be transformed into information and, most importantly, then into knowledge. The conversion of information into knowledge requires information processing, the most critical step for the data or information to enhance/improve decision-making processes leading to enhancement of performance. Until and unless information can be processed to become knowledge, it will not be of any use in effective decision-making; in fact, it may even lead to performance impairment as pointed out by some researchers (e.g., Ho and Tang, 2001).

The performance of an individual in terms of quality of decision-making will be positively affected if the
information collected can be properly processed. Mere dissemination of information can not ensure increase in performance, be it at the individual level or organizational level. Since, the relationship between information quantity and performance is of the form of inverted ‘U’ curve (Figure-1), it means that after the threshold level, individuals can not process additional supply of the information. It is quite clear that for better decision-making, information should be processed using appropriate tools and techniques into knowledge and then, ideally, into wisdom.

4. Information Overload and Information Processing Capacity

Individual user, with the help of existing knowledge and wisdom, decides the type of data or information to be collected that will meet his or her requirements in decision-making. Once this data or information has been collected, the person has to use his or her processing capacity to convert this information into knowledge which can be used in decision-making. This sequence of conversions indicates the importance of Information Processing Capacity (IPC) in the whole decision-making process and ultimately the performance of an individual (Figure-2). Information per se may not serve the final objective of the information receiver, which in most cases is improved performance.

Eppler and Mengis (2004) observe that IPC of an individual is influenced by five factor

- organizational design,
- nature of the information,
- personal traits of the information receiver,
- tasks and processes to be completed with the help of information, and finally,
- the type of information technology used to disseminate information.

Of the five factors influencing IPC, this study concerns with personal traits of the information users and remaining four factors are out of its purview.

Personal traits of an individual influencing his or her IPC comprise one’s attitude, qualification, and pre-dispositional factors. Some theorists argue that processing capability of an individual is limited and can not be changed (Jacoby et al., 1974; Galbraith, 1974; Simon, 1979; Tushman and Nadler, 1978) whereas more recent studies argue that with right kinds of interventions the information processing capability of individuals can be successfully enhanced. IPC can be enhanced by improving personal skills (Owen, 1992) and the motivation of a person (Muller, 1984).

As pointed out earlier, one of the reasons that information overload occurs has to do with the mismatch/imbalance between the volume of information received/disseminated and IPC of the user. This suggests that information overload and its associated adverse impacts can be avoided in two ways. First, by tackling the supply side, that is limiting the amount of information being disseminated to the extent that the user is able to successfully process it in the time available to him or her for processing. This may not be desirable in certain situations where collection and processing of large amount of information is critical for accurate and efficient decision-making. Further, with intensive use of ICT and presence and accessibility to so many sources of information, it may not be possible for a person to restrict oneself to limited amount of information gathering. Moreover, given multiple sources of information and the amount of information available, a person may not be able to identify and retrieve the exact information required for a particular task/decision.

The second possible way to cope with the problem of information overload is to simultaneously enhance IPC of information users. As stated earlier, it is now an established fact that IPC of an individual can be successfully enhanced by applying appropriate tools and techniques. Since, in most cases it is not possible or desirable to restrict the information flow from various sources to the users, the problem of information overload and its associated adverse impacts can be overcome by undertaking measures that improve IPC of the user group. This issue has been a focus of research in different fields like organization science, marketing
or consumer relation management, among many other. Due to emergence of Internet, World Wide Web, and Email, the amount of information available to employees in any organization has increased exponentially over last two decades, leading to the problem of information overload. In organization science, lot of work has been carried out to identify and apply various interventions so as to increase IPC of the employees. These interventions work at individual as well as the organizational levels.

5. E-governance and Rural Community

Rural community in India is used to making decisions in a very simplistic manner that does not require much of information processing. Most decisions on aspects related to farming or non-farming activities are broadly based on several ‘rules of thumb’ or experiences passed on from generation to generation. The social structure of rural India encourages transmitting simple rules and standards from one generation to the next, using which the rural people can efficiently and effectively take decisions related to most of their day to day matters. Traditional knowledge has been used since time immemorial for adopting different practices related to cultivation and cropping patterns without ever feeling the need for any additional information.

It was stated earlier that the individual processing capacity is a function of in-built personality factors and some external environmental factors including the kind of training, education etc. The rural communities, since they had never felt the need of going beyond using their traditional knowledge in decision-making, have not developed their information processing capabilities so as to keep pace with the recent exponential increase in information supply. Low literacy rate among rural people is another factor which renders lower IPC among them.

One of the major objectives of e-governance initiatives, whether public or private, is to disseminate information related to various developmental programs of the government, market related information including pricing, demand etc., information on cultural practices of cultivation and livestock, information related to technology, weather information, information related to inputs etc. In fact, some e-governance initiatives like Agriwatch, AgMarknet of Directorate of Marketing and Inspection (DMI), Commodityindia, Oilmandi, eAgriTrader, Samaikya, focus only on making information available to the rural people through their rural centres.

With so much of information flowing from multiple sources on any single issue related to their daily needs (Figure-3), the rural people are unable to locate the type of information they need (Herbig and Kramer, 1994). As the volume of information being provided from different sources (which at times may be conflicting) exceeds the processing capability of rural community, this falls under the broader domain of Information Overload (please see definition of information overload in section 2). In fact, we can apply the generalized model of Eppler and Mengis (2004) of an inverted ‘U’ curve relationship between decision accuracy and information supply. The information overload resulting from e-governance affects the rural communities in two ways. First, the affected persons may be unable to locate what they need most due to sheer volume, even causing them to overlook what they themselves would consider critical. Second, due to information overload, the rural people may fail to use the relevant information at hand, leading to inefficient use of decision-making time (Wilson, 1995). They might spend a lot of time on retrieving and organizing the information and thereby curtailing the time available for decision-making. Abundance of irrelevant and/or dubious quality information is reported to be harmful to employees as well as the organizations. For example, in a survey on information overload, 48 percent of the American managers reported that information overload led to decrease job satisfaction and other 48 percent believed that due to information overload they felt shortage of time leading to strain on their personal relationships, and negative impact on their professional performance (Ho and Tang, 2001). Hence, it implies that ill-equipped rural people (in terms of IPC), due to non-availability of adequate time for decision-making coupled with huge amount of information retrieved, are likely to face an impairment in their performance levels. And this might ultimately lead to increase in stress and lower satisfaction.
Hence, it can be safely deduced that with e-governance the volume of information supply has increased exponentially leading to imbalance between information supply and processing capability of rural people. This mismatch is likely to generate information overload and may result in many adverse impacts on end-users including impairment in his/her performance level.

6. Conclusion and Suggestions

With public and private sector agencies revolutionizing the information delivery technology, using Internet/Intranet and World Wide Web in their various e-governance initiatives, information overload is bound to become a crucial problem in the users’ daily lives, especially the rural users. If rural people’s IPC does not evolve quickly enough to keep pace with the rising tide of information being disseminated, they will continue to perceive information overload and face associated implications. This will happen because the amount of information they receive does not fit their mental models of reality.

Information from ever increasing number of e-governance initiatives has been rapidly proliferating, but what is not changing is the time available to process the volume of information. The time available to process and make decisions has been rather shrinking as people now have to spend significant part of their time on identifying, searching and retrieving information suited to their requirements. The second aspect, on which not much emphasis is being laid by the public and the private sector e-governance initiatives, has to do with the cognitive ability of rural people. The cognitive ability of rural communities in India is still limited as they are used to follow very simplistic decision-making processes. Also, literacy levels in most parts of rural India are also very low.

It is high time that the government realizes the importance of information overload likely to be generated through different e-governance initiatives and starts taking preventive measures. This is desirable because
most e-governance initiatives in India are still at a nascent stage and designing and application of appropriate interventions at this stage can effectively preclude adverse impacts of information overload in a cost-effective manner. Public and private agencies undertaking e-governance initiatives can draw lessons from different strategies being adopted by various private organizations to enhance IPC of the information users. No doubt, appropriate technology of information dissemination, better quality of information, right information formats for dissemination, and an appropriate organizational structure, help overcome the problem of information overload. However, in the context of e-governance for the rural communities, enhancement in information processing capacity of rural people is equally important, if not more.

The Government of India and also the State Governments along with private enterprises should not restrict their efforts only to dissemination of information. They should also focus on skill development of rural people in processing of the ever-increasing supply of information. To achieve this objective, all agencies involved in e-governance initiatives need to conduct frequent trainings and workshops for enabling users to process information in an efficient and effective manner. Such frequent usage oriented technical trainings and skill enhancing workshops will lead to better information processing capacity of the user groups and thereby avoid information overload.

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Employment Exchange Programme for Blue Collared Workers

Jaijit Bhattacharya¹, Amod Kumar², Amit Shukla³* and Shweta Puneet⁴

ABSTRACT

Information and Communication Technology (ICT) becomes indispensable for execution of various community welfare schemes and managing effective growth of citizen and country with the increasing number of beneficiary and stakeholders of the system due to increase in population and involvement of multiple number bodies. India needs a system for managing labor force of 380 million to disseminate maximum profit of government scheme to the rural citizen in corruption free manner and for creating equal opportunity environment. This paper has proposed the system for managing illiterate skilled and unskilled labor force working in infrastructure development project such as irrigation, construction, road, waste land management; in community development project for Below poverty line population, smith, carpenter, jute worker, and in various regional manual artistic works. These workers don't have any fix employment. These workers in India don't have resume and system to improve their working environment and to monitor their future growth. This process re-engineered system will be work as tool to manage this unorganized sector, roll out various employment generation schemes and will benefit the citizen in multifaceted way to improve their living standard consistently.

Keywords: ICT, 380 million labors, living standard, government, process re-engineering

1. Introduction

Blue-collar is a term given to jobs that require a lot of physical activity [3]. Construction and manufacturing are two examples of industries where workers have a high level of physical activity. Major employers are Construction companies, Automotive repair shops, Plastics manufacturers, Motor vehicle workshops, Motor vehicle manufacturers, Trucking firms, Plumbing, electrical, heating, and air-conditioning contractors, Warehouses and distributors etc. Manufacturing sector is growing and infrastructure development is on priority of government for giving strong base for sustaining the development of Indian economy. India lacks in proper management system for blue collared worker. Mostly, workers are not registered to any government body, despite of existence of formal procedure. There is wide difference in process of registration of skilled worker in India. In Gujrat, registration is pre requisite for working.

India has more then 380 million labor force. Managing this labor force for productive and growth oriented employment is major challenge for India. Indian higher GDP must be accompanied by higher per capita GDP. Countries with highest GDP’s and highest per capita GDP have well developed markets and

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well developed regulations. Resource rich country with developed market has ended up with poor economy in long run due to poorly managed labor force e.g. West Asia.

Indian government has implemented various programs with twin goal of Infrastructure Development and Employment Generation. Rural Employment Guarantee Act, National Food for Work program, Pradhan Mantri Gram Sadak Yojana (Prime Minister Village Road Scheme), Sampoorna Gramin Rozgar Yojana (Entire village employment scheme) and Swarna Jayanti Gram Swarozgar Yojana (self employment scheme) are currently running in India for this purpose. Infrastructure development is essential for sustaining the high economic growth of country. India’s economic growth is intertwined with its infrastructure development and there is a strong positive association between the two. The infrastructure deficit continues to haunt India. Provision of quality infrastructure is vital for India to nudge its sustainable growth trajectory upwards. Infrastructure Projects are high labor-intensive project. Labor need should be fulfilled in a way that can improve of living standard of labor by developing skills.

Existing Employment Exchange cannot be upgraded to facilitate labor due to their poor track record. Less then 3% jobseekers have received employment through employment exchange till 2004(Jan-Aug). Number of job seekers registered through employment exchange has negative slope during period of 2000 to 2002 instead of positive growth rate of population. This shows that skilled labor force is loosing faith on Employment Exchange. India needs a program that can convert unorganized sector of 380 million into well-managed organized sector. Program must be able to satisfy the need of this large labor force distributed over diversified geographical area. Information and Communication Technology with Process Re-engineering and Change Management can be the cost effective and suitable tool for management of this labor force. I have designed a Labor Employment Exchange Programme using ICT, which will make Indian labor Market productive, reliable, and transparent, and more then it will be satisfy the urgent labor need of Infrastructure Development. Use of Information and Communication Technology (ICT) can distribute work uniformly to eligible registered employees. Easy and transparent procedure of registration is provided to motivate worker to participate in Infrastructure Development and Community Development Programs. This will also record labor’s experience to upgrade the labor to labor supervisor.

Monitoring and Control of different Community Development Program by higher authority will be more convenient using this Public Private Partnership model. This will decrease the workload of Gram Pradhan and District Administration by transferring non-strategic part to Community Service Centers. This program will provide strategic significance of Right to Information Act, 2005 to blue collared worker. This will facilitate government to plan effectively and accurately the development and Infrastructure project by providing labor market information on demand. This will also assist private sector and farmer to have easy access of labor market.

2. Related Work

An ICT based employment system is running in Minnesota State of United State of America. Minnesota’s (Minnesota Department of Employment and Economic Development) [3] Job Bank is a service provided by the Minnesota Department of Employment and Economic Development (DEED). DEED is responsible for administering various state and federal programs that provide workforce development services. Minnesota’s Job Bank is an Internet-based self-service system where registered employers and job seekers can quickly find each other. This service is prepaid by employer taxes contributions collected under the Federal Unemployment Tax Act (FUTA). Employers can post job openings to be viewed by job seekers, search for resumes, and contact prospective candidates online. Job seekers can post a resume to be viewed by employers, search for job openings, and even apply online.

Blue Collar worker Supervisor is one of best features of the system for lower qualified but experienced worker. Blue-collar worker supervisors direct, help, and train workers in physically active jobs. Regardless
of the type of work being done, supervisors have many of the same tasks. Supervisors have many duties that involve personnel management. For example, they hire, fire, and evaluate employees. They also resolve worker problems or assist workers in solving problems. In addition, supervisors train new employees. When starting new projects, supervisors estimate the number of workers and the amount of materials needed to complete the project. They may create a budget that shows this information. Before beginning the project, supervisors analyze its requirements. Then they plan and establish work goals.

The Eastern Africa Multidisciplinary Advisory Team (EAMAT) build, maintain, and disseminate information about labor market information databases, by regular interchange between the professionals of data-management. In her programme of technical cooperation activities, EAMAT has supported firmly the establishment of a Labor Market Information System for Ethiopia [2]. In Ethiopia, available labor market information is not systematically linked to demand considerations, it is scattered among various institutions, and its dissemination is uncoordinated. The Labor Market Information System envisages specifying the demand for labor market information at the national level, by focusing in on the demands of specified users, Coordinating the supply of desired labor market information, i.e. identify supplying and coordinating institutions, data collection methods, methodology guidelines, and means of dissemination and Presenting available labor market information in an effective manner and by means of a database system.

Ethiopian Labor Market Information System has included indicators namely- Adult Illiteracy Rate

Child Labor, Education Profile of Population, Education Profile of Unemployed, Employment by Sector, Employment by Status, Employment-to-Population Ratio, Inactivity by Reason, Inactivity Rate, Informal Sector Employment, Labor Force, Labor Force Participation Rate, Labor Force, Participation Rate of People with Disabilities, Ratifications of Employment Conventions, Second Economic Activities, Total Employment, Underemployment, Unemployment, Youth Unemployment. All indicators are - where possible - disaggregated by gender, urban vs rural, and by the eleven Ethiopian regions.

Hence, Labor Employment Exchange Programme needed to be more productive, reliable, and transparent and more then it should be align to need of country. Use of Information and Communication Technology (ICT) can distribute work uniformly to eligible registered employees. Easy and transparent procedure of registration should be provided to motivate worker to participate in programme.

3. Indian Employment Statistics

India has population of over a billion. Organized sector contribute to only 28 million whereas unorganized sector contribute the bigger pie of 369 million. Brake up of unorganized sector is shown in Table 1 Employment in Organized and Unorganized Sector. Hence available data shows that nearly 40% of Indian population is working in organized or unorganized sector.

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<th>Table 1: Employment in Organized and Unorganized Sector</th>
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<td>Labors in Construction</td>
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<td>Labor employed in Infrastructure development</td>
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i) Employment in Organized Sector

Figure 1 Number of employees in Organized Sector from 1990 to 2003 shows number of employee in organized sector from 1990 to 2003. This graph shows that organized sector will not able to provide job security to India. Most fast growing IT enable job has only 1.6 million IT professionals.

![Number of Employee working in Private Sector and Public Sector](image)

**Fig. 1: Number of employees in Organized Sector from 1990 to 2003**

ii) Unorganized Sector

40% of Indian population is young falling in age group of 13 to 35. The Right to Work for this population can be protected in unorganized sector only. We need to make unorganized sector more organized and rule based to manage this mammoth labor force. 65-70% of Indian population is dependent on Agriculture. This means 25% of Indian population working in Agriculture sector is not included in any of the sector. This group has no fixed type of employment. Division of above data between men and women shows poorer condition of women. Population of women in India is 496 million. Only 5 million women are working in organized sector. 87% of working rural women is facing discrimination between men and women in wage rates.

4. Existing System

There is no employment exchange for blue collared worker in India. As per the current management structure of employment in India, responsibility of Blue collared worker can be given to running employment exchanges or to the rural development department. In this section we will discuss both the options with their track record.

4.1. Employment Exchange

947 Employment exchanges are working in India for qualified skilled labor force holding at least diploma in specific domain. Statistics of Employment exchange is not satisfactory. The reason for less interest in registration to Employment Exchange is involvement of mediator in the registration process and expected low returns.

One of the possible ways of changing unorganized sector into organized sector is opening Labor
employment exchange throughout India on the same model of 948 Employment Exchange working in India. But before proceeding in this line it is necessary to have looked on condition and working of Employment Exchange in India. The main activities of the Employment Exchanges are registration, placement of job seekers, career counseling, and vocational guidance and collection of employment market information. Less than 2.5% registered job seeker has received job through Employment Exchange during January to August, 2004. It is important to note that Employment Exchange provides work for diploma holder and skilled person only. There is no provision for unskilled labor force in employment exchange. The performance of Employment Exchange for period of 1999 to 2004 (January-August) is not satisfactory Figure 2 Placement Provided by employment exchange against Registration made.

Fig. 2: Placement Provided by employment exchange against Registration made

Less then 3% jobseekers have received employment through employment exchange till 2004 (Jan-Aug). Number of job seekers registered through employment exchange has negative slope during period of 2000 to 2002 instead of positive growth rate of population. This shows that skilled labor force is loosing faith on Employment Exchange. Hence giving responsibility of employing 380 million labor forces to existing employment exchange will not be good decision. Massive up gradation will be required for capacity building of Employment Exchanges.

4.2. Rural Department

Another possible ways of implementation is working on the same channel on which government works to run various poverty elevation and rural community development program. Poverty reduction has been an important goal of development policy since the inception of planning in India. Various antipoverty, employment generation and basic Service programs have been in operation for decades in India. The ongoing reforms attach great importance to removal of poverty, and addressing specifically the wide variations across States and the rural-urban divide. Anti-poverty strategy has three broad components - Promotion of economic growth; Promotion of human development; And targeted program of poverty alleviation to address multi-dimensional nature of poverty

The implementation of rural development program through this channel starts with preparing the list of work seeker by the village Panchayat (smallest political unit in India). Village panchayat with the consultation with Block Development Officer (smallest administration unit in Government of India) finalize the list through verification and send it to District Rural Development Authority for opening of the account of qualified work seeker. After implementation of rural employment guarantee act every registered work seeker should get the employment with in the 15 days of registration with the government. Block Development
Officer with the consultation of Gram Panchayat submit the list off possible work can be taken under the program and appoint the contractor for providing material and machine for completion of the work.

But various research works on various employment generation scheme implemented through above process has revealed gap in this delivery system. Rural Employment Guarantee Act has been implemented in India. The Programme will run for 4 years to ensure right to work. This has overlooked few critical points. Employment, in the Indian context, cannot be divorced from the issue of payment of an appropriate wage rate that should help poor households to cross the poverty line. Further, Employment should not be viewed and designed as a “stand alone” one, but as part of a larger package linked to the objective of human development, especially of the poor. It will widen the range of employment activities beyond manual fieldwork of a particular kind. Some work like housekeeping in schools and primary health centers is indeed manual work but not manual fieldwork as is usually understood. Taking care of children is more than manual work.

Such a widening of the horizon of work will be much more gender-friendly in that a number of young women with some education (say 8 to 12 years) from poor households may find work that they will be able to access than otherwise for a variety of reasons. By focusing on strengthening and/or development of public and collective goods at the local level, the Employment will come to enjoy a wide base of support than otherwise since its linkage with social sector will be seen as beneficial to the entire community.

5. Agenda of rural employment

i) Wages that can provide health and education to family

Employment, in the Indian context, cannot be divorced from the issue of payment of an appropriate wage rate that should help poor households to cross the poverty line. Further, Employment should not be viewed and designed as a “stand alone” one, but as part of a larger package linked to the objective of human development, especially of the poor. Employment must mean that worker has sufficient income to cross the poverty line.

This is borne out by the fact that the incidence of income poverty in rural areas is, at the least, four times the incidence of unemployment (7.2 per cent as per the Current Daily Status – CDS – in 1999-2000). If this measurement is a reliable indicator, then this simply means that the number of working poor far outweighs the number of people want work. Hence, full employment is not the solution to problem but employment, which can provide basic necessities with health and education, is requirement of citizen.

ii) Developing self sufficiency

Employee should be made competitive enough to take care of health and education of their family. This require on work training for employee. Trainer can be taken from linked employment exchange to area. Tracking and monitoring of work to control its quality is necessary. Employee database will assist for tracking his work and providing him further employment under government scheme. EEIS can be accessed by private agencies too.

iii) Quality of work and productivity of labor force

Employee will be self-dependent only if they are competent enough. Setting quality parameter of work under government schemes can develop competency. Hence, Concentration must be on quality of work with high productivity of employee. For providing full employment low productivity should not be used as mean to do so. Financial viability and time constraints should be strictly followed for every work.

6. Labor Employment Exchange (LEE)

India needs a mechanism to use the available 380 million for best possible results for citizen and country. LEE should free from drawback of both Employment Exchange and Government way of implementing
employment generation schemes. Labor Employment Exchange will provide assistance to Infrastructure
development project. It will also help agriculture to match the high growth of Indian economy. It will
convert unorganized sector employment into organized employment. This will provide labor to following
projects like BHARAT NIRMAN, National Rural Employment Guarantee Scheme, National Food for Work
program, Rural Infrastructure Development Fund, Road and Bridge construction, Improving irrigation for
making agriculture competitive with over all economic growth of India, Environmental Conservation Project,
Agriculture Sector (Waste Land Management).

This will satisfy the labor force requirement for local industries and requirement of citizen for short term
work. This job will include watchman, sweeper, kitchen made, tutor, driver, etc. LEE is needed to be more
productive, reliable, and transparent and more than this it should be aligned to the needs of country. Use of
Information and Communication Technology (ICT) can distribute work uniformly to eligible registered
employees. Easy and transparent procedure of registration will motivate worker to participate in procedure.
Use of ICT will benefit in following manner in Monitoring and control, Shifting of unorganized sector
employment into organized sector employment and increasing Accountability and transparency

6.1. PPP Model for Operations, Maintenance, & Management

Public partner (federal, state, or local government agency or authority) contracts with a private partner to
operate, maintain, and manage ICT based Labor Employment Exchange for providing services. Under this
contract option, the public partner will retain ownership of the Labor Employment Exchange, but the private
party will invest its own capital in maintaining the services through there hand. The longer the Kiosk owner
will work, the greater the opportunity for increased profit. This will decrease the work load of government
and Gram Pradhan. This will also generate the employment at local level. The ICT based kiosks are already
running and providing various G2C, B2C and C2C services in India. Hence there will be no fixed cost
involved in implementation of this web based LEE.

6.2. Process of registering Vacancies to LEEIS

Rural Development Department, private sector, or any employer requiring manpower can register his
requirement on the LEEIS. Employer has to code the eligibility criteria, type of work, working duration and
wages on LEEIS. This will ensure the payment of appropriate wages without any gender biasness. This will
also help in controlling the child labor. The process of registration of work in LEEIS is shown in the Private
sector can visit to the kiosk and can upload their requirement for employee. Currently this news is published
in local newspaper. This will not only simplify the process but also save the time, money and energy input of
employer for searching employee

6.3. Process of registering to Labor Employment Exchange

The registration in job seeker list can be done easily by visiting nearby kiosk. Kiosk will be charge
nominal fee for registration in Labor Employment Exchange Information System (LEEIS). Village Pradhan
can pay this fee in case of Rural Development Project to the Village Level Entrepreneur Kiosk owner partly
or fully. Village Pradhan is currently maintaining list of Below Poverty Line (BPL) families or benefit
seekers in different scheme in register at village level. This process will outsource this work to the ICT
enabled Kiosk. Block Development Officer and Village Pradhan using LEEIS can do the verification of
identity of worker for government projects. The process of registration and verification of job seeker is
shown in figure 3.

System has process of matching the suitable job for job seeker. Job seeker will get the notification if there
is any opening as per his requirement. System will generate various reports for monitoring the system. Daily
report on job seeker registered and received employment through LEEIS, Weekly report to administration
regarding work registered on LEEIS, Exception Report after 15 days of registration for work are few examples.
Another unique feature of the system is promotion of labor to Blue-collar worker supervisor. Worker will get the certificate from LEEIS after completing the assignment. On the basis of experience and quality of work done, Worker will be promoted to Blue collar worker supervisor after getting training from government or private sector under capacity building programs.

Blue-collar worker supervisors direct, help, and train workers in physically active jobs. Blue-collar is a term given to jobs that require a lot of physical activity. Construction and manufacturing are two examples of industries where workers have a high level of physical activity. Regardless of the type of work being done, supervisors have many of the same tasks.

Supervisors have many duties that involve personnel management. For example, they hire, fire, and evaluate employees. They also resolve worker problems or assist workers in solving problems. In addition, supervisors train new employees. When starting new projects, supervisors estimate the number of workers and the amount of materials needed to complete the project. They may create a budget that shows this information. Before beginning the project, supervisors analyze its requirements. Then they plan and establish work goals. These goals may involve coordinating work with other departments. Supervisors then assign tasks to workers. Supervisors keep records of how work is progressing. If work falls behind schedule, supervisors revise tasks or reassign workers to improve progress.
In manufacturing plants, supervisors make sure the machinery is set up and operating properly. They adjust machinery controls, test machines, and repair or order the repair of broken machinery. They also create work schedules, oversee workers, and make sure the work is done correctly and on time.

In construction companies, supervisors lay out construction sites and assign workers to specific jobs. They also order supplies and equipment. In addition, supervisors discuss prices and work details with customers. They interpret design plans for other workers as well as inspect their work. Supervisors often work alongside the workers they supervise. They perform construction tasks in addition to their supervisory duties.

7. Benefit of the System

System will make positive impact on the process and will be beneficial for employee, employer and regulatory body. It will convert Unorganized Sector of 380 million into organized sector. This will help in
better planning of community welfare scheme. Information will be provided in real time and will safe expenditure on survey. Information is collecting from village level this will divide massive work of computerization into small manageable units.

Decision maker at centre level can view the Information about available labor force in different part of country on demand. Better knowledge of labor market will assist strategy maker for planning effectively different development and infrastructure development project of country. This will help in better Estimation of budget of new program. System has feature of recording of experience of Blue collared worker. This will help in upgrading the job profile of uneducated labor. This will help in making labor force self dependent by developing their skills in respective working area.

Services will be provided at nearby Community Service Centre. It will benefit participant by saving time, energy and money. System does not require direct interaction of labor force to government department. This will reduce work pressure from government employee. Evaluation of different government schemes and Nation wide comparison will promote strategy maker for knowledge sharing. Different states will learn from success and failure of other departments.

Labor will be beneficial by multiple number ways. Labor will get desired work at desired location. Tracking of experience will upgrade the position of labor after working for suitable period. Experience certificate will be available at website on the basis of previous assignment. This will also motivate labor force to continuously update their profile at Labor Employment Exchange through nearby kiosk. Blue collared worker or labor will be promoted to Supervisor position.

8. Concluding Remarks

LEE is not just an online employment web site for Government and Private Sector. It will increase transparency in the process of dissemination of benefit of the government scheme to grass root level citizen. It will support the strategy maker in monitoring of existing scheme and planning new schemes for the development.

LEE will control the movement of rural population to urban area. It will bridge the gap between women and men wage rate and will provide a tool for controlling the child labor also further it will generate awareness among the worker by providing necessary information at village. This will not only improve the working environment but also control the inappropriate wage to rural people.

will also open the carrier opportunity for uneducated but skilled labor force. Skill will be developed over the time and system is capable of tracking the development. It will increase the disposable income of the worker that will increase their living standard improving the health and food of community at large. It will impact the most vulnerable segment of the society. On the other hand, it will decrease the workload of government officers and Village Panchayat by transferring non-strategic work to Community Services Centre. It will provide the real time information about the irregular employment and will help for the calculation of exact earning of the person in a year. It will help in fixing the poverty line. In nutshell, it will be a significant move to improve the working condition, health, education, and wages of economically poorest part of the society and to create the equally opportunity transparent environment. It will give the real meaning to Right to Work of every citizen of the India. It will impact the Indian GDP and give strength to the Great Indian Dream of Developed Nation.

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E-governance and Citizen Identity System: Legal Issues from Indian Perspectives

Hari Mohan Jha Bidyarthi1*, Prabhakar V. Bokad1 and Ashish K. Shrivastava2

ABSTRACT

E-governance appears holds promise in this present scenario of contemporary citizens who are showing inclination for “anytime anywhere services’ from the governance. Fortunately the prevailing system of governance has realized the significance of e-governance world over. Accordingly these governments have initiated hundreds of e-governance projects. Incidentally, what escapes, in the process, the attention of is the fact that there is conspicuous disappearance of the physical connection between service provider – the governance – and the service receiver – citizens. The authentication of the citizen and the uniqueness of his identity is of paramount importance. The prevailing Acts, rules and regulations in India prove to be a great hurdle in it as lead to ‘purpose of identity’ than ‘person of identity’ The present paper focus on the provisions of these related Acts and suggests uniformity in the same for developing unique citizen identity system in India – a precondition for effective e-governance.

Keywords: Citizen ID, Constitution of India, Indian Acts providing for identity, Person of identity.

1. Introduction

While “the customer is king” has been a mantra since the 1940s, its content has changed fundamentally over the past decade. It’s interesting to see what is defined as a customer. A customer is a paying client, an employee, a supplier / vendor and a partner (Greeberg, 2003). What this means is that the historic customer (the individual or group that paid for the goods and services) has become the contemporary customer (the individual or group with whom one exchanges value) (Thalheim, 2000). Added to it is the fact that today’s technology in computers and communication has made the death of time and distance, because the computer is extremely fast and the technology is further improving everything that can be solved with in the time one has. The network is extremely fast there is no need to worry about the distance. There is a new paradigm in the democratized information system “anytime anywhere the information can be accessed” (Gupta, 2004).

Given that the process of transforming expectation to experience is inevitable, what’s available to assist government is e-governance (Cunningham and Froschl, 1999) and CRM – Citizen (Customer) Relationship Management. CRM is not a technology, though. Technology is a CRM enabler (Hansmann, 2002). The primary goal of business has always been to acquire, retain and service customers and so has been for the government, which is of the people, by the people and for the people (Hatchard and Ndulo, 2004). It is the advances in technology that serve as the primary catalyst to the CRM bonanza. The rise of the internet as a...
means to transact business, increasing and affordable bandwidth, and advances in computing power are all driving CRM (Joseph, 2004).

These technology advances greatly empower customers / citizens and position them to more easily access information on products, services and competitors. In short, customers / citizens are in control more than ever before (Gandossy and Sonnenfeld, 2004). For innovative and proactive government that readily embrace this new citizen-empowered paradigm, the situation is great (Gupta, 2004). By adopting citizen-centric processes and leveraging technology, these governments can better serve their citizens (Schneider, 2003). For laggard government, though, the citizen-empowered new world order is nightmarish.

2. Citizen Relationship Management

Every time a citizen approaches the government, they arrive with an expectation. It may be a service need or a new scheme (product) interest, but in every case, they have an expectation that accompanies their interest in the government. What happens next will form an experience that shapes their behavior. A good experience may increase their loyalty and tendency towards the ‘power-that-be’ (Wray, 2001). A poor experience may transfer their interest in other’s favor. The ability to recognize this process and to actively manage it forms the basis for citizen relationship management (Mitra, 2005). The ability to ensure that the government will act with unity of purpose to ensure experiences that exceed every expectation is a monumental task. Citizens interacting with the employees in the government, and employees collaborating with suppliers – every such interaction is an opportunity to manage a relationship (Munson and Wolfe, 2001). Only recently has technology advanced to support interactions with any role through any channel, to any touch point across the extended governance. Building this requires applications that can seamlessly support government processes as they span the organization, deliver information, empowerment, and insight to all individual citizens, wherever they are. And continually monitor, measure and improve the process (Nowlan, 2000).

Though governments have already initiated hundreds of e-governance projects in different States of our country, and even at the central level like countries abroad, signifying its importance, the problem of multiplicity of identity remains as such (Morth, 2004). It was there in the manual system of governance and it has pathetically come to stay in the electronic system of governance as well. This is because of the faulty principle underlying the citizen identity system, which advocates for ‘purpose of identity’ than the ‘person of identity’ (Corbridge and Williams, 2005). The following table shows the examples of multiple identities issue to a citizen following the principle of ‘purpose of identity’.

It is thus quite important for establishing life long citizen relationship that every citizen is uniquely identified for all purposes so that even in case of electronic connectivity one is sure of dealing with the targeted citizen. This was well noticed by the government of India while considering “National Citizen ID”

3. National ID

The primary data requirement for the effective e-Governance is the National Citizen ID Card. It should be a multipurpose secured and authentic ID card. This card should be akin to the Xerox copy of the individual with the multifactor authentication such as photograph, biometrics - fingerprint, iris-based systems and digital signature. India with a population of one billion people should be concerned about providing this card to the citizens at a cost effective basis. Hence there is a need to select the right technology for the preparation of the card and online issue of the card also needs to be determined urgently. This challenge has to be taken up by the consortium of public and private industries, academic institutions with the Government. The government of India is preparing for introducing multipurpose Citizen ID card.” (Kalam, 2003)

Kalam (2003) further observed, “I visualize an election scenario, where a candidate files his nomination from a particular constituency. Immediately the election officer verifies his/her authenticity from the national
Table 1: Showing Multiplicity of Identity of Citizens

<table>
<thead>
<tr>
<th>SN.</th>
<th>Citizen function</th>
<th>Multiplicity of Identity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Driving Licenses</td>
<td>Two-Wheeler Driving Licenses, Four-Wheeler Light Vehicle Driving Licenses, Four-Wheeler Heavy Vehicle Driving Licenses etc.</td>
</tr>
<tr>
<td>2</td>
<td>Deposits</td>
<td>Saving Account Deposits, Recurring Account Deposits, Provident Fund Account Deposits, Public Provident Fund Account Deposits, Bank Credit Cards etc.</td>
</tr>
<tr>
<td>4</td>
<td>Identity Card</td>
<td>Voter Identity, Employee Identity, Visitors Identity (Pass), Railway Identity Card, Professional Membership Identity etc.</td>
</tr>
<tr>
<td>5</td>
<td>Registration</td>
<td>Land Registration, Vehicle (of all types) Registration, University Registration (Migration or Immigration), Registration of Birth and Deaths etc.</td>
</tr>
<tr>
<td>7</td>
<td>Legal Functions</td>
<td>PAN, Passport, Business Licenses etc.</td>
</tr>
</tbody>
</table>

citizen ID database through multifactor authentication, through a multipurpose Citizen ID card. His/her civic consciousness and citizenship behavior comes from the police crime record. His property record comes from the registration of land authority across the country. His income and wealth resources come from the income-tax department, and other sources. His education credentials come from the university records. His track record of employment comes from various employers with whom he had worked. His credit history comes form various credit institutions like banks. His legal track records come from the judicial system. All the details arrive at the computer terminal of the election officer within few minutes automatically by the act of e-governance software agents which crawls across the various state and central government web services directories through the network and collects the information automatically and presents the facts in real-time with out any bias”.

i) Indian Citizenship Act

Articles 5 to 11 of the Indian Constitution (Mahajan, 1995) deal with the citizenship of India. Article 11 empowers the Parliament of India to pass a law making provision with respect to the acquisition and termination of citizenship. In exercise of the powers conferred by Article 11, the Parliament of India passed the Indian Citizenship Act 1955. The Act lays down five modes of acquiring citizenship and thereby the national citizen ID. There has not been dual citizenship in India. It is only recently that the India government has proposed and granted dual citizenship to non-resident Indians (NRIs) on the pattern of US dual citizenship (Bellamy and Warleigh, 2001) where a person is a citizen of United States and also a citizen of a particular State in which he resides. The Indian Constitution under its different Articles empowered the Parliament of India to pass such other Acts as deemed necessary in democratic function of the nation. Thus a number of Acts was passed over the last fifty years in India and many of these Acts deal with the identity of citizens in relation to various purposes. Here is presented description of such Acts, which have caused multiplicity of identity and therefore becoming hurdle in the effective implementation of e-governance.
ii) Election Commission of India

Article 324 of the Indian Constitution provides that the superintendence, direction and control of the electoral rolls for and the conduct of all elections to Parliament and the Legislature of every State and of elections to the offices of the President and Vice-President shall be vested in the Election Commission. This power to prepare electoral roll tempted the Election Commission to issue mandatory “voter’s Identity Card”. Thus came a second identity to an Indian citizen.

iii) Income Tax Act

Through an amendment in the Income Tax Act of India a few years ago it has been made compulsory to obtain Permanent Account Number (PAN) which serves as an identity of the income tax payers for all purposes of tax administration and control by the government. Thus this Act adds another identity symbol to the same citizen of the nation.

iv) Indian Passports Act

The Act provides for the procedure and formality for issuing passport to an applicant Indian which can be used for travel abroad including immigration. This legislation therefore also provides for issue of another identity document in terms of passport number and the passport book, which an Indian citizen uses for his personal identity and personal authentication every time he flies abroad from here.

v) Motor Vehicles Act

This is another act in force which ensures that a citizen who is not adult and has not been certified to have learnt driving is allowed to drive a vehicle of any nature whether two-wheeler, four-wheeler (light vehicle) or four-wheeler (heavy vehicle). According to the provisions of this Act only the Road Transport Inspector (RTI) issues a driving license to the applicant citizen, which identifies his legal rights to drive the vehicle on road. This is another identity document to the same citizen bound by another law of the land.

vi) The Universities Act

Different States of our country have their own respective Acts meant for smooth governance of the universities under their jurisdiction. There are Acts specifically passed for respective universities as well. These Acts invariably provide for registration and / or migration of a student willing to pursue his studies in any of the departments or colleges under this university only when he or she is entitled to receive a degree or certificate from that university after successful completion of the related course of study. This registration number or enrollment number as it is so called in many universities identifies a student with that university thereby adding another identity document to the head of a citizen.

There are a host of such Acts and various other rules, regulations and norms of different bodies / departments of the government and other semi-government organizations, non-government organizations (NGOs) and private organizations which provide for issue of identity to related citizen for different purposes as shown in the following Table- 2.

All these Acts, rules and regulations and norms (Adediran, 2002) prove to be legal hurdles in creating a unique citizen identity system that could be used for all purposes. The citizens then would not be lost in interaction as there is always one identity assigned to him with back up of centralized database. However, it is also true that a citizen by virtue of being citizen does not become legally entitled to perform every function such as casting of votes prior to attaining the adulthood i.e. the law prescribed age, driving a vehicle and so on and so forth. In that case there shall be a mechanism in place working through a Centralized Information System (Pani and Mishra, 2004) where the profile of the concerned citizen shall be updated on its identity page in the website on production of appropriate proof or documentary evidence. This will ensure that there
always remain unique identity of the citizen and his / her identity profile shall be continuously updated on as-the-case-may-be basis. The following figure shows the proposed web-based mechanism (i.e. e-governance) for creation of unique identity with a system for its continuous updating.

But this calls for abolition of the clauses of all such Indian Acts, rules, regulations and norms, which specify for issue of identity. All these clauses may be merged within the Indian Citizenship Act where insertions in identity profile of a citizen shall be made on being eligible for certain functions.

Fig. 1: Showing Unified Citizen Identity System Model

4. Concluding Remarks

In conclusion it can be said that good governance is being recognized as an important goal by many countries across the world. The internet revolution has proved to be a powerful tool for good governance initiatives. An important dimension of the internet potential is the possibility of providing services any time anywhere. This means that the physical presence of citizen is not to happen now. Along with this there is also a conscious effort to put the citizen as the center of focus of the governance. Citizens are being perceived as
customers and clients. E-governance has to be citizen friendly. Delivery of services to citizens is considered as a primary function of the government. Particularly the democratic nation of the billion people like India, e-Governance should enable seamless access to information and seamless flow of information across the state and central government in the federal setup. This necessitates that every citizen has a unique identity.

The regime of multiplicity of identity has to go and that is possible by eliminating the legal implications pertaining to citizen identity system as pointed out in this paper.

Acknowledgement

Authors wish to acknowledge the financial support from the All India Council for Technical Education, New Delhi under Research Promotion Scheme vide their F. No. 8022/RID/NPROJ/RPS-35/2003-04 dated 11.08.2004 for this project.

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A Study on E-Government Readiness of Indian States

Dibakar Ray1*, Sibli Sirajee1 and Shefali Dash1

ABSTRACT

A lot of efforts and resources have been invested in implementing e-government across India; it is necessary now to know the current stage of e-government maturity of the Indian states. Status of the states according to the e-government readiness index is discussed in the article. The e-government readiness index, as proposed by UN, is combination of the measure of information and service availability at web sites, with the measures of availability of technological infrastructure, capability of the stakeholders in using the services. In this article State Government web sites are analysed to calculate the Web measure index and e-readiness index as calculated by DIT(DIT 2003,2004) is used as an approximation of the measure of enabling environment. The states are then ranked according to the combined e-government Readiness index.

Keyword: E-government Readiness, Benchmarking, India

1. Introduction

Development of e-government is a gradual process and involved multiple stages of growth. Some starts from a very rudimentary existence and some are born smart and start at a much higher state of evolution. There are many technological, sociological and economic reasons for a country, state or local-body to be at a stage of growth [UN 2003]. Nonetheless it is important to know the stage of growth of an e-government implementation and to compare the current status among the peers. This information helps the policy maker to take proper decision about resource allocation and for charting course to higher stage of progress.

The e-government readiness measure is an assessment of availability of information and services at the government websites. Presence of a very sophisticated web site full of services and information is not of much value until there is enabling environment to access and use these information and services. E-government readiness measure therefore combines measure of information and service availability at web sites, with measures of availability of technological infrastructure, capability of the stakeholders in using these services. UN [UN 2004] defines e-government readiness as an assessment of a state’s use of Internet and the World Wide Web (WWW) for provision of information, products and services; plus the level of telecommunication and human capital infrastructure development in a country.

Empirical grounding for categorization and ranking of e-government efforts is provided by studies on ‘stages’ of e-government progress. ‘Stages’ of e-government refers to the degree of progress made by a Government towards the ultimate e-government goal. There are a number of discourses on maturity stages of government service delivery and available methodologies to measure it. Generally these work refers to

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sequence that starts with publishing static information on the web, which progressively include more and more features, and ultimately matures into a stage which transform the government into a networked entity.

A brief survey of studies on stages of maturity is given below –

**Table 1: Studies on stages of e-government maturity**

<table>
<thead>
<tr>
<th>Authority</th>
<th>Stages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Garner [Christopher 2000]</td>
<td>1. Presence - Web site that lists cursory information about an agency, such as hours of operation, mailing address, and/or phone numbers, but has no interactive capabilities.</td>
</tr>
<tr>
<td>Zhou [Zhou 2001]</td>
<td>2. Transaction (Services and Form Online, Working Databases supporting online transactions)</td>
</tr>
<tr>
<td>Moon [2002]</td>
<td>3. Vertical integration (Local Systems linked to higher level systems, Integration across similar functionalities)</td>
</tr>
<tr>
<td>Infodev [Infodev 2002]</td>
<td>4. Horizontal Integration (Systems integrated across different functions, One stop access point for citizens)</td>
</tr>
<tr>
<td>UN [UN 2004]</td>
<td>5. Portal personalization</td>
</tr>
<tr>
<td>Pearce [2004]</td>
<td>6. Full integration and enterprise transformation</td>
</tr>
<tr>
<td>Capgemini [2005]</td>
<td>1. Information: The information necessary to start the procedure to obtain this public service is available on-line.</td>
</tr>
<tr>
<td>UN [UN 2004]</td>
<td>2. One-way Interaction: The publicly accessible website offers the possibility to obtain in a non-electronic way (by downloading forms) the paper form to start the procedure to obtain this service. This implies that there must be a form of authentication of the person (physical or juridical) requesting the services in order to reach stage 3.</td>
</tr>
<tr>
<td>Pearce [2004]</td>
<td>3. Two-way Interaction: The publicly accessible website offers the possibility of an electronic intake with an official electronic form to start the procedure to obtain this service.</td>
</tr>
<tr>
<td>Silcock [Silcock 2001] cited Deloitte Research 2000]</td>
<td>4. Full electronic case handling: The publicly accessible website offers the possibility to completely treat the public service via the website, including decision and delivery. No other formal procedure is necessary for the applicant via &quot;paperwork&quot;.</td>
</tr>
<tr>
<td>Layne and Lee (2001)</td>
<td>1. Clustering of common services</td>
</tr>
<tr>
<td>Zhou [Zhou 2001]</td>
<td>2. Full integration and enterprise transformation</td>
</tr>
<tr>
<td>Layne and Lee (2001)</td>
<td>6. Full integration and enterprise transformation</td>
</tr>
<tr>
<td>Layne and Lee (2001)</td>
<td>2. Transaction (Services and Form Online, Working Databases supporting online transactions)</td>
</tr>
<tr>
<td>Zhou [Zhou 2001]</td>
<td>3. Vertical integration (Local Systems linked to higher level systems, Integration across similar functionalities)</td>
</tr>
<tr>
<td>Layne and Lee (2001)</td>
<td>5. Portal personalization</td>
</tr>
</tbody>
</table>

E-government: Macro Issues
Irani, Al-Sebie and Elliman [2006] have done a good review on the stages of e-government. Similar to the maturity models for e-government, there are number of benchmarking efforts undertaken by International bodies, private sector consulting firms, national government and individual researchers to measure development of e-government across the globe. Some the benchmarking efforts are pure e-readiness study, which attempts to investigate how different spheres of the society—health, education, governance etc. are prepared to utilize opportunities created by ICT, particularly the Internet [Adegboyega 2005]. As e-readiness transcends e-government, e-readiness studies, which target specifically e-government, are of our interest for this study. Review of these benchmarking studies is done by Jassen [2004] and Adegboyega [2005]. Sakowicz[2004]. Jassen at al in their article have analyzed 18 such e-government bench marking studies and Adegboyega has studied 11 such e-government surveys.

Here is a very brief description of the surveys done consistently by various agencies over the years.

**UN [UN 2002, 2003, 2004, 2005]** The UN Global E-government Survey (2002,2003,2004,2005) presents a comparative ranking of 191 member states of the UN according to a composite index of e-government readiness, based on website assessment; telecommunication infrastructure and human resource endowment. The e-government Readiness Index, is a composite measurement of the website development patterns in a country (Web measure Index) and access characteristics reflected through the infrastructure and educational levels (Infrastructure index and the Human Capital index).

**Accenture [Accenture 2000, 2001, 2002, 2003, 2004, 2005]** Accenture, an independent global consultancy with has consistently carried out annual e-government Leadership Surveys since 2000, which review the progress being made with e-government initiatives of 22 national governments in terms of e-government maturity. Two measures were used to determine the e-government maturity of the countries: service maturity and customer relationship management. These measures were then combined to calculate each country’s overall maturity. Service maturity measures the level to which a government has developed an online presence. It takes into account the number of services for which national governments are responsible that are available online (service maturity breadth), and the level of completeness with which each service is offered (service maturity depth). Service maturity overall is the product of service maturity breadth and service maturity depth. Customer relationship management is a measure of the extent to which government agencies manage interactions with their customers, both citizens and businesses, and deliver service in an integrated way [Accenture 2004]. In its most recent survey [2005], Accenture, assessed not only service maturity, but also customer service maturity, which measured the extent to which government agencies manage interactions with their customers and deliver service in an integrated way across all channels.

**Centre for Public Policy of the Brown University [West, D 2001, 2002, 2003, 2004, 2005]** The Centre for Public Policy, Brown University has been conducting survey of national government websites since 2001. These surveys measured the online presence of governments in 198 countries through the evaluation of government websites for the presence of various features dealing with information availability, service delivery, and public access. Features assessed included the existence of online publications, online database, audio clips, video clips, non-native languages or foreign language translation, commercial advertising, premium fees, user payments, disability access, privacy policy, security features, presence of online services, number of different services, digital signatures, credit card payments, email address, comment form, automatic email updates, website personalization, personal digital assistant (PDA) access etc. These surveys assess the visible services at the websites of the national governments to measure the status of the e-government for that country. UN survey adds up other indices to calculate the e-government readiness index, whereas Accenture combines up customer service maturity with Service maturity to determine the overall maturity of the Countries. Adegboyega [Adegboyega 2005] in their review of e-government surveys, conclude that UN survey is the most comprehensive survey among the three discussed above.

**Indian Study [DIT 2003, 2004]** In India, Department of Information Technology (DIT), Government of...
E-government: Macro Issues

India is assessing the e-preparedness of Indian States since 2003 (2003 study covers Central Ministries as well). These studies define e-readiness as “It is the preparedness of states to provide governance equitably and cost effectively and the capability reflected in the degree of integration the deprived segments of society attain after application of ICT as an e-governance tool. Apart from this, the ability of the state to provide business, the capacity to participate in the provincial level digital economy and further networking with the national level digital economy.” [DIT 2003]. These studies rank Indian States into six categories, namely Leaders, Aspiring Leaders, Expectants, Average Achievers, Below Average Achievers and Least Achievers according to an e-Readiness composite index. The Networked Readiness Index (NRI) framework 2003-04 is based upon the three broad parameters, Environment for ICT (market, political/regulatory, and infrastructure), Readiness of the community’s key stakeholders (individual, business, and government) to use ICT, and Usage of ICT among these stakeholders. The environment sub-index reflects the degree of conduciveness of environment a state provide for the development and uses of ICT. The sub-index is composed of three indicators, Market environment, Political and Regulatory environment and Infrastructure environment. The Readiness sub-index measures the capability of the stakeholders to leverage the potential of ICT. The framework not only evaluates a state’s relative development and use of ICT but also to depicts a state’s strengths and weaknesses with respect to ICT. The study finally brings out a composite index for the states derived from the three sub indexes using Principal Component Analysis (PCA) method. The survey also covers some web content analysis of the state government sites to find out online transaction services like (land registration/stamp paper registration, utility billing, crime registration etc.) under e-governance indicator (2003) and under Usage indicators (2004).

Rational for current work

The motivation behind the study is, while existing international studies generally focus on the national level government websites, there is not much study done to find out the status at the state level, especially for India. This is all the more important given the wide social, economic and technological variations among Indian states. Literature survey did not reveal any attempt on benchmarking e-government efforts of the states of India, in the same line as that of UN survey. UN surveys benchmark countries, depending on their online presence, telecommunication Infrastructure and the human capital. Online presence is measured by analyzing the visible services at the country’s national web portals and represented using web measure index. Telecommunication infrastructure and human capital are represented using Telecommunications infrastructure index and Human capital index respectively. DIT attempt, which studies e-readiness of Indian states, emphasized more on e-readiness than e-government readiness. The DIT survey reflects ‘the capacity of the state to participate in the networked economy vis-à-vis the other states’ [DIT 2004] where as E-government Readiness Index assesses the quantity of information and services provided by the government at the government portal and The E-Government Readiness Index is a composite index comprising the Web Measure Index, the Telecommunication Infrastructure Index and the Human Capital Index [UN 2004, pg 12].

In this paper attempt in made to bridge this gap in research by developing a web measure index for benchmarking online presence of the state governments. Also attempts to derive a composite e-government readiness measure for each state by incorporating the measure of enabling environment.

2. Objective of the study

- Developing a web measure index indicating maturity of Indian state governments online presence by analyzing the visible services at the state government web sites based on UN model.
- Develop a composite index indicating e-government status of Indian states by combining e-readiness indices of Indian states provided by MIT e-readiness survey and the web measure index developed in this study.

The UN 5 stage model is chosen as basis for the study to determine maturity of online presence, because
of the fact that, its web measure model perfectly matches scope of the work. Moreover, UN model, in our
opinion, reflects more aptly the stages of e-government development, which starts with publish stage and
finally matures to the stage, which facilitates participatory democracy (Networked presence stage). Other
reasons for choosing the UN model is well established methodology of measuring web index.

3. Methodology

To address the research question content analysis of the state government web sites were conducted.
Addresses of the web sites were picked up by searching google or from Links of India Portal. A complete
list of the web sites is given in the Table 2.

<table>
<thead>
<tr>
<th>State</th>
<th>Websites</th>
</tr>
</thead>
<tbody>
<tr>
<td>Andaman &amp; Nicobar</td>
<td><a href="http://www.and.nic.in">www.and.nic.in</a></td>
</tr>
<tr>
<td>Andhra Pradesh</td>
<td><a href="http://www.aponline.gov.in/apportal/index.asp">www.aponline.gov.in/apportal/index.asp</a></td>
</tr>
<tr>
<td>Arunachal Pradesh</td>
<td>arunachalpradesh.gov.in</td>
</tr>
<tr>
<td>Assam</td>
<td>assam.gov.in</td>
</tr>
<tr>
<td>Bihar</td>
<td>gov.bih.nic.in</td>
</tr>
<tr>
<td>Chandigarh</td>
<td>chandigarh.nic.in, sampark.chd.nic.in/pls/esampark_web/home</td>
</tr>
<tr>
<td>Chattisgarh</td>
<td>chhattisgarh.gov.in</td>
</tr>
<tr>
<td>Dadra &amp; Nagar Haveli</td>
<td>dnh.nic.in</td>
</tr>
<tr>
<td>Daman &amp; Diu</td>
<td>daman.nic.in</td>
</tr>
<tr>
<td>Delhi</td>
<td>delhi.gov.in</td>
</tr>
<tr>
<td>Goa</td>
<td>goa.govt.nic.in</td>
</tr>
<tr>
<td>Gujarat</td>
<td><a href="http://www.gujaratindia.com">www.gujaratindia.com</a></td>
</tr>
<tr>
<td>Haryana</td>
<td>haryana.gov.in</td>
</tr>
<tr>
<td>Himachal Pradesh</td>
<td><a href="http://www.himachal.gov.in/welcome.asp">www.himachal.gov.in/welcome.asp</a>, himachal.gov.in/citgov/citgov.asp</td>
</tr>
<tr>
<td>Jammu &amp; Kashmir</td>
<td>jammu.kashmir.nic.in</td>
</tr>
<tr>
<td>Jharkhand</td>
<td><a href="http://www.jharkhand.gov.in">www.jharkhand.gov.in</a>, jharkhand.nic.in</td>
</tr>
<tr>
<td>Karnataka</td>
<td><a href="http://www.karnataka.gov.in">www.karnataka.gov.in</a>, <a href="http://www.bangaloreone.gov.in">www.bangaloreone.gov.in</a></td>
</tr>
<tr>
<td>Kerala</td>
<td><a href="http://www.kerala.gov.in">www.kerala.gov.in</a></td>
</tr>
<tr>
<td>Lakshadweep</td>
<td>lakshadweep.nic.in</td>
</tr>
<tr>
<td>Madhya Pradesh</td>
<td><a href="http://www.mp.gov.in">www.mp.gov.in</a></td>
</tr>
<tr>
<td>Maharashtra</td>
<td><a href="http://www.maharashtra.gov.in">www.maharashtra.gov.in</a></td>
</tr>
<tr>
<td>Manipur</td>
<td>manipur.nic.in</td>
</tr>
<tr>
<td>Meghalaya</td>
<td>meghalaya.nic.in</td>
</tr>
<tr>
<td>Mizoram</td>
<td>mizoram.gov.in</td>
</tr>
<tr>
<td>Nagaland</td>
<td>nagaland.nic.in</td>
</tr>
<tr>
<td>Orissa</td>
<td>orissagov.nic.in</td>
</tr>
<tr>
<td>Pondicherry</td>
<td>pondicherry.nic.in</td>
</tr>
<tr>
<td>Punjab</td>
<td>punjab.govt.nic.in, punjab.gov.in, punjav.gov.net</td>
</tr>
<tr>
<td>Rajasthan</td>
<td><a href="http://www.rajasthan.gov.in">www.rajasthan.gov.in</a>, <a href="http://www.emitra.gov.in">www.emitra.gov.in</a></td>
</tr>
<tr>
<td>Sikkim</td>
<td>sikkim.gov.in</td>
</tr>
<tr>
<td>Tamil Nadu</td>
<td><a href="http://www.tn.gov.in">www.tn.gov.in</a></td>
</tr>
<tr>
<td>Tripura</td>
<td><a href="http://www.tripura.gov.in">www.tripura.gov.in</a>, tripura.nic.in/eparisvea</td>
</tr>
<tr>
<td>Uttar Pradesh</td>
<td><a href="http://www.up.gov.in">www.up.gov.in</a></td>
</tr>
<tr>
<td>Uttaranchal</td>
<td>gov.ua.nic.in</td>
</tr>
<tr>
<td>West Bengal</td>
<td><a href="http://www.wbgov.com">www.wbgov.com</a></td>
</tr>
</tbody>
</table>
Most of the cases state government web sites clearly indicates 'Official Website of the …'. When such title or display is not there, or more than one sites are available, sites with domain name xxx.gov.in (xxx is the state name) is chosen for analysis. In case such site is not available site with xxx.nic.in (xxx is the state name) is given preference. In case more than one state site is found (for example Punjab has three sites punjabgovt.nic.in, punjab.gov.in, punjavgov.net) features of all the sites are considered for calculating the web index for the state. In case a separate e-government web site is present for a state features of that site is also included in determining the web measure index for that state. Since the UN Survey’s primary objective is to measure government effectiveness in delivery of basic economic social services to the citizen, 5 additional departmental sites were assessed i.e. Ministries/Department of Health, Education, Social Welfare, Labor and Finance. According to the conceptual framework of the UN Survey these are representative of what services citizens require most from the government. In our survey same concept is used but instead of analyzing the content of such sites thoroughly, just a count of such sites are done, because all the states now have a portal and services offered by different departments are mostly available through the portal. The department/ministries considered for this survey are Agriculture, Health, Labour, Food & Civil Supplies, Education, Panchayat & Rural Development, Social Welfare department.

Each website is analyzed with an approach and mindset of an average citizen user. The reason is, as quoted by UN report [UN 2004] “While it is possible, although implausible, to search the sites meticulously for all content and features, this approach misses the key point that the average user needs to find information and features quickly and intuitively for a site to be “usable.” Even if the researchers had the resources to search for hours on end to find a specific feature or function at a given site, no average citizen or government website user would expend that kind of time or effort.”

The scope of the analysis was limited to information available at the website, for example, land records has been computerized in many states across India, but for this survey, government portals, which provide link to online land record facility were considered. Moreover some of the sites deliver some services, especially transactional services through kiosks. Services provided such kiosks could not be tested online, as they require user id and password. For such cases services mentioned in the associated documents available at the site are used to determine presence and absence of services.

A questionnaire that captures unique feature of each stage of e-government was prepared. Most of the attributes have sub attributes and presence of such attributes is decided on the basis of presence of any one of the sub attributes. A value of 1 is assigned to indicate presence of an attribute and 0 is assigned to indicate absence of an attribute.

Definitions and attributes identified for each stage are:

A caveat would be appropriate at this point about the web measurement in the Survey. The assessment of online services was carried out during May-July 2006 and the survey provides a snapshot of the state during that period. During the survey the sites were carefully checked and revisited several times. However, as the websites are rapidly evolving and sites are updated frequently with new features and services, some of the websites assessed in the survey may have been augmented and changed during the period that elapsed between the time when the research was undertaken and publishing of the article, for example a completely new look site for the Daman & Diu just after the survey was finalised.

To give a true picture of e-government readiness the e-government assessment must include measure of the enabling environment in addition to the measure of online presence of service and information. Instead of doing a fresh research on finding out measure of ICT infrastructure and other enabling environmental indicators, we have used the e-readiness measure as calculated by the DIT survey as a close approximation of the composite indicator, which represents the infrastructural and human capacity measure. DIT e-readiness report classifies each state under six broad groups based on their composite e-readiness index score. These groups are - Leader, Aspiring Leader, Expectants, Average Achievers, Below Average Achievers, and Least
Achievers. In order to use this measure for our study to calculate the composite e-government readiness index, a numeric value corresponding to each broad category was required. It is a fact that broad categorisation, as done in DIT survey, does not reflect the actual position of a state and blurs minor difference among the states. Moreover the e-readiness data available is somewhat what old (the latest data available is that of year 2004). However, given the fact the currency of publicly available data, and long gestation period of any ICT infrastructure project and the exhaustiveness of the survey done by the DIT, we think this data is a very close approximation of the current state. The table 4 shows the numeric value and the corresponding category.

4. Result

In total, analysis of 200 web sites of 35 state government and union territories were performed during the period May-July 2006.

4.1. Web Measure Index

It is no doubt very important to measure the required infrastructure and know how of using ICT in order to get a overall picture of the success of e-government, it is also important to measure, in isolation, the governments willingness and capacity to employ ICT for provision of basic services. Web measure index assesses, in isolation how the e-government websites are used, devoid of the context of the access indicators like availability of Infrastructure and the human capital [UN 2005]. Table 6 shows the states ranked according to the Web Measure Index.

Outcome shows that most of states are in first three stages, with sporadic presence in stage IV and V. It is found that progression from one to the next higher is not strictly.

Additive and progression from stage to stage is not always linear. These observations are in line with that of findings of the UN surveys.

4.2. Stages of Service Delivery

As generally government progress does not follow a linear path and the stage model of e-government is not necessarily additive [UN 2005], so it is important to study states by measuring the services each state provide under each stage. 6 states are found to be in the highest scoring (67-100) percent utilization bracket, while only two are in the lowest (33-0) percent utilization bracket and rest are in the mid range of (66-34) percentage utilization. e-government progress does not follow a linear path and the stage model of e-government is not necessarily additive [UN 2005], so it is important to study states by measuring the services each state provide under each stage. 6 states are found to be in the highest scoring (67-100) percent utilization bracket, while only two are in the lowest (33-0) percent utilization bracket and rest are in the mid range of (66-34) percentage utilization.

33(94%) of the states has all the features of stage I. 27(77%) of the states covers at least 75% of the features of the stage II which include more than 11(31%) states having all the features of stage II. The result shows that all the state has got an integrated state portal, which provides a one-stop shop window for all the services provided by the state. In addition to the portal, some of the states have separate e-government portal dedicated for public services. 34 (97%) sites provide current and archived information, such as policies, laws and regulation, reports, newsletters, gazette. Despite its importance only 10(28.57%) sites provide access to Online Land Record information. One interesting observation is, even among the sites providing online land record information only 5 sites (Assam, Haryana, Maharashtra, UP, Tripura provides direct link at their portal. For other sites, these links are buried deep into the departmental web sites.

16(45%) states cover more than 75% of the features of stage III, which include 5(14%) covers all the features of stage III. For 29 (83%) sites links to downloadable forms are found. Downloadable forms are
### Table 3: Definitions and attributes for identification of each stage

<table>
<thead>
<tr>
<th>Stage</th>
<th>Definition (UN 2004)</th>
<th>Attributes</th>
</tr>
</thead>
</table>
| Stage I: Emerging Presence | Web presence through an official website, a national portal or an official home page; links to government ministries, regional / local government, non-executive branch of the government; information is limited, basic and static. Some archived information | • Web presence  
  • Bio data/Message of the Governor / CM  
  • Information about the state, people, history, culture, statistical information about the state  
  • Links to ministries / Departments: Agriculture, Education, Health, Civil supplies & Consumer affair, Labour, Panchyat Raj & Rural Development, Social Welfare, Districts, Municipalities |
| Stage II: Enhanced Presence | Though offering some enhanced capabilities, e-government efforts are still limited to providing one-way information (G2C). On line services are enhanced to include databases and sources of current and archived information, such as policies, laws and regulation, reports, newsletters and statistics. The user can search for a document and there is a help feature and a site map provided | • Integrated Single Entry Portal  
  • E-Government Portal  
  • Archived /Current Government Information  
  • Laws  
  • RTI Information  
  • Health Policy  
  • Education /Industrial/Health Policy  
  • e-Government Policy/Strategy  
  • Report  
  • Newsletter  
  • Gazette  
  • Help feature for Documents  
  • Search option for Documents  
  • Help feature for Documents  
  • Site map |
| Stage III: Interactive Presence | Government’s provision of on-line services enters the interactive mode; facilities for on-line downloading; security link; electronic signature facility; audio and video Capability for relevant public information. The government officials can be contacted via e-mail, fax, telephone and post. The site is updated with greater regularity. | • Downloadable Forms  
  • Name of Contact information of officials  
  • Telephone numbers, address etc  
  • Email of the Officials  
  • Directory of Officials  
  • Does the site allow user to post Grievances/Complaints/feedback to the Govt. Depts.  
  • Access to Databases  
  • Job Database  
  • Hospital Database  
  • Educational Inst. Database  
  • Any other Database  
  • Electoral Roll  
  • Land Record  
  • Examination Results |
| Stage IV: Transactional Presence | Users are able to conduct on-line transactions, such as paying fines for motor vehicle violations, taxes and fees for postal services through their credit card, bank or debit card. There are some facilities for on-line bidding for public contracts via secure links. | • Users able to conduct complete secure transaction  
  • Online Tax Payment  
  • Online Fine/Penalty Payment  
  • License Renewal  
  • Car Registration  
  • Driving License  
  • Online Service  
  • Birth Certificate  
  • Cast Certificate  
  • Marriage Certificate  
  • Death Certificate  
  • Security Features  
  • e-Procurement/e-Tender |
| Stage V: Networked Presence | A G2C framework based on an integrated network of public agencies for the provision of information, knowledge and services. The emphasis is on feedback to the government. A web comment form is provided. A calendar of upcoming government events exists with a government invitation to participate. Government solicits feedback through on-line polling mechanism; discussion forums; and on-line consultation facilities. | • Web Feedback about legislation/policy  
  • Online Pole/Survey (About Govt. Policies/ socioeconomic issues only)  
  • Discussion forums on policies, matters of public interest |

mostly pdf, but at times they are available as html or word format. 22 (62.85%) sites provide clearly mentioned link at the portal for downloadable forms. 7 (20%) other states also provides facility for downloadable forms, but links are either available at the department sites or buried deep inside the portal.

Only 12 (34%) states provide transactional services, with only 2 (5.71%) states fulfilling all the features of
this stage. Among the transactional services, most common features are Electricity, Water Bill Payment. Few states provide option for payment of traffic challan (Chandigarh), Bus ticket and Hotel Room Reservation (Himachal Pradesh, Madhya Pradesh, Tamil Nadu). Payments are generally accepted either through Credit Card, or electronic money transfer facility of Banks. Only 6 states (17%) provide features of stage V. Andhra Pradesh and Gujarat site solicit public opinion about government policies. Andhra Pradesh and Himachal Pradesh has feature for discussion forum and some states conduct opinion poll on subject of public interest. Three states, Andhra Pradesh, Himachal Pradesh and Jharkhand have presence in all the five stages.

Andhra Pradesh tops in the web measure index followed by Karnataka, Himachal Pradesh, Delhi, Tamilnadu and Chandigarh. Mizoram, Sikkim, Pondicherry, Jammu & Kashmir and Daman & Diu are among the low scoring states.

Following are a brief description of the states with high web measure index:

- **Andhra Pradesh (www.aponline.gov.in)**: The state shows 100% category utilization in the first, second, third and fourth stage. The state also has high utilization at the fifth stage (66%). The portal provides facility for online submission of application for Cast. Nativity, Birth Certificate. For Cast Nativity Certificate citizen need to site social security identity (SSI), a searchable interface for finding SSI for a citizen is also available at the site. Once the SSI is provided the form is automatically filled up with the data from the database. Citizen can apply online for new electricity connection, for provisional registration as Small Scale Industries. Among transactional services, the portal provides online Electricity Bill Payment for Mehabubnagar and Twin Cities, Metro Water Bill Payment, Property Tax payment, Trade License Fee Payment. The site provides features like citizen’s response to government policies and discussion forum. The site provides strong security support like digital certificate.

- **Karnataka (www.karnataka.gov.in)**: Karnataka shows 100% presence at the first four stages. Like Andhra Pradesh, Karnataka also has e-tendering/procurement facility. Citizens of Bangalore can avail numerous services of several government departments, through one window facility called bangaloreone (www.bangaloreone.gov.in). Some of the services at bangaloreone are available on the portal, and an array of other services is available through bangaloreone centres. Banaloreone portal provides transactional services like Electricity bill payment for Bangalore Electricity Supply Company (BESCOM), Water Bill of Bangalore Water Supply and Sewerage Board, online statement of Electricity Bill, online filling of grievances and complaint and a number of online services of Bangalore Mahanagar Palike. The site has strong security features.

- **Himachal Pradesh (himachal.gov.in)**: This portal provide two unique features related to the highest stage Networked Presence. These are Opinion poll and Discussion forum, indicating evolution of the site towards participatory democracy. Online Booking of HPTDC Hotels is fully transactional service, where payment can be made through Credit Card or online money transfer facility of banks. The Himachal Road Transport Corporation provides facility for online Booking of Bus tickets. Among other online services, the portal provide facility for filling up Sales Tax return for any registered dealers under the HP GST Act/CST (still the dealer need to take a print-out of the online return, sign and send it to the concerned Assessing Authority), online electric bill details, stolen/recovered vehicle details, various examination results, online electoral roll etc. This is probably the only site, which accepts Grievances, suggestion, proposals etc addressed directly to the Chief Minister and guarantees a reply with in seven days. Downloadable forms at this site are arranged department wise with details of the procedure of availing that service.

- **Delhi (delhi.gov.in)**: Delhi has 100% category utilization in the first, second and third stages and provide facility for online payments and transactional service of the fourth stage. It is one of the sites, which we found most institutively designed and services well arranged under different categories.
Table 4: Broad e-readiness categories and the corresponding numeric values

<table>
<thead>
<tr>
<th>Level</th>
<th>Numeric Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leader</td>
<td>1.00</td>
</tr>
<tr>
<td>Aspiring Leader</td>
<td>0.83</td>
</tr>
<tr>
<td>Expectants</td>
<td>0.67</td>
</tr>
<tr>
<td>Average Achievers</td>
<td>0.50</td>
</tr>
<tr>
<td>Below Average Achievers</td>
<td>0.33</td>
</tr>
<tr>
<td>Least Achievers</td>
<td>0.17</td>
</tr>
</tbody>
</table>

Table 5: Accordingly each state is assigned a numeric value

<table>
<thead>
<tr>
<th>State Name</th>
<th>Numeric e-readiness Score</th>
<th>State Name</th>
<th>Numeric e-readiness Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Andaman &amp; Nicobar Islands</td>
<td>0.17</td>
<td>Lakshadweep</td>
<td>0.17</td>
</tr>
<tr>
<td>Andhra Pradesh</td>
<td>1</td>
<td>Madhya Pradesh</td>
<td>0.67</td>
</tr>
<tr>
<td>Arunachal Pradesh</td>
<td>0.17</td>
<td>Maharashtra</td>
<td>1</td>
</tr>
<tr>
<td>Assam</td>
<td>0.33</td>
<td>Manipur</td>
<td>0.17</td>
</tr>
<tr>
<td>Bihar</td>
<td>0.17</td>
<td>Meghalaya</td>
<td>0.33</td>
</tr>
<tr>
<td>Chandigarh</td>
<td>1</td>
<td>Mizoram</td>
<td>0.33</td>
</tr>
<tr>
<td>Chhattisgarh</td>
<td>0.5</td>
<td>Nagaland</td>
<td>0.17</td>
</tr>
<tr>
<td>Dadra &amp; Nagar Haveli</td>
<td>0.17</td>
<td>Orissa</td>
<td>0.5</td>
</tr>
<tr>
<td>Daman &amp; Diu</td>
<td>0.17</td>
<td>Pondicherry</td>
<td>0.67</td>
</tr>
<tr>
<td>Delhi</td>
<td>0.83</td>
<td>Punjab</td>
<td>0.83</td>
</tr>
<tr>
<td>Goa</td>
<td>0.83</td>
<td>Rajasthan</td>
<td>0.5</td>
</tr>
<tr>
<td>Gujarat</td>
<td>0.83</td>
<td>Sikkim</td>
<td>0.5</td>
</tr>
<tr>
<td>Haryana</td>
<td>0.83</td>
<td>Tamil Nadu</td>
<td>1</td>
</tr>
<tr>
<td>Himachal Pradesh</td>
<td>0.5</td>
<td>Tripura</td>
<td>0.17</td>
</tr>
<tr>
<td>Jammu &amp; Kashmir</td>
<td>0.33</td>
<td>Uttaranchal</td>
<td>0.33</td>
</tr>
<tr>
<td>Jharkhand</td>
<td>0.33</td>
<td>Uttar Pradesh</td>
<td>0.5</td>
</tr>
<tr>
<td>Karnataka</td>
<td>1</td>
<td>West Bengal</td>
<td>0.67</td>
</tr>
<tr>
<td>Kerala</td>
<td>0.83</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Among online services it provides Online Vehicle Registration. The site provides facility for applying online for number of services and monitor status of such applications online. On submission the system generates acknowledgement slip with an application number. Although the user has to resubmit by post the printed copy of the online application. The online services include - Schedule Caste (SC) Certificate, Other Backward Classes (OBC) Certificate, Surviving Member Certificate, Domicile of Delhi Certificate, Orders For Birth Certificate, Orders For Death Certificate, Income Certificate, Nationality Certificate, Solvency Certificate, SSI Registration, Society Registration, etc. The site provides facility for online grievance submission; the status of the grievances can also be known online.

- **Tamil Nadu (www.tn.gov.in):** Tamil Nadu provides maximum number of online services. Most important of online transactional services are Online Booking of TTDC Tours and Hotel Accommodation by Tamil Nadu Tourism Development Corporation (payments through Credit Card or Banks), Online Bus Seat Reservation (no payment required, while reservation, actual tickets to be collected from the reservation counter, by providing the code number generated by the online reservation system) by Tamil Nadu State Transport Corporations, Water & Sewerage Tax, Water Charges & Sewerage Service Charges (Payment through Online money transfer of Bank) by Chennai Metropolitan Water supply and Sewerage Board, Online payment of Property Tax (Payment through Online money transfer of Bank and Credit Cards) by
Table 6: Score of the states by delivery stages

<table>
<thead>
<tr>
<th>State Name</th>
<th>I</th>
<th>II</th>
<th>III</th>
<th>IV</th>
<th>V</th>
<th>Total I-V</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Top Scoring States (percent utilization = 67-100%)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Andhra Pradesh</td>
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<td>100.00</td>
<td>0.00</td>
<td>80</td>
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<td>83.33</td>
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<td>66.67</td>
<td>75</td>
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<td>Delhi</td>
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<td>50.00</td>
<td>0.00</td>
<td>70</td>
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<tr>
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<td>100.00</td>
<td>83.33</td>
<td>50.00</td>
<td>0.00</td>
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<td>100.00</td>
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<td>50.00</td>
<td>0.00</td>
<td>67</td>
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<tr>
<td><strong>Mid range scoring States (percent utilization = 34 - 66%)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
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<td>66.67</td>
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<td>100.00</td>
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<td>0.00</td>
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<td>25.00</td>
<td>0.00</td>
<td>57</td>
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<tr>
<td>West Bengal</td>
<td>100.00</td>
<td>75.00</td>
<td>83.33</td>
<td>25.00</td>
<td>0.00</td>
<td>57</td>
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<tr>
<td>Jharkhand</td>
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<td>75.00</td>
<td>50.00</td>
<td>25.00</td>
<td>33.33</td>
<td>57</td>
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<tr>
<td>Chhattisgarh</td>
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<td>100.00</td>
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<td>55</td>
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<tr>
<td>Tripura</td>
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<td>25.00</td>
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<td>55</td>
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<td>83.33</td>
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<td>83.33</td>
<td>0.00</td>
<td>0.00</td>
<td>52</td>
</tr>
<tr>
<td>Bihar</td>
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<td>75.00</td>
<td>83.33</td>
<td>0.00</td>
<td>0.00</td>
<td>52</td>
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<tr>
<td>Punjab</td>
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<td>75.00</td>
<td>50.00</td>
<td>0.00</td>
<td>33.33</td>
<td>52</td>
</tr>
<tr>
<td>Dadra &amp; Nagar Haveli</td>
<td>100.00</td>
<td>100.00</td>
<td>50.00</td>
<td>0.00</td>
<td>0.00</td>
<td>50</td>
</tr>
<tr>
<td>Lakshadweep</td>
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<td>66.67</td>
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<td>0.00</td>
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<tr>
<td>Uttarakhand</td>
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<td>75.00</td>
<td>66.67</td>
<td>0.00</td>
<td>0.00</td>
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<tr>
<td>Meghalaya</td>
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<td>50.00</td>
<td>83.33</td>
<td>0.00</td>
<td>0.00</td>
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<tr>
<td>Manipur</td>
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<td>50.00</td>
<td>0.00</td>
<td>0.00</td>
<td>45</td>
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<tr>
<td>Orissa</td>
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<td>50.00</td>
<td>66.67</td>
<td>0.00</td>
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<tr>
<td>Nagaland</td>
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<td>66.67</td>
<td>0.00</td>
<td>0.00</td>
<td>43</td>
</tr>
<tr>
<td>Arunachal</td>
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<td>50.00</td>
<td>66.67</td>
<td>0.00</td>
<td>0.00</td>
<td>43</td>
</tr>
<tr>
<td>Assam</td>
<td>100.00</td>
<td>50.00</td>
<td>66.67</td>
<td>0.00</td>
<td>0.00</td>
<td>43</td>
</tr>
<tr>
<td>Mizoram</td>
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<td>75.00</td>
<td>33.33</td>
<td>0.00</td>
<td>0.00</td>
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<td>0.00</td>
<td>0.00</td>
<td>42</td>
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<tr>
<td>Sikkim</td>
<td>100.00</td>
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<td>50.00</td>
<td>0.00</td>
<td>0.00</td>
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<tr>
<td><strong>Lowest scoring states (percent utilization = 0 - 33%)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jammu &amp; Kashmir</td>
<td>33.33</td>
<td>75.00</td>
<td>50.00</td>
<td>0.00</td>
<td>0.00</td>
<td>32</td>
</tr>
<tr>
<td>Daman &amp; Diu</td>
<td>33.33</td>
<td>50.00</td>
<td>33.33</td>
<td>0.00</td>
<td>0.00</td>
<td>23</td>
</tr>
</tbody>
</table>
E-government: Macro Issues

Corporation of Chennai. Other online services are online Encumbrance Certificate for the properties where the Certificates can be collected in Person or through Courier/VPP, online SSI Provisional certificate through authorized Browsing Centres, online Birth/Death certificate from Coimbatore and Chennai Corporation (Chennai Corporation facility was not operational on the day of testing 10/07/2006). Another important service for the citizen, specially for the youth is provided by Professional and Executive Employment Exchange. This service allow Job seekers to register online at the Employment Exchange and the database of job seekers can be searched by the registered Employer who is looking for suitable employee.

- Chandigarh (www.chandigarh.gov.in): Chandigarh has 100% utilization at stage I and stage II. Have 83% utilization at the Interactive Stage and about 50% utilization at the transactional stage. Among the transactional services the e-gov portal (sampark.chd.nic.in/pls/esampark_web/home) provides online services for Bill Payment, Traffic Challan Payment. Also provide services line online tenant registration, servant registration etc. It has a facility for online grievance submission as well.

District web sites of Jammu & Kashmir are much more developed than the state portal. The district sites contain downloadable forms and FAQ on filling them. But as the state portal have not provided any links do the district; no point has been assigned to the state on that count. Daman & Diu does not have official web site for the state, however websites for Daman district and Tourism department are found (*The district site has since been upgraded to official state site).

Finding about the low scoring states shows that all of the sites have some presence in first three stages, have static information about the state, government and tourism information. But the portals generally do not have link to department/ministries, no contact information about the government officials/ people’s representatives is provided and downloadable forms are also not available at the portal.

4.3. Composite e-government Readiness Index

Table 8 shows the composite e-government readiness index for each state, which is a composite of Web Measure Index, e-readiness Index which in turn is a composite measure of Environment, Readiness and Usage indicators. Each Index is assigned equal weight similar to that of UN survey.

16 states have higher e-government readiness index than the average value of 0.54. Andhra Pradesh (0.98), Karnataka (.93), Tamil Nadu (0.85), Chandigarh (0.85) and Maharashtra (0.80) top the list in overall e-
## Table 7: Web Measure Index of the States

<table>
<thead>
<tr>
<th>State Name</th>
<th>Web Measure Index</th>
<th>State Name</th>
<th>Web Measure Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>Andhra Pradesh</td>
<td>0.95</td>
<td>Bihar</td>
<td>0.55</td>
</tr>
<tr>
<td>Karnataka</td>
<td>0.85</td>
<td>Jharkhand</td>
<td>0.55</td>
</tr>
<tr>
<td>Delhi</td>
<td>0.75</td>
<td>Dadra &amp; Nagar Haveli</td>
<td>0.5</td>
</tr>
<tr>
<td>Himachal Pradesh</td>
<td>0.75</td>
<td>Lakshadweep</td>
<td>0.5</td>
</tr>
<tr>
<td>TN</td>
<td>0.7</td>
<td>Meghalaya</td>
<td>0.5</td>
</tr>
<tr>
<td>Chandigarh</td>
<td>0.7</td>
<td>Uttaranchal</td>
<td>0.5</td>
</tr>
<tr>
<td>Gujarat</td>
<td>0.6</td>
<td>Punjab</td>
<td>0.5</td>
</tr>
<tr>
<td>Chhattisgarh</td>
<td>0.6</td>
<td>Uttar Pradesh</td>
<td>0.5</td>
</tr>
<tr>
<td>Tripura</td>
<td>0.6</td>
<td>Manipur</td>
<td>0.45</td>
</tr>
<tr>
<td>Haryana</td>
<td>0.6</td>
<td>Nagaland</td>
<td>0.45</td>
</tr>
<tr>
<td>Rajasthan</td>
<td>0.6</td>
<td>Assam</td>
<td>0.45</td>
</tr>
<tr>
<td>Maharashtra</td>
<td>0.6</td>
<td>Mizoram</td>
<td>0.45</td>
</tr>
<tr>
<td>West Bengal</td>
<td>0.6</td>
<td>Jammu &amp; Kashmir</td>
<td>0.4</td>
</tr>
<tr>
<td>Andaman &amp; Nicobar</td>
<td>0.55</td>
<td>Daman &amp; Diu</td>
<td>0.25</td>
</tr>
<tr>
<td>Kerala</td>
<td>0.55</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

This measure clearly shows that despite having high web measure index, due to limited enabling environment states may lose out in the comparative ranking when assessed for overall e-government readiness. For example Himachal Pradesh, ranked among the top three in assessment of presence of services and information at the web portal, was ranked 14 by the composite e-government index. Similarly, Himachal Pradesh, ranked among the top five in web measure, ranks among the top five in overall e-government readiness index.

### 5. Concluding Remarks

This survey provides a snapshot view of the contents made available by different states on their state portals. This measure in combination with the e-readiness measure, which represents the state of the ICT infrastructure at each state, gives a comprehensive view of the e-government readiness index. Lakshadweep (0.34), Arunachal Pradesh (0.31), Manipur (0.31), Nagaland (0.31) and Daman & Diu (0.21) are at the bottom of the list. It is not consequential that top 10 states are among the top 15 states in terms of Per Capita Net State Domestic Product for (2003-2004) at 993-1994 prices (http://mospi.nic.in/11_percapnsdp_const_9394ser.htm).
E-government: Macro Issues

e-government readiness of the states of India. This survey provides a useful insight for the policy makers, administrators and researchers about the relative position of the Indian states in terms of online service provisioning. Moreover the attributes identified in this survey as representatives of stages of e-government

Table 8: E-government Readiness Index of Indian States

<table>
<thead>
<tr>
<th>State Name</th>
<th>Web Measure Index (Weight 0.5)</th>
<th>E-readiness index (weight 0.5)</th>
<th>E-government Readiness Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>Andhra Pradesh</td>
<td>0.95</td>
<td>1</td>
<td>0.98</td>
</tr>
<tr>
<td>Karnataka</td>
<td>0.80</td>
<td>1</td>
<td>0.93</td>
</tr>
<tr>
<td>TN</td>
<td>0.70</td>
<td>1</td>
<td>0.85</td>
</tr>
<tr>
<td>Chandigarh</td>
<td>0.70</td>
<td>1</td>
<td>0.85</td>
</tr>
<tr>
<td>Maharashtra</td>
<td>0.60</td>
<td>1</td>
<td>0.80</td>
</tr>
<tr>
<td>Delhi</td>
<td>0.75</td>
<td>0.83</td>
<td>0.79</td>
</tr>
<tr>
<td>Goa</td>
<td>0.60</td>
<td>0.83</td>
<td>0.72</td>
</tr>
<tr>
<td>Gujarat</td>
<td>0.60</td>
<td>0.83</td>
<td>0.72</td>
</tr>
<tr>
<td>Haryana</td>
<td>0.60</td>
<td>0.83</td>
<td>0.72</td>
</tr>
<tr>
<td>Kerala</td>
<td>0.55</td>
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</tr>
<tr>
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<td>0.67</td>
</tr>
<tr>
<td>Madhy Pradesh</td>
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<td>0.67</td>
<td>0.64</td>
</tr>
<tr>
<td>West Bengal</td>
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<td>0.67</td>
<td>0.64</td>
</tr>
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<tr>
<td>Rajasthan</td>
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<td>0.5</td>
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<td>Orissa</td>
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<td>Sikkim</td>
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<td>Tripura</td>
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<td>Andaman &amp; Nicobar</td>
<td>0.55</td>
<td>0.17</td>
<td>0.36</td>
</tr>
<tr>
<td>Bihar</td>
<td>0.55</td>
<td>0.17</td>
<td>0.36</td>
</tr>
<tr>
<td>Dadra &amp; Nagar Haveli</td>
<td>0.50</td>
<td>0.17</td>
<td>0.34</td>
</tr>
<tr>
<td>Lakshadweep</td>
<td>0.50</td>
<td>0.17</td>
<td>0.34</td>
</tr>
<tr>
<td>Arunachal</td>
<td>0.45</td>
<td>0.17</td>
<td>0.31</td>
</tr>
<tr>
<td>Manipur</td>
<td>0.45</td>
<td>0.17</td>
<td>0.31</td>
</tr>
<tr>
<td>Nagaland</td>
<td>0.45</td>
<td>0.17</td>
<td>0.31</td>
</tr>
<tr>
<td>Daman &amp; Diu</td>
<td>0.25</td>
<td>0.17</td>
<td>0.21</td>
</tr>
</tbody>
</table>
development, could be a basis for best practice for each stage of development. As we have decided that such survey would be done each year, next year onward we would be in a position to describe the degree of change with respect to the previous year. A word of caution here, while evaluating and interpreting the result, the readers must remember that the survey is only supply side of the e-government, and no attempt is made to find out the demand side, i.e. the actual take-up and satisfaction rate. Moreover the e-government readiness index is just a broad relative index reflecting the content available on the state portals and the rankings does not necessary show that the states with higher ranking are a better outcome. Moreover caution should also be exerted, given the nature of the index, in interpreting too finely the rankings of a state within a few positions of similarly ranked states.

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E-government: Macro Issues

The International Journal for Communication Studies, Vol 64 No 5 Pp 467-477.


29 Views expressed in this article are that of the authors own and does not necessarily reflect the view of the organization they represent.

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Open Document Format (ODF) Adoption in India: Challenges, Bottlenecks and Prospects

Rajanish Dass1*, Rashi Goyal1, K. Nishant Raman1 and Jaijit Bhattacharya2

ABSTRACT

Open Document Format (ODF) has caught the centre stage of attention immediately after being accepted as a document standard by ISO/IEC. Though the ODF movement has been simmering since a couple of years, but the adoption of ODF becomes quite crucial after governments in various parts of the world have started embracing ODF. In this paper, we discuss the adoption of ODF by the State Government of Delhi and try to highlight the probable prospects, implementation challenges and bottlenecks that similar organizations may find while adopting to ODF. The paper ends in discussing possible initiatives to be taken and the road ahead.

Keywords: ODF Alliance, TCO, OMM, Change Management, e-governance

1. Introduction

The Open Document format (ODF) is an open document file format for saving and exchanging office documents like memos, reports, books, spreadsheets, databases, charts, and presentations. It has been developed by the OASIS industry consortium and provides an open alternative to proprietary document formats. This standard is publicly accessible and can be implemented into any solution without any royalties. It is based upon the XML format originally created for an open source office suite called OpenOffice.org, which was developed as a free alternative to Microsoft Office. ODF had become an OASIS standard on May 1, 2005 (Suárez-Potts, 2006). On 4 May 2006, the International Organization for Standardization (ISO) and the International Electrotechnical Commission (IEC) approved ODF as an international standard ISO/IEC 26300. With its adoption as a standard, ODF has sent ripples across the globe. A number of countries have openly declared of adopting ODF standards, albeit there had been early adopters who had tried to change to ODF much before it was accepted as an international standard.

In this paper, we discuss the adoption of ODF by the Government of Delhi, in India. Our purpose for this paper is to find various aspects of ODF adoption and discussing the road ahead after an organization (typically government departments) decide to accept ODF, especially in a developing country like India. The rest of the paper is outlined as follows: we discuss the relevant work done in section 2. While discussing the global scenario in section 3, we brief about the ODF adoption by the Government of Delhi in section 4. In section 5, we discuss about the prospects and challenges of ODF adoption as we found from the experience of ODF Adoption by Government of Delhi. We conclude the paper in section 6, discussing the road ahead.
E-government: Macro Issues

Literature on open source has explored the inefficiencies generated by proprietary software and suggested alternative mechanisms for financing open source software development (Baker, 2005). It has been argued that a mix of a system of direct government funding for software development and a system of individual vouchers can be an economically viable mechanism for financing the development of new software. Ghosh has also suggested that open standards allow natural monopolies to form in a given technology without discouraging competition among the suppliers (Ghosh, 2005). He has recommended that for public procurement, the criterion of compatibility with proprietary technologies should be removed. Instead, the emphasis should be on interoperability with products from multiple vendors. Also, open standards should be made mandatory for e-Government services and should be preferred for all other public procurement of software and software services. In this regard, a roadmap has been evolved at Berkley for designing or implementing open information and communication technologies (ICT) ecosystems that will drive openness in driving innovation in politics, health care, disaster management and countless other sectors ((School, 2005). Such a system would be interoperable, user-centric, collaborative, sustainable and flexible. A new diagnostic tool, openness maturity model (OMM) has also been introduced to support change management and guide an ICT ecosystem’s evolution. Other literature has tried to measure the degree of openness of various open standards. West has developed a series of attributes that can be used as a metrics for such assessment (West, 2004). He argues that different participants in the value chain: customers, complementers and competitors — value different aspects of openness and these metrics can be used to gauge the policy implications of the various types of open (or closed) standards and predict which form of openness is important for achieving specific goals.

2. Global Scenario

In an ODF Summit held at the IBM Learning Centre in Armonk in November 2005, IBM and Sun Microsystems came together to discuss how to boost Open Document adoption. The summit also brought together several industry groups and technology companies like including Oracle, Google, Adobe, Novell, Red Hat, Computer Associates, Corel, Nokia, Intel, and Linux. The focus of the meeting was on the gaps between Microsoft Office and ODF and on delivering an Open Office which would be superior to the prevalent Office suites. The movement towards open source has also led to the formation of various alliances and agencies. The ODF Alliance formed in March 2006 by the coming together of thirty six companies, associations and end-users, is involved in globally educating policy makers, IT administrators and the public on the benefits and opportunities of ODF and ensuring that government information, records and documents are accessible across platforms and applications, even as technologies change today and in the future (ODFAlliance, 2006). Starting with Massachusetts in September 2005, various states have converted to Open Document and mandate the saving of documents only using the software that complies with the Open Document OASIS Format (ODF). The India ODF Alliance came into being in June 2006 (Dass, 2006). Currently, thirteen nations across the world are planning to adapt to ODF standards.

3. Adoption of ODF by Government of Delhi

The state’s move to open office was spearheaded by the IT Secretary to the Government of the National Capital Territory (GoNCT), Delhi and the responsibility for the same was taken up by the Department of Information Technology (DoIT), Government of NCT Delhi, which was set up in 2000 to enable the various Departments and offices of the Government to harness information technology to improve the administration of state programs and services.

In the latter part of 2005, the usage of IT across these Departments was on the rise. The IT procurement expenditure had increased by 379% in totality and 113% for an average order.

The cost implications were more serious if viewed on an annual basis. The cost of purchasing an Office Suite or License by the government was the major component of the total purchasing costs by the Department, often being the sole form of purchase for a month. On an average, 78% of the total software purchase was for
Table 1: IT Procurement Expenditure by GoNCT, Delhi

<table>
<thead>
<tr>
<th>Year</th>
<th>No. Of orders</th>
<th>IT related procurement</th>
<th>Procurement/order</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004</td>
<td>52</td>
<td>73.5 lakhs</td>
<td>1.41</td>
</tr>
<tr>
<td>2005</td>
<td>117</td>
<td>352 lakhs</td>
<td>3</td>
</tr>
<tr>
<td>% Increase</td>
<td>125 %</td>
<td>379%</td>
<td>113%</td>
</tr>
</tbody>
</table>

Table 2: IT purchases as a component of total monthly purchases for GoNCT, Delhi

<table>
<thead>
<tr>
<th>Year</th>
<th>Month</th>
<th>Total Purchase</th>
<th>Office Suite and/or License Purchased</th>
<th>% of Total Purchase</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004</td>
<td>September</td>
<td>142089</td>
<td>128321</td>
<td>90</td>
</tr>
<tr>
<td>2004</td>
<td>October</td>
<td>26502</td>
<td>18334</td>
<td>69</td>
</tr>
<tr>
<td>2004</td>
<td>November</td>
<td>190157</td>
<td>151921</td>
<td>79</td>
</tr>
<tr>
<td>2004</td>
<td>December</td>
<td>62294</td>
<td>33696</td>
<td>54</td>
</tr>
<tr>
<td>2005</td>
<td>January</td>
<td>151206</td>
<td>19574</td>
<td>13</td>
</tr>
<tr>
<td>2005</td>
<td>February</td>
<td>402762</td>
<td>383668</td>
<td>95</td>
</tr>
<tr>
<td>2005</td>
<td>March</td>
<td>1592874</td>
<td>1508323</td>
<td>94</td>
</tr>
<tr>
<td>2005</td>
<td>April</td>
<td>424013</td>
<td>74870</td>
<td>17</td>
</tr>
<tr>
<td>2005</td>
<td>May</td>
<td>0</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>2005</td>
<td>June</td>
<td>31146</td>
<td>29968</td>
<td>96</td>
</tr>
<tr>
<td>2005</td>
<td>July</td>
<td>0</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>2005</td>
<td>August</td>
<td>14984</td>
<td>14984</td>
<td>100</td>
</tr>
<tr>
<td>2005</td>
<td>September</td>
<td>0</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>2005</td>
<td>October</td>
<td>18712</td>
<td>18712</td>
<td>100</td>
</tr>
<tr>
<td>2005</td>
<td>November</td>
<td>0</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>2005</td>
<td>December</td>
<td>43092</td>
<td>19644</td>
<td>45</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>3099831</td>
<td>2402018</td>
<td>77</td>
</tr>
</tbody>
</table>

In December 2005, a circular was sent to the various government Departments, encouraging them to use OpenOffice in future instead of buying any proprietary Office suite application from a particular vendor. Moreover, the departments were also encouraged to make multiple copies of the OpenOffice as there were no piracy issues attached to it. The National Informatics Centre (NIC), which was responsible for all the purchases of IT and related hardware and software, once it was passed by the Secretary of IT, was also notified not to purchase any proprietary Office suite, even on demand.

However, migration to OpenOffice was not made mandatory. Also, the government had specified no roadmap for the change management and for tackling the logistic challenge of introducing Open Document to more than two hundred departments and government offices of the Delhi GoNCT. This was done in part to avoid the long and cumbersome decision procedure. It was also felt that the stakeholders could initially be hostile to the change owing to pressure from the proprietary Office Suite manufacturers. It was therefore felt that the change could be managed better if it happened gradually as the users started seeing the real value proposition of embracing OpenOffice.

4. Challenges and Prospects of ODF Adoption

Free Source software packages have their own set of advantages and disadvantages. These can occur both due to technological regions and the managerial complexities involved in migration.

The Open Source movement maintains that proprietary software impedes the process of software buying licensed Office suites.
development by delaying an organization’s free adaptation to new and better software. ODF is believed to be particularly suited for adoption by governments as they source documents from various channels using different formats. Besides being a basis for a market test of the relative efficiency of IPR-supported research, this could also enable the government to recoup its investment in software development through lower prices on the computers and software it purchases (Ghosh, 2005) Besides, the Open Document format has got a lot of government support worldwide as it has been seen as a means to end the dependence of end users on limiting proprietary solutions and their exposure to related risks and guaranteeing long term access to public documents.

The movement can actually become an economic necessity for a fast growing, developing country like India. The ODF India Alliance also believed that it had a special relevance in the Indian context, given the country’s presence in the global IT business. Further, due to India’s large population, low costs and free markets, this movement has the potential to impact huge masses of people both in the country and abroad.

**Cost Implications** - In the present case, this decision was also taken by looking at the Total Cost of Ownership (TCO) of having proprietary software like MS Office over a long period. Open Document was seen as an opportunity to save huge amounts of money paid as licensing fees to the vendors and also to completely bypass piracy issues. It was estimated that by adopting OpenDocument the savings from licensing fees alone would amount to over Rs. 238 million.

By adding the total savings of Rs. 34.3 million which would accrue from using Linux, the total savings of this proposition would be approximately Rs. 28 crores. These are exclusive of the other non quantifiable but equally important savings due to lower downtime, reduced risks from vendor lock-ins, freely possible migration and upgrades.

**Ease of Procurement** - Besides the cost advantages, the IT Department also looked at the internal efficiencies that got created by the use of ODF. Though interoperability was still not mandated by law, it was considered an important criterion for enhancing the future accessibility of important government documents. It would also give a greater choice to the Department by allowing it to switch vendor without the fear of lock-ins and be standards neutral when inviting bids from various vendors (Hiser, 2006).

**Speed of Procurement** - The option of free download and the freedom of multiple installations without any attached piracy issues could save on a lot of ordering and procurement time (to the tune of half a year in the case of DoIT)

**Technology Portability** - The compatibility of the software package with the available desktop platforms is an important criterion as one office would usually be using a variety of platforms. Apart from this, the word

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**Table 3: Savings from Licensing Fees**

<table>
<thead>
<tr>
<th>Licensing Cost per user</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Total Lic Cost/user</th>
<th>Total Lic Cost for 10,000 users</th>
<th>Approx Cost (INR)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Opt 1: Migrate to StarOffice</td>
<td>US$50</td>
<td>$0.00</td>
<td>$0.00</td>
<td>US$50</td>
<td>US$ 100</td>
<td>US$ 100,000</td>
<td>4500000</td>
</tr>
<tr>
<td>SAVING</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>$ 5.3Mn</td>
<td>238.5 mn</td>
</tr>
</tbody>
</table>
processing software would be required to process all the commonly available document formats (within the specified ISO standards). OpenOffice scores well on both these aspects; it can easily assimilate all the commonly available file formats and thereby facilitate information availability.

**Future Availability of data** – Another benefit of ODF is the increased accessibility by ensuring usability of important documents in future even as technologies and platforms change. As a package, it can be supported by other available vendors/configurations at that time, not necessarily for substitutions, but for upgrades, bug patches and maintenance as well.

**Increase in Competition:** Since the OpenOffice provides a leveling for all the vendors based on their efficiency, it promotes innovations in the market for office applications through a standardized format. While some officials welcomed this move to OpenOffice, many others were concerned about the various implications of migration from the Office suite that they had been using. Some like the Sales Tax department simply refused to make the transition to OpenOffice. There were several reasons for this internal resistance.

**Support and Maintenance** - One weak area for OpenOffice was in the area of maintenance support from the market. Due to the technology being new and not having captured substantial market share, this support is considerably expensive and not so easily available. While there were numerous vendors to provide support for a MS Office product, getting support for the OpenOffice or any other Open Office package was difficult. Though support may be bought from any of the software providers whose Office suite complies to ODF, this was against the very rationale of going for ODF as the main reason for migrating to ODF compliant Office Suites had been the cost benefits. Till the time OpenOffice achieves a critical mass in the country, the availability of maintenance support, trainers, administration, upgrade et al. will remain less than optimal and expensive, making it difficult, if not infeasible for the concerned vendor (technology provider) to operate.

**Skilled Workforce** - One of the most prominent challenges faced by DoIT was in getting the requisite manpower which could work on Open Source Technologies. It was also found that recruiting people trained in Open Source technologies was costlier than recruiting people for prevalent proprietary technologies and this remained an obstacle in the switchover to ODF by Departments. People recruited as OSS Experts were either not up to the mark or else shifted to other platforms looking for career growth and better job prospects.

**Change Resistance** - Another problem was the inertia to change by the current users of MS Office. While switching over from one software package to another might not be much of an issue for experts and people with considerable exposure to computer technology, there were a lot of teething troubles in getting the employees of DoIT to adapt to even small changes in the level customization of their software package. Moreover, it is difficult for an ordinary end-user with no technical background to cope up with the changes. Employees’ opposition can also stem due to real or perceived loss of authority, for instance, through taking away of the high volume monetary decisions like vendor selections etc. from them. This may block the whole change due to lack of co-operation, and in some case opposition may come from people high up in hierarchy.

**Inadequate Training** - Some users revealed that the training that DoIT had conducted for ODF was meant for novices only and hence, they were not made aware of the advanced features of OpenOffice, till the point they had discovered it themselves. They also pointed out that to lure users away from existing Office packages, the new Office Suite would have to offer more advanced features that people find valuable.

4.1. Post Implementation Steps by DoIT

To manage this change, DoIT has started training end-users on OSS and ODF Office Suites. Till date, a substantial number of people have been trained by the DoIT. The training is conducted centrally with each of
the department nominating employees for training. Moreover, to avoid the inertia to change to Open Standard software, especially ODF, DoIT has targeted users who are using the computer for the very first time. They have found that in these cases, the user’s are quite comfortable using ODF and have been using it without any complaints. For instance, the Department of Food Supplies and Consumer Affairs has already trained a substantial number of its employees in ODF.

4.2. Other instances of ODF adoption

Other instances of Open Document adoption in India include the state Judiciary System which has developed systems based on OSS up to the district level. Moreover, by mid-December 2007, thirty one state-run hospitals in India will be using Hospital Information Systems (being developed by Amrita Institute) developed using Open Source Software (OSS).

Even all the IT infrastructure built for the Institute of Liver and Biliary Services, a super specialty hospital first of its kind in Asia with a total budget of INR 3.5 billion, would also be based on ODF standard office applications.

<table>
<thead>
<tr>
<th>Type of Hospital</th>
<th>No. of Nodes</th>
<th>Extra Financial Implication for Windows XP @Rs.3500 per node</th>
<th>No. of Hospitals</th>
<th>Total Savings (INR)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>200</td>
<td>700,000</td>
<td>3</td>
<td>2100000</td>
</tr>
<tr>
<td>B</td>
<td>300</td>
<td>1050000</td>
<td>20</td>
<td>2100000</td>
</tr>
<tr>
<td>C</td>
<td>400</td>
<td>1400000</td>
<td>8</td>
<td>1120000</td>
</tr>
<tr>
<td>TOTAL SAVINGS</td>
<td></td>
<td></td>
<td></td>
<td>34300000 (34.3 million)</td>
</tr>
</tbody>
</table>

Table 6: Savings for HIMS for Hospitals

Table 5: Training from DoIT (Apr 03-June 06)
suites and all software would be developed on OSS. This will mean that in total approximately 10,000 computers will be running on OSS. The Election Commission (EC) of the Government of India is also currently working on adapting to ODF using OpenOffice. According to Rajesh Aggarwal, Director of EC, if the roll-out succeeds, it may be geographically the largest deployment of OpenOffice in the world as it will be mandatory for all the States and Districts to use it and steps will have to be taken to train people and ensure actual usage in all the Indian Languages.

5. Discussion and the Road Ahead

The adoption of Open Document Formant entails a lot of implementation bottlenecks which the organizations concerned are forced to face. A smooth move over requires thorough planning with a roadmap for implementation. In this paper, we have discussed the probable prospects of such an adoption in the Indian context. Most of the discussion and findings presented in the paper are from the learnings that happened in case of ODF adoption at the Government of Delhi, being initiated by its Department of IT. Results of the study show immediate benefits in terms of savings coming from adoption to ODF along with the high risks of vendor lock-in, obsolescence etc. which are being mitigated through post – implementation efforts. However, this is just the start. There is a huge scope of internal planning before the adoption of ODF for managing change. Moreover, the consortium supporting ODF must come up with a substantial plan for India wide training and enabling people, from the very school days, about the key benefits of ODF. Technology familiarization and a strong support network are accepted as the two key enablers for the country-wide acceptance of ODF. For long term acceptability among common users, requisite skill development through training and education of open source software and open document formats becomes crucial for managing change quickly and efficiently. Similar studies need to be done at wider levels before framing a change management policy standard for ODF, typically in fast developing countries, like India.

References


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E-governance Initiatives in an Indian State: Some Observations from a Gender Perspective

Malathi Subramanian1* and Anupama Saxena2

ABSTRACT

The application of ICT to governance processes, e-governance, as distinguished from government mechanisms, is one of the important uses of ICT in every country. Ability to derive equal benefits from the use of ICT in the process of governance has been a big challenge for the Indian women. The patriarchal character of the Indian society has been one of the major factors responsible for creating gender based divide in the society as a result of which the process of governance has been undoubtedly male centric. In this context this paper seeks to address the research question of what impact the process of e-governance has had from a gender perspective in terms of its outcomes for women. Many factors prevent women from participating in the process of e-governance on an equal footing with men. The present paper aims at exploring whether women have been able to access and participate in the e-governance initiatives as equally as their male counterparts and whether and how far these e-governance initiatives have been able to address and include the needs of women.

The present paper is an attempt to examine some of the issues and questions related to this dimension of growth and development of ICT in India with special reference illustratively to Chhattisgarh State of India which was established in the year 2000 and where a number of e-governance initiatives have been taken even though it is considered to be a comparatively backward region. The methodology in this paper includes an illustrative and analytical study of ICT policy and programme documents and sample data from some districts of Chhattisgarh State of India.

Keywords: E-governance, Gender, Patriarchal, Women

1. Introduction

Information and Communication Technologies (ICT) have dominated the beginning of the 21st century. ICT revolution has enabled the governments, that are by far the biggest agency for social-re-engineering in developing countries towards achievement of various goals of social equity by delivering a range of services to citizens – from ration cards, motor license and land records to health, education and municipal services – in a manner that is timely, efficient, economical, equitable, transparent and corruption free. The application of ICT to ‘governing processes’ rather than to merely government mechanisms, e-governance in short, has a profound impact on the efficiency, responsiveness and accountability of government and thereby, on the quality of life and productivity of citizens and ultimately, on the economic output, growth and development of the country as a whole.

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In India, apart from paving the way to realize the goal of good governance, dramatic changes brought about by ICT have created new economic and social opportunities, as the Indian Planning Commission’s ‘India Vision 2020’ document puts it:

“The shift from material to knowledge-based resources opens up vast opportunities for developing countries to accelerate the pace of development. India’s rate of economic growth can be substantially increased if the country becomes a superpower in knowledge and if the potentials of information and information technology are fully understood and exploited.”

But the real challenge before ICT, in Indian context, does not lie in merely using it more efficiently as a means to accelerate the current rate of economic growth of the country, but in using it for the benefit of the masses, in developing a system which provides tangible, day-to-day benefits widely spread through the society and accessible by the all sections of the population, particularly the excluded sections and especially the most excluded section - WOMEN. While poverty affects both men and women which may restrict the access for both men and women equally to the gains from ICT, gender-specific antecedents, in particular female poverty which is more pervasive and widespread and well documented, have impeded women’s access of ICT more than that of males. Unfortunately, not much work has been done in identifying and removing these constraints in the context of developing countries (Huyer, 1997).

Due to the patriarchal character of the society, ability to derive equal benefits from the government schemes has been a big challenge for the Indian women. It has never been easy for women to make multiple trips to far off offices, chase officials, and humor them or to network with them. When women have to depend on men to get over the intricacies and difficulties for getting these services, it does no good to gender equations. Due to the patriarchal character of the society, this process has been undoubtedly male centric, one of the major factors underlying the gender based divide in the society. What difference this emerging phenomena of e-governance will be able to make in terms of women’s relations to the realm of governance is a pertinent question. But in the most parts of the developing countries of the world e-governance is still at its inception stage and it will be too early to analyze the impact of e-governance on women particularly in the context of the deep rooted gender biased equations in the society. What we can do and should do is to explore whether women have been able to access and to use these e-governance initiatives as equally as their male counterparts and how far these e-governance initiatives been able to address and include the needs of women. The present paper is an attempt to explore answers to some of these questions with reference to a backward state of India as an illustration in support of some of the points sought to be made here.

2. Status of Women In Chhattisgarh

Chhattisgarh a newly formed state of India, came into existence in the year 2000. 79% of the state population lives in rural areas, 32.55% of its population is of Scheduled Tribes (ST) and 12.22% is of Scheduled Castes (SC). The scheduled castes and scheduled tribes are groups identified under the Indian Constitution as socially disadvantaged groups for affirmative action in public policies. Earlier even as a part of another state of India (Madhya Pradesh) the State was marked with severe poverty, backwardness and illiteracy. (Dev, Mahendra, S., 2004). Women in Chhattisgarh are active in many spheres of life, in agriculture, in collection and processing of the State’s rich forest wealth and in construction / wage work in urban areas etc. Moreover, contrary to the situation in many parts of the country, Chhattisgarh enjoys a comparatively favorable position in terms of women’s population reflected in the sex ratio, which is 990 per 1000 males (Census India :2001). But the condition of women is worse in some other aspects. Chattisgarh within integrated Madhya Pradesh was ranked worst in female life expectancy and infant mortality during 1993-97, with 97 girl deaths out of 1000 infants, which was the highest in India. (Kannan, K.P.2004). 32.55% population belongs to the Scheduled Tribes (ST). The condition of the adivasi (tribal) women is worse in all respects (Ministry of tribal Affairs Annual Report 2003). During 2000-01 the school dropout rate (Class I-VIII) in Chhattisgarh was 47.15%. The female dropout rates were much higher than males (Social infrastructure
E-government: Macro Issues

Document, Chattisagrh Government: 2002). With the formation of a separate state for its people, the state is aspiring for the prosperity and growth of its people (State Vision Document 2001). Expressing its commitment towards the development of its women population, the State has envisaged a very ambitious and comprehensive women policy. (Women Policy of Chhattisgarh State: 2001)

3. IT Scenario and IT Policy of the State

The State has a low position in terms of social and economic infrastructure and development and this is well documented. (Kannan, K.P., Dev, Mahendra, S., 2004). The state has been ranked second last in the list of all Indian states for tele-density (Report of Ministry of Communications and Information Technology, Government of India: 2004). But after the formation of the separate state for its people the State government has framed very comprehensive and ambitious IT policy (IT Policy of the State 2004) with an aim to use ICT for the benefit of all its citizens. The State has been ranked only second last in the list of all states in India in Tele Density. (Ministry of Telecommunication Report 2003) The sum and substance of the Policy is as following:

- Using IT as an industry to boost the economic development of the State
- Using ICT for providing good governance to the citizens of the State

3.1. E-governance initiatives of State Government

Following are the major e-governance initiatives that have been taken after the formation of the State:

i) Bhuiyan - All land records are computerized under the scheme. At a nominal charge land records and related information can be obtained. This facility is implemented in all Tehsil (Block) head quarters of the state at present, but it is planned to be extended to the villages also eventually.

ii) *E Sangwari* scheme has been implemented with an objective of providing 7 services to common citizen, launched at Bilaspur district only: 1. death certificate 2. Birth certificate 3. Caste certificate 4. Form (16) pertaining to income tax, 5. Khasara (land record) 6. Income certificate 7. Domicile certificate

iii) *E-Kosh scheme* was started in December 2004, to computerize all treasury transactions of the District Head Quarters.

iv) *The E- Panchayat* (local self government unit) programme was launched on 26th January 2005. It is executed through Janpad Panchayats (local self government units). Each Janpad panchayat is provided with two computers, which will be linked to the others by satellite. It is sought to be an informative programme, aimed at informing the rural people about the development and welfare schemes and making the application forms available online. It is sought to be interactive eventually.

v) *Video Conferencing* programme was launched in January 2001 and it is aimed at an interactive interface between the government agencies and the people by making it possible for the heads of various government departments to answer the questions asked by the common people through video conferencing.

vi) *The Feed Back facility* is aimed at enabling most of the Departments of Government to get a feedback through the web. Any citizen of the state can register complaints or suggestions related to any of the schemes or programmes of the state government through the internet. The complaint is directed to the concerned department / official on line for her/ his attention. The status of the application / complaint can also be tracked on line.

vii) *Wireless Loop Line Telephone (WLL)* – Bharat Sanchar Nigam (the central agency providing telephone and Internet services all over India) has provided at least one phone to each village under this scheme with a 50% subsidy in the total expenditure. In some villages Internet facility is also sought to be made
available through this scheme.

viii) Choice The latest, most ambitious and citizen centric inclusion in E-Governance initiatives of the state government is CHOICE, which is an acronym for Chhattisgarh Online Information for Citizen Empowerment. This project deals with online disbursement of Government services to the citizens and it is said to be one of the most comprehensive solution covering 130 services. CHOICE is presently being operated in Raipur and would be rolled out in the remaining districts of the State. Not a single woman is working as a choice agent.

ix) Another very ambitious project in the vicinity is Common Service Centre Scheme (CSC) to provide E-Governance services and other value added services to the people living in rural areas at their doorsteps through more than 3000 such Centers in rural areas.

The implementation of e-governance schemes in the state has been facilitated by:

• Government Agencies like National Informatics Centre whereby the services are free
• (CHIPS): Chhattisgarh Infotech Promotion Society is an autonomous registered society, set up by the State Government
• Public Private partnership enterprise wherein the services are paid ones

4. ICT Policies & E-governance initiatives of the State through gender lens

Related to e-governance, there are two dimensions of the gender issue:
First, whether the women are able to enjoy as equal an access to e-governance facilities as the men.
And second, whether the e-governance facilities are being used by women as equally as their male counterparts.

There are further questions:
• How far have the e-governance initiatives been able to address women’s needs?
• How far are the e-governance initiatives being supported by adequate capacity building measures or measures aimed at removing the hurdles women face in using them?

To answer these questions one has to first understand the context in which these initiatives are taking place. In Chhattisgarh the population can be divided into two segments. The segment of the population, where ICT is wide spread, ranging from traditional forms of ICT like radio, TV, to most modern forms like internet, mobile phone etc., is concentrated in urban areas of the state, covering about 20% of the population. It is here that the most of the e governance related programme are being implemented and most of the educational and training centers are also operating. In a discussion with some private and public service providers it was clear that the density of the population and the capacity to pay for the services are the two factors that are important for taking any decision for expanding the operations to different areas. As the rural and tribal population do not satisfy these criteria they are not interested in expanding/providing their services to these areas. The CEO of the IT department of Chhattisgarh also indirectly echoed the same feelings, adding that as the population of urban areas is more aware than those of the rural areas, there is stronger pressure to implement the schemes in these areas first. Right now the areas most benefiting by the e-governance initiatives include the capital city of Raipur, Bilaspur-the seat of finance minister, Durg, the most industrialized, densely populated and richest district of the state. Thus as far as the implementation and application of ICT in Chhattisgarh is concerned an urban bias is clearly visible, due to some of the reasons cited.

The other segment of population belongs to rural areas where the traditional forms of ICT, like Radio, TV, landline telephone etc. are used. And then there are also people to whom even these traditional forms of ICT are not available. At least 20% of the population comes under the category that does not even have a radio.
E-government: Macro Issues

On the basis of extensive field survey it was found that as far as the access and use of traditional forms of ICT like TV, Radio, telephone etc. and the modern forms like internet are concerned, due to the following reasons women and girls do not enjoy equal access to these in the state:

- The families are male dominated families and males are considered to have the first right in using whatever belongs to the family.
- In most of the families the male is considered to be the bread earner so he automatically gets hold of every thing first.
- Women are mostly busy in house hold affairs and they do not have time to use these facilities.
- Cyber cafés, telephone departments and all other implementation points are mostly run by men and their users are also mostly men.
- One has to spend money to use these facilities and money is available more to men. Even if women and men have equal monetary powers, women are less interested in spending it on mobile phones, laptops, or in cyber café etc.
- Use of technology whether driving a car, using a camera and likewise using internet or information kiosk is considered as the male domain, especially in rural areas. So even if a woman tries using these the male community considers it as an intrusion into the male domain.

In some places in the rural and tribal areas we have observed that even if a woman is the earning member of the family instead of spending her earning on buying a TV or a radio, she is more likely to spend it on the family needs whereas the male prefers spending it on television (TV), radio or other things and not necessarily on the family needs. Even if the woman buys TV or a radio under the pressure of the male members of the family she herself is not interested in using these.

Getting information is understood to be the responsibility of male members. So right from the childhood getting information or being informed is considered to be the duty of males, and women remain excluded and do not take interest in it. This gender-specific antecedent impedes women’s access and use of e-governance technologies and initiatives.

This view gains support from the information gathered from a sample survey: Although no official data is available about the percentage of women having the ownership of telephone connections, whether it is landline connections or mobile connections, through the official directory of Bharat Sanchar Nigam Limited (the official phone line providers of Indian Government), it is clear that only 09% of total phones are in the name of women.

A sample survey of the use of cyber cafe is shown in Table -1.

The following factors could explain the negligible presence of women in the data indicated above:

- Lower literacy rate among women
- Women are not as computer savvy as men. Only very few women might visit cyber cafés for occasional academic and professional needs whereas men, apart from these purposes, might visit cyber cafés for recreation and other purposes also.
- Generally the male members of the family do the cyber café related work
- The environment in cyber café is not found to be woman friendly, except for a few cyber cafés
- The local milieu is also somewhat backward as socializing among males and females is not so common and not socially accepted
- There are no cyber cafes exclusively for women or there are no separate arrangements for women in cyber cafés.
- Cyber cafes are assumed to be a place where women should avoid visiting. Most of the parents as well as women students and hostel wardens also hold this view.
From the foregoing one could establish a clear linkage between lack of equal access to sources of information for women as women and consequently the lack of their equal access to e-governance services and this is supported by the findings of a field survey of one of the major e-governance Initiatives which has shown in the Table -2.

Due to the concentrated implementation of e-governance services in urban areas, among the rural folk it is easier for rural men to come to city and benefit from these facilities such as e-land records, or making complaints or taking a license etc Or getting education in an institution in the urban areas rather than for rural women without proper transportation facility or a safe environment in the city. So this urban bias is also a major contributory gender factor.

Thus women do not have same access to e-governance facilities as the men and nor are the e-governance facilities being used by women as equally as men.

Therefore, the questions which need to be addressed are:

i. How far have the e-governance initiatives been able to address women’s needs both at the content level and at the implementation level.

ii. How far the e-governance initiatives are being supported by adequate capacity building measures or the measures aimed at removing the hurdles women face in using them.

Content wise, while designing and implementing e-governance schemes, the dominance of the male

<table>
<thead>
<tr>
<th>Name of the café</th>
<th>Name of the owner</th>
<th>Total Visitors</th>
<th>Male</th>
<th>Female</th>
<th>Hours used by male</th>
<th>Hours used by female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hotline</td>
<td>Mr. Kailash B.</td>
<td>900</td>
<td>685</td>
<td>215</td>
<td>2223</td>
<td>1725</td>
</tr>
<tr>
<td>Speed Computer</td>
<td>Mrs. Anuradha S.</td>
<td>300</td>
<td>175</td>
<td>125</td>
<td>150</td>
<td>120</td>
</tr>
<tr>
<td>Om Cyber Cafe</td>
<td>Mr. Manish</td>
<td>195</td>
<td>110</td>
<td>85</td>
<td>150</td>
<td>60</td>
</tr>
<tr>
<td>Ocean C. Online</td>
<td>Mr. Prakash C.</td>
<td>97</td>
<td>85</td>
<td>12</td>
<td>102</td>
<td>12</td>
</tr>
<tr>
<td>Right Click</td>
<td>Mr. Devkant R.</td>
<td>597</td>
<td>471</td>
<td>126</td>
<td>502</td>
<td>196</td>
</tr>
<tr>
<td>Cyber Bite</td>
<td>Mr. Ashish A.</td>
<td>2100</td>
<td>1150</td>
<td>750</td>
<td>2145</td>
<td>1095</td>
</tr>
<tr>
<td>Royal Cafe</td>
<td>Mr. Sunil S.</td>
<td>900</td>
<td>600</td>
<td>300</td>
<td>1600</td>
<td>300</td>
</tr>
<tr>
<td>Saber Café</td>
<td>Mr. Rizvan Khan</td>
<td>560</td>
<td>364</td>
<td>196</td>
<td>1119</td>
<td>225</td>
</tr>
<tr>
<td>Modern Cafe</td>
<td>Mr. Yogesh A.</td>
<td>580</td>
<td>464</td>
<td>116</td>
<td>404</td>
<td>116</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>6229</td>
<td>4304</td>
<td>1925</td>
<td>8375</td>
<td>3249</td>
</tr>
</tbody>
</table>

(Source: Data Collected from the documents available with the owners of cyber cafes and through personal interviews)
E-governance: Macro Issues

Table 2: Video Conferencing facility (Bilaspur and Durg Districts of Chhattisgarh)

<table>
<thead>
<tr>
<th>Duration</th>
<th>Bilsapur</th>
<th>Women</th>
<th>Men</th>
<th>Durg</th>
<th>Women</th>
<th>Men</th>
</tr>
</thead>
<tbody>
<tr>
<td>01-02-2004</td>
<td>377</td>
<td>77</td>
<td>300</td>
<td>126</td>
<td>44</td>
<td>82</td>
</tr>
<tr>
<td>01-02-2005</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(Source: Records available in the offices of District Information Officers, National Informatics Centres, Bilaspur and Durg Districts of Chhattisgarh)

perspective is clearly visible. All the services, which are now being brought under the umbrella of e-governance, have the male as the norm though vicariously, and hence are related to the needs and convenience of men. A close analysis of services provided in the state under e-governance reveals the fact that these services are mostly used by men. There are no efforts to identify the convenience and needs of women in relation to e-governance initiatives. One could identify some services in reference to the needs of women of Chhattisgarh that can be brought under the e-governance Initiatives such as:

- The health related information can be provided by using ICT through the use of the Video with instructions for reproductive health care for instance regarding small precautions that should be taken at the time of delivery for safe delivery (Chhattisgarh has a very low safe delivery percentage)
- While studying the Self Help Groups in Chhattisgarh it was found that the women groups that are involved in making bamboo items or other handicrafts with Jute etc are always in need of new designs. Though government and NGOs provide them training it does not have a wide reach. With the availability of an internet connected computer in Aganwadi Kendras (local village level women’s groups) this information can be provided to a larger number of women. Even the illiterate rural women will be able to learn.

At the implementation/operational level, consideration for the specific problems women face in accessing or using these services is completely missing. If we analyse closely, we find that lack of mobility has been the main factor responsible for Indian women to have less access to government services and for their dependence on males. The burden of house hold responsibilities, lack of transportation facilities, an insecure outside environment, a male dominated gender insensitive administration, lack of facilities for women in administrative offices are some of the factors due to which even the educated and aware women have hesitation in approaching the officials themselves. If ‘government any time anywhere’ through internet could be provided, women would then be able to obtain information more easily and will be able to register complaints or convey problems regarding administration to the concerned officers without facing some of the constraints mentioned above. But unfortunately even with this potential of ICT there have been no efforts to adopt this gender sensitive approach while planning and implementing the e-governance initiatives in the state. Though many small measures can be taken very easily just as the V-Sat based computer which is available in the office of CEO and the Janapad Panchayats (units of the local self government) and are controlled by the male officers there, computers can be given to women self help groups and can be placed in an Aganwadi Kendra (centre for women and child care), where women sit together and interact with each other very frequently and freely. One of the literate women members of the group can be trained to operate the computer. Like wise while selecting the places for the proposed Cyber Agent Scheme, locations can be selected taking care of women’s needs and convenience. This could be in a residential colony or nearer a women’s college etc. Though these may seem small measures, but they would make the difference.

More over keeping in view the benefits that ICT can provide to women i.e. governance at finger tips any time any where, special subsidy schemes can be started by banks and government for women to buy
computers and internet connection. The NGOs can help in creating awareness and providing required training to women to use these facilities. This can be a major step towards the empowerment of women as women may be able to access the government schemes and the officials easily and as and when required. We have to keep in view the fact that the problems related to governance may be different for men and women. While women and men face many common problems, women face added problems merely being women. And we are sure that many of those problems which women face merely being women can be solved to some extent by women friendly rather than merely ‘user’ friendly ICT.

One factor that is very important while discussing the issue of ‘Women Friendly’ ICT is the share of women in policy making and implementation structure. This is almost negligible in the State. One of the factors responsible for this may be the very low percentage of women in the ICT related courses. (Table - 3)

Table 3: Share of Women in ICT Related Courses

<table>
<thead>
<tr>
<th>Year</th>
<th>% of Girls</th>
</tr>
</thead>
<tbody>
<tr>
<td>2001-02</td>
<td>26.01%</td>
</tr>
<tr>
<td>2002-03</td>
<td>26.5%</td>
</tr>
<tr>
<td>2003-04</td>
<td>23.27%</td>
</tr>
<tr>
<td>2004-05</td>
<td>25.41%</td>
</tr>
<tr>
<td>Total</td>
<td>25.26%</td>
</tr>
</tbody>
</table>

(Source: Admission Records of the various institutions of Chhattisgarh)

The reasons for fewer shares of women in the ICT related courses could be:

- Historically there has been a tendency to divide the disciplines of study as masculine and feminine, the more technical professional ones being considered as masculine and the arts, humanities and the social sciences as feminine and this has been followed up with a congealed socialization reflecting and perpetuating the patriarchal mind set of the society.
- Following this and in addition, though technical education has a better chance of employability, since it is comparatively costlier in the state of Chhattisgarh and because in the Indian society the son is considered to be the bread earner, parents generally prefer to provide technical education to their sons rather than to their daughters.
- In Chhattisgarh State the institutes of technical education are mostly limited to urban areas, and the village communities even today have reservations in sending their daughters to study out side their villages due to deep rooted socio-cultural factors.
- Some of the prevailing social customs like dowry (bride price) also prevent parents to encourage their daughters to join technical education, as they assume that the more educated the girl, they would have to find an equally educated bridegroom apart from spending more money in such a marriage.
- The uncertain social factors and the real and perceived fears of the parents about the ‘unsafe’ social environment including the campuses, and lack of adequate arrangements of boarding etc also make parents hesitant to send their daughters to far off places to study or work.

The question therefore remains as to how far the e-governance initiatives are being supported by adequate capacity building measures or the measures aimed at removing the hurdles women face in using them.

There is only one such programme called ‘Suchna Shakti’ Programme for girls who are studying in classes 10th, 11th and 12th. The programme aims at providing computer education to these students. Conceptually it is a good capacity building measure for young girls but because of the administrative sluggishness the programme has not achieved its stated objectives. More over this programme is limited to the girls who are studying in class 10th to 12th where as more then 60% of girls never get a chance to reach the level of these classes. Other then this programme there is no capacity building programme for women.
E-government: Macro Issues

It is obvious from the above analysis that the e-governance initiatives in the State do not have the required gender perspective which could be attributed to the following reasons:

- As the policy makers and those who implement them are males, they generally overlook or ignore women’s needs either because of the lack of gender sensitivity or due to just plain patriarchal socialization.
- There is a often a common tendency in India among policy makers and among those who implement them to treat some areas as gender neutral, and this is the case with the ICT policies and programmes in Chattisgarh. This is clearly reflected in the fact that though the State has a very comprehensive Women Policy, there is no mention of ICT in this Policy and in the State IT Policy there is no mention of women. Not a single programme of Women and Child Development Department is using ICT or is being included under e-governance schemes in the State.
- Even if one tries to draw their attention towards this, they might agree to the suggestions but then since there is a limited amount of fund available for e-governance that is preferably being used in the set mould addressing the needs of the male population as they are perhaps politically more beneficial.
- Interestingly the women organizations of the region also do not assign any importance to e-governance. They feel that problems like domestic violence, water scarcity, poverty etc. are more important and fundamental arenas of struggle for women. They fail to understand that though ICT may not be the panacea to all the age old problems that women continue to face it can be used as a powerful supporting instruments to address these age old problems in one way or other. For instance if we take the cases of domestic violence, a number of women organizations are eager to help the victims but the real problem is that the victim may not want to disclose her identity or is not allowed to have any contact with these women groups. If e- Governance services that are being provided by E Panchayatas (Local Self Government Unit at Village Level) or CHOICE is also extended to include such complaints, women organizations and government machinery may prove to be more helpful/useful to such women.

Field surveys show that while it is generally assumed by policy makers (mainly male) that e-governance programmes will benefit men and women equally, the ground reality is that there is a vast difference in the availability, use, and access of e-governance schemes for men and women. Hence, it is necessary to examine the gender perspective in the e-governance. The ICT policies, programmes, and schemes in Chattisgarh seem to bypass the question of women’s capacity building and empowerment. The impact of this at the user end for women may be one of exclusion due to various reasons that need to be addressed urgently to avoid the digital gender divide superimposed on the already existing gender disadvantages for women arising from socio-cultural factors. Without a gender perspective, the low participation of women in accessing and using the e-governance facilities may not be noticed. This is the case in the Chattisgarh region where even in urban areas, as compared to men, a very low number of women use the e-governance facilities and services such as videoconferencing with public bodies, accessing Internet-based services like e-sangwari for obtaining records regarding births, deaths, or land, or using local government-information kiosks for obtaining information under the e-panchayata scheme. In fact, as already stated, very few women have telephones registered in their own names. Similarly, in the educational sphere, there is low enrollment, retention, and visibility of women in ICT-related courses of study.

Thus, in the Indian context, where women are already less visible in the public spheres due to socio-cultural factors and men already dominate, e-governance is more available and accessible to men. This is also because ICTs have masculine connotations due to the traditionally larger presence of men in technological disciplines. Such is the picture in even urban areas in Chattisgarh where more women are literate, aware, and considered to face comparatively less socio-cultural constraints. Even if these programmes and facilities based on ICT are made available in the rural areas, women would still find it difficult to benefit from them due to the already existing limitations of a male-dominated society. This would be especially true for women in areas dominated by the scheduled castes and tribes, who have been recognized as socially disadvantaged in the Indian Constitution, and who already suffer from severe poverty, illiteracy, and backwardness, to which
is added the restrictive limitations imposed by the domination of patriarchal values, traditions, and attitudes.

5. Concluding Remarks

One might conclude that while poverty, lack of literacy and rural urban divide are potent factors affecting both men and women and their benefiting from e-governance processes equally, there are certain gender-specific factors that impede women’s access to it, in ways different from that for men. Apart from lack of literacy and education, social and cultural norms also constrain women’s mobility and affect their access to e-government schemes and thus restrict their participation in e governance processes. These constraints need to be addressed in order to determine what impact this gendered exclusion from e-governance processes might have on women and whether a digital gap is being added to the already existing gender gap, and ways and means to address and reduce the gap.

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A Comparative Analysis of E-government Strategies

Lakshmi Iyer¹, Muhammad Naveed Baqir³*, Timo Vollmer²

ABSTRACT

Enhanced interaction between government agencies, citizens and businesses is the goal of e-government. Information communication technologies (ICTs) play a vital role in the development, deployment and use of e-government services. Developed countries, e.g. United States and many European countries, have highly developed ICT infrastructure and yet e-government services usage is not too impressive. Developing countries such as India and Pakistan are still struggling to develop and deploy basic infrastructure for ICTs which limits people’s ability to use e-government services. It presents a unique set of issues in which due to the lack of ICT infrastructure people cannot use e-government services efficiently and effectively that have already been made available. The paper will define e-government, compare countries on the basis of their current e-government initiatives, discuss goals and objectives as well as risks and benefits of e-government in developing and developed countries context.

Keywords: E-government, E-commerce, information & communication technology (ICT), Internet, Integration.

1. Introduction

The nature of government functioning has been undergoing a rapid transformation in the latter part of the 1990’s (Devadoss, Pan, & Huang, 2002). Undoubtedly, the magnitude of technological change did not only alter the economy or society, but also governments. Nowadays, public institutions around the world are shifting towards the online provision of services and the term ‘e-government’ has firmly established itself next to other, already more common, words such as ‘e-commerce’ or ‘e-business’. Examples for such public sector services include the online application for government jobs, the determination of eligibility for government benefits, the filing of taxes, the obtaining of birth certificates/marriage licenses, the renewal of driver licenses, the application for high school grants, and the casting of votes. However, these examples resemble only a very small part of the broad spectrum of services available, and a lot of people would be surprised about the large number of institutions that actually fall under the public sector. New service industries, better delivery of services and faster, cheaper communication are some of the by-products of this technological revolution (Devadoss, et.al. 2002).

Because governments are increasingly looking towards a digital future, e-government yields an interesting research area. The paper will give insights into the different available definitions of e-government, analyze the distinctive stages of e-government development, identify the layers and participants involved, discuss advantages and disadvantages, and compare countries on the basis of their current e-government initiatives.

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Also, since the term ‘e-government’ is not strictly limited to governments only, the paper also takes a broader perspective. Highlighting future trends and challenges will conclude the analysis.

2. Background

2.1. Definitions of E-government

Definitions of e-government vary and efforts to incorporate all of them in one single statement seem impossible. However, a common theme is that e-government refers to the use of information and communication technology, particularly web-based applications, to provide access to and deliver information/services to the public, businesses, other agencies, and governmental entities faster, cheaper, easier, and more efficient (Biancucci, Goode, Hunter, Owings, Tucker & Willett, 2001), (Dearstyne, 2001), (Dippo, 2003), (Preston, 2000). This in turn, enhances relationships, enlarges the overall customer base, and improves core business operations through re-examination of internal processes.

Other definitions go beyond this main core. Wimmer and Traunmuller (2000) consider e-government as a ‘guiding vision towards modern administration and democracy’ (Wimmer & Traunmuller, 2000). For them it is concerned with the transformation that government and public administration have to undergo in the next decades. Hence, e-government is not an option. Instead, it is a must for governments to use the benefits of information technology in order to not fall behind. Lawson sees e-government as ‘transferring power to people, by operating in a one-stop, non-stop way, and doing more for less’ (Lawson, 1998). Nadler and Tushman (1997) emphasize that ‘technology is only one of the structural materials’, indicating that e-government goes beyond the mere use of IT. In addition, e-government initiatives can be understood from a variety of perspectives (Devadoss, et.al. 2002). The e-business perspective aims at transferring and applying the developments of e-business and e-commerce to e-government. Hence, it is e-business’ impact on the public sector that activated the transformation process from government to e-government. The use of e-commerce technologies can do both successfully increase access to information and improve government’s internal functioning (Devadoss, et.al. 2002). The citizen perspective resembles Lawson’s empowerment definition. It puts the citizen first, saying that without the citizen’s participation, e-government cannot succeed. However, it ads, that it is government’s obligation to address citizens’ concerns and to provide safe, easy, and accessible transactions (Devadoss, et.al. 2002). The challenge will be to effectively redesign the interaction between governments, citizens, and businesses which automatically implies the reorganization of internal processes.

2.2. Stages of E-government

Layne & Jungwoo, 2001 identify four stages of e-government development: cataloguing, transaction, vertical integration, and horizontal integration. While cataloguing is characterized by sparse integration as well as simple technological and organizational complexity, horizontal integration is characterized by complete integration and complex technological and organizational complexity. Within the first stage, governments set up their initial online presence. This includes, and is very often limited, to the online presentation of information. Governments, citizens, and businesses are not able to conduct any transactions. Instead, efforts focus on the internal collection of information, their (re)organization, and final presentation on the web. However, forms might be downloaded, printed and then sent back via the normal postal system. The second stage includes an increase in services and online forms. Citizens and businesses are now able to engage in electronic transactions with governments. Examples include the use of interactive forms and digital signatures for tasks such as registering a business, getting a building permit, or filing for unemployment benefits (Salkever & Kharif, 2002). In addition, governments will increase their efforts in linking their internal procedures to the online world.

Advancing from transaction to vertical integration definitely marks a larger step than advancing from cataloguing to transaction. However, very often the real advantages (as will be see later) of e-government will
only be derived if this step is taken. In addition, the mentioned changes in the business world and society push governments to go further than just publishing information on the web. Integration can be reached in two ways. First, across different levels of government (vertical integration), such as federal, state, and local institutions, and second, across different functions of government (horizontal integration) which operate on the same level. Citizens and businesses will now be able to contact any level of government, with the integrated system guaranteeing the completion of any transaction (Layne & Jungwoo, 2001). The benefits of such systems can put governments and citizens/businesses into a win-win situation. While convenience for citizens/businesses increases, governments are able to eliminate redundancies and inconsistencies within their internal functioning. Although, throughout literature vertical and horizontal integration are often summarized as one integration step, a preceding relationship of vertical integration to horizontal integration seems to be more appropriate. The reasoning is that although vertical integration includes different levels of government it predominantly takes place within similar functions. In contrast, horizontal integration is across different functions. The gap between different functions of government is therefore bigger than the gap between different levels of government. Given this analysis, horizontal integration appears to be the masterpiece of e-government development. Yet, a lot of institutions are far from having reached this stage. Especially, small municipals lack the necessary financial resources to advance this far. For them very often reaching transactional levels already poses problems. Complete integration however will only succeed if all levels operate on equal standards.

![Fig. 1: Vertical and horizontal integration](image)

The country analysis will give insights into how to classify different countries within the described framework. For citizens and businesses, and governments aggressive moves towards an increased integration are desirable since they offer better access to a broader number of governmental services and reduce functional barriers within governments themselves.

2.3. Advantages of E-government

The following part will discuss some of the advantages of e-government. Hereby, it is important to see that both governments and citizens/businesses benefit:

- Governments are given the chance to rethink the way they are doing business (Preston, 2000). A transformation from government to e-government forces many institutions to evaluate and to reengineer their processes. Hence, technology gives agencies the chance to discover where they are, where they want to go, and decide how they want to get there (Preston, 2000). Throughout the past, the reengineering concept has gained in importance because of the business’ and public sectors’ increasing obligation to
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meet their customers’ needs. Reengineering alters workflows by taking a horizontal approach to organizational structure (Tullar, 2004). It reduces the specialization of jobs, moves responsibilities down the ranks, creates several paths for action, reorganizes workflows, and eliminates non-value adding controls. Therefore, although e-government may not be regarded as a competitive weapon, it is viewed as a primary mechanism for creating more efficient and effective service organizations by increasing communication, eliminating redundancies and inconsistencies, and enhancing transparency.

- E-government offers great opportunities for establishing partnerships with the private sector, for example by developing new funding models and sharing risk with technology vendors (Symonds, 2000). Governments could further allow the private sector to provide public services and to package these with commercial services.
- Successful implementation of e-government can increase the public’s overall trust in the Internet and thus have repercussions on e-commerce throughout the whole economy. With regard to citizens, governments can provide incentives to make the web their preferred channel for transactions, spurring the adoption of the Internet (Symonds, 2000).
- The Internet has set the stage and continuous to increase the potential for radically shrinking communication and information costs on behalf of all participants involved. E-government maximizes speed, improves service delivery, broadens reach, and eliminates problems of distance. Today, computers put homes in remote areas of the world in touch with federal, state, or local government websites. High speed internet connections reduce time and make the web a convenient way to get into touch with the public sector. Among those things, e-government allows citizens to take over tasks themselves – such as deciding what types of benefits or grants they should apply for – that once where the domain of clerks (Salkever & Kharif, 2002).
- Although a very critical topic, labor costs can be cut (Birnbaum, 2000). In addition, given the high degree of bureaucracy in many countries, material costs are significantly reduced. Governments need no longer print documents, send them out, store them etc. Through the elimination of thousands of paper forms, receipts, statements of accounts, etc. agencies already save huge amounts in postage costs only. Document management is simplified if the right systems are in place. Examples of cost savings include a report published in Canada that stated that in-person transactions cost the government $44 whereas online transactions cost less than $1 and higher tax payments have been made through online tax filings (Anonymous, 2004). When IBM put Arizona’s vehicle-registration program online, the average wait to register a car fell from 45 to 3 minutes, and the cost to the state plummeted from $6.60 per car to $1.60 (Birnbaum, 2000).
- The opportunity to deliver services more innovatively can send out signals to other agencies, whether it is within the same country or other parts of the world. Therefore, the overall level of innovation might attract direct investments or even persuade businesses to relocate their operations, or skilled people to move abroad.
- Since the Internet allows vertical and horizontal integration it guarantees the provision of much more information than would be available through traditional bricks-and-mortar facilities. Employees in the public sector can further redirect their resources by e.g. once answering questions through FAQ sites, instead of communicating with a large number of citizens/businesses on an individual basis.

2.4. Factors Limiting E-government Adoption

One of the highest risks is a clear threat and fear of personal information abuses (Tillman, 2003). The possibility to make sensitive information easier to find clearly endangers privacy. Security concerns make it not surprising that people hesitate to provide personal information online (Anonymous, 2003). Also, with so many private companies building government websites, people need to know how much, if any, of that information will be used by the private companies themselves (Birnbaum, 2000).

While technology continuous to improve, the amount of data on government websites is sky rocketing.
Although e-government guarantees access to thousands of websites, it does not necessarily mean that their content is also meaningful. Many users are getting frustrated when it comes to finding a specific piece of information they are looking for (Anonymous, 2004). The almost uncountable number of websites requires visits to multiple sites and sometimes coordination between several different organizations.

Employees are especially threatened by the fact that information technology could make them lose their jobs since the online provision of services makes some positions obsolete. Fortune magazine estimated that within 10 year the number of merely federal employees could be slashed by 25% (Birnbaum, 2000). From a customer perspective, personal contact/interaction and the possibility to ask questions in case of misunderstanding is significantly reduced. In highly unionized countries, unions already exert high pressures on governmental initiatives that threaten jobs. Finally, governments’ advertising efforts compared to business’ efforts are small. However, without advertising people may not know that there are e-government services online.

3. Country Comparison

The core ideas and techniques associated with putting governments online first emerged in the most developed western countries. Then, throughout the past years most of the worlds’ other countries have also established their own e-government websites. For developed countries, however, the issue is no longer whether government is or should be online, but in what form and with which consequences (Anonymous, 2004). These countries have expanded participatory services online through the use of e-participation portals and online consultation mechanisms encouraging citizen feedback on important economic and social policy issues (United Nations, 2004).

Table 1: Summary of advantages and limitations related to e-Government initiatives

<table>
<thead>
<tr>
<th>Advantages</th>
<th>Limitations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increases efficiency and effectiveness</td>
<td>Privacy/Security/Confidentiality concerns</td>
</tr>
<tr>
<td>Increases communication</td>
<td>Information overload</td>
</tr>
<tr>
<td>Eliminates redundancies and inconsistencies</td>
<td>Value of information</td>
</tr>
<tr>
<td>Enhances transparency</td>
<td>Websites do not work/are out-dated</td>
</tr>
<tr>
<td>Yields opportunities to partner with private sector</td>
<td>Benefits often linked to high stages of development</td>
</tr>
<tr>
<td>Can have repercussions on entire economy</td>
<td>Internal resistance/lack of leadership</td>
</tr>
<tr>
<td>Spurs adoption of Internet</td>
<td>Lack of resources/capabilities</td>
</tr>
<tr>
<td>Reduces costs (communication, information, labor, and material)</td>
<td>High investments necessary</td>
</tr>
<tr>
<td>Improves speed and service delivery, broadens reach, eliminates distance problems</td>
<td>Eliminates personal interaction/ contact/possibility to ask questions</td>
</tr>
<tr>
<td>Increases convenience</td>
<td>Threatens jobs</td>
</tr>
<tr>
<td>Empowers citizens</td>
<td>Advertising opportunities limited</td>
</tr>
<tr>
<td>Attracts investments, businesses and skilled people</td>
<td>Vast size and bureaucratic nature</td>
</tr>
<tr>
<td>Increases amount of available information</td>
<td>of governments reduces flexibility</td>
</tr>
<tr>
<td>Improves utilization of resources</td>
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</table>

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The core ideas and techniques associated with putting governments online first emerged in the most developed western countries. Then, throughout the past years most of the worlds’ other countries have also established their own e-government websites. For developed countries, however, the issue is no longer whether government is or should be online, but in what form and with which consequences (Anonymous, 2004). These countries have expanded participatory services online through the use of e-participation portals and online consultation mechanisms encouraging citizen feedback on important economic and social policy issues (United Nations, 2004).
An Accenture study revealed that in 2003, 173 of the United Nations’ 191 members operated Web sites (Accenture, 2004). Only 18 countries, predominantly in Africa, remain completely offline (Anonymous, 2004). Yet, only 20% of people with internet access really use e-government services (United Nations, 2004). The reasoning is that very often the public sectors’ offerings differ from what users really want. Also, despite all the improvements that have been made so far only 15 governments in the world accept the publics’ comments on policy issues and only 33 allow online transactions (Anonymous, 2004). In developing countries about 60% of all e-government projects fail and about half waste tax payer money (United Nations, 2004). Figure 2 displays the relative positioning of selected countries on the ‘e-government life cycle’. Canada, Singapore, and the United States take the top maturity spots. Italy, Mexico, Portugal, Brazil, and South Africa fall behind. Nevertheless, each country is somehow involved in e-government initiatives and even the most advanced countries have to work hard to arrive at greater values for their businesses and citizens. In countries with high internet penetration and high e-government use, such as the U.S., people already actively use the internet in many ways and thus do not hesitate to use e-government services as well. In countries with low internet penetration and high e-government use, such as Italy and Spain, e-government usage predominantly stems from early adaptors. The U.K., Ireland, Belgium, and Germany show rather low interest for e-government, implying the need for increased exposure and especially familiarity with E-government services (Accenture, 2004). In the following, e-government in the United States, the United Kingdom, Germany, India and Pakistan is described in more detail. The selection criteria are based on countries that fall in the low-maturity stage of the life-cycle to the high-maturity stage. Analyzing these 5 countries therefore guarantees that the life cycle is pretty much covered in total.

3.1. United States

The United States belong to the top 3 countries with regard to e-government development. It leads the field in readiness of the amount of information available, services and products offered, as well as the underlying infrastructure such as telephones, computers, and internet connections (Anonymous, 2004). Internet penetration and e-government use are high, resulting in a mass scenario. Also, the country’s population is Internet savvy and supports the ideas of increased convenience and time and cost savings. Finally, legislation is more in favor of moving e-government strategies forward than putting up restricting barriers.

It was the United States together with Great Britain, Canada and Australia that led the way, both in establishing a basic information form of web presence in the mid 1990s and in developing what became known as e-government in the late 1990s (Chadwick, 2003). In 2001, the country published its first e-
government vision statement, which adhered to 3 principles: being citizen-centered, results-oriented, and market based (Accenture, 2004). It realized that e-government can only succeed if services are citizen-centered (not agency centered), enabled through the changing of processes, and effectively marketed to the customer.

3.2 Europe

Europe is second in e-government readiness following the United States (United Nations, 2004). In 2000, the European Summits at Lisbon and Feira redefined the continent’s e-government ambitions by setting 4 guidelines. The new agenda included the continuous development of internet based services to improve access to information and services, the improvement of transparency of public administration, the full exploitation of information technology, and the establishment of e-procurement (Strejcek & Theil, 2002). These objectives show a high similarity to the United States’ objectives. However, as often, these challenging targets could not yet be implemented to their full extend. Overall, Europe’s public sector faces challenging economic and social conditions, institutional change, and of course the impact of information technology (Chadwick, 2003). In order to boost growth, efficiency, productivity and quality of governmental services still need to be improved.

Today, about 67% of public services are accessible online (Anonymous, 2004). Since such numbers always depend on the underlying assumptions for their calculation they have to be used with caution. Whereas, the percentage is higher by looking at public services merely from a perspective of online availability, the percentage is lower if focus is on public services that are already truly transactional. Among the public service categories, income generating services (tax and social contributions) are the most developed, followed by registration services (car and new company registration) and returns, such as social security (Anonymous, 2004). Services related to documents and permits (driver’s license, passports) are the least developed on the Web (Anonymous, 2002). Services for businesses reach 79% of online sophistication, whereas the services for citizens reached a level of 58% (Anonymous, 2004). In summary, on the one hand, Europe makes progress in e-government. On the other hand, taking the measure of fully transactional services and highly advances stages of e-government development the result seems to be more pessimistic.

United Kingdom: Although the United Kingdom is among those European countries that have higher maturity levels, its e-government growth kept slowing down throughout the last couple of years. The Prime Minister’s initial objective (in 2000) was to make all public services available electronically by the end of 2005 (Chadwick, 2003). Since then 1 billion pounds have been invested to boost UK’s central government’s online offerings. However, despite high internet penetration, the use of e-government services remains low. So far about 70% of government services can be accessed via the Internet. That figure is expected to reach 80% by the end of 2005, the date by which everything was supposed to have been ‘e-enabled’ (Economist, 2003). Even this 80%, compared to other countries, is still a high number though. What is more worrying is that where such services have already been put online, hardly anyone seems to be using them (Economist, 2003). Since the British are, similar to the Americans, rather an Internet savvy society e-government usage patterns are disappointing.

The vast amount of different websites, the required coordination between several organizations as well as the necessity to visit multiple sites before finding valuable information, again appear to be the main problems why e-government is not really taking off. In addition, some government’s sites are out of date or do not work properly. Finally, the British have traditionally been skeptical about their governments’ initiatives, given the examples of failures in the past (Economist, 2003). Even more, a 2003 report by analyst firm Kable predicted that the cost of e-government could outweigh any savings until 2012 (James, 2003). That is why take-up of e-government services in Britain continuous to be an issue. For the future, the UK government still plans to increase spending on e-government to almost $1.2 billion until 2008 (Anonymous, 2004).

Germany: Germany is within the cluster of low to medium growth stage countries on the life-cycle. Emphasis
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is still on providing information on the web and a really noticeable push toward the transaction level is not yet evident. In addition, e-government is not considered as a crucial aspect in the political debate. The transfer of BundOnline 2005 out of the Ministry of Inner Affairs to the Federal Office for Administration supports this view (Accenture, 2004). Fewer than half of the country’s regular Internet users have ever used any e-government service at all (Accenture, 2004). One of the problems e-government faces in Germany is that the majority of initiatives have so far been targeted at the federal level. Although the number of government portals and sites is immense, the most significant services for citizens and businesses are provided primarily by municipal governments, however. Also, Germany is a highly unionized country and the extensive amounts of employment laws make a hire-and-fire strategy (like in the U.S.) impossible. The fear of trading a large number of municipal governmental jobs for advances in e-government thus already restricts some activities in their initial phase.

Finally, Germany is often dominated by the call for security, legal certainty, and data privacy which is in part attributable to the country’s culture and working habits. Nevertheless, some plans are already in place such as the introduction of a digital passport in 2008 (Accenture, 2004). Thoughts about this type of passport, that requires a digital signature, first emerged after the terrorist attacks in the United States. Its successful implementation, along with other planned activities, could push Germany back into a more desirable position of e-government maturity. The country’s technological infrastructure and capabilities definitely favor a position more towards innovative practices and higher maturity levels and do not resemble the low-maturity status the country currently has. For the upcoming years, Germany’s e-government spending is expected to grow from $985 million in 2004 to $1.4 billion in 2004 (Anonymous 2004).

3.3 India

According to the Ministry of IT (2005) in India, mostly southern states in India have implemented several e-government projects after establishing considerably good IT infrastructure. Karnataka, Tamil Nadu, Andhra Pradesh, Maharashtra and Chandigarh are ranked leaders in e-readiness index for e-government delivery. Even though India was using computerized databases for its military, elections, economic planning, national census and tax collection, it was not until 1990s that citizens could directly interface with e-government projects. Projects such as Bhoomi (land administration for Karnataka), CARD (land administration for Andhra Pradesh), Gyandoot (computing services for villagers), eSeva (utility bill payments in Andhra Pradesh), Akshaya (computer training for villagers in Kerala), Lokvani (various government services) and SARI (wireless internet link for villagers) are both aspiring and indicative of public-private interest in creating an environment to develop and use e-government services. Even though teledensity stands at 12.74% (India Core, 2006), telecom growth in certain states is phenomenal. With approximately 541 Gbps international bandwidth link, all what’s left is to create and establish inhouse infrastructure for the people living in far off places in India.

3.4. Pakistan

Information technology infrastructure is one of the fundamental requirements for the establishment of e-government deployment and use. The turn of the millennium proved to be a tipping point for Pakistan’s information technology infrastructure. Pre year 2000 Pakistan stood with teledensity of just 2.80%. Today, it stands well above 27% and local and foreign investments in infrastructure development have reached over 3212 million dollars during 2005-2006 fiscal year. Internet users grew from 10,000 users in 10 major cities in 1998 to 2.1 million (internet service providers’ association claims this number to be 10 million) in over 400 cities and towns by the middle of 2006. Increasing deployment of high speed internet (mostly DSL/ADSL), is creating an opportunity for the development of e-government environment. (PTA, 2006). Even with expanding use of internet, number of companies offering online products/services is negligibly small.

With an enormous growth in infrastructure during the past few years, Government of Pakistan took multiple initiatives including the establishment of ministry of IT and telecom, national database and registration authority (NADRA - citizens’ database and identity management), national IT policy (EGD, 2006; Baqir and
Sarah, 2000), electronic government directorate (EGD, 2006), computerized electoral rolls (ECP, 2006),
computerization of land ownership records and electronic filing of taxes (Mujahid, 2002). These initiatives are
in addition to steps in the five year plan for e-government implementation strategy plan given in EGD (2006).
Even though Pakistani Government’s plans are exciting and aspiring, e-business is almost non existent in the
country. This leads to a strange situation where government is offering multiple avenues to its citizens to
utilize e-government services but citizens are not familiar with what can be done online. There is lack of
statistical evidence to investigate the extent to which these e-government initiatives are actually being used by
the citizens. In addition to trust issues on the e-government, access control and security mechanisms prohibit
wide spread use of online services.

4. Trends Emerging in E-government

The e-government life-cycle showed the relative positions of countries with regard to their maturity
levels. One of the trends emerging in e-government is that larger differences in maturity slowly disappear
(Accenture, 2004). Countries that were once lacking behind have managed to catch up with former industry
leaders. This is especially true for some countries in the medium maturity range. Here, countries are very
close together, making an appropriate differentiation hardly possible and differences in rankings are often
due to differing underlying assumptions. It shall also not be surprising that especially countries in the low or
mid-maturity phases have better chances to make more significant advances. The reason is that it simply
becomes harder for countries that are already highly mature to significantly differentiate themselves.

Second, when governments initiated their first online programs, cost-savings have been soaked up by
large investments into the e-government structure. While some governments still need to heavily invest,
industry leaders now start realizing tangible cost savings (Accenture, 2004). Third, the biggest factors for
driving citizens to greater e-government usage are time and cost savings. As already mentioned, a lot of
services are hardly known off, however. Therefore, governments are increasing their promotion efforts
(Accenture, 2004). Some countries have already reported concentrated marketing efforts that lead to satisfying
results. Tools included television and radio campaigns, advertisements in airline magazines, newspapers,
and other media. Fourth, moving from the transaction stage to stages of vertical and horizontal integration is
for many countries still the major hurdle. However, since these stages characterize the provision of a truly
seamless approach to e-government, countries are also increasing their efforts to reach them. For already
highly advanced countries the next ‘battleground’ could be integration at the international level (Jaeger &
Thompson, 2003). Especially with regard to the current developments within the European Union,
international integration will be an interesting field for further future research (Anonymous, 2003).

Finally, e-government services are starting to get customized (Accenture, 2004). This means that
governments are not only trying to serve the overall public in the best way possible, but also try to tailor their
services to specific needs and interests. While users benefit from more accurate, appropriate information,
and time savings, agencies increase their customer satisfaction ratings and strengthen the user participation
layer. In addition, user data becomes more reliable, enabling the better targeting of future services.
Segmentation becomes possible through enhanced market understanding.

5. Future Challenges for E-government

The idea of a fully integrated e-government assumes perfect coordination, communication, and
collaboration among both different levels and functions of government and is therefore in a theoretical
concept than reality. As with other sectors, the public sector faces power conflicts, differing goals, functional
boundaries, self-centered thinking, etc. The future will show which countries will most likely be able to
improve coordination, communication, and collaboration among agencies in order to move ahead. As stated
in the disadvantage section, an out-of-date e-government does not add any value. Hence, it will require
significant resources first to provide valuable information and services that are continuously updated and
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expanded in order to meet customer needs and second to keep customers informed through marketing initiatives. Another challenge will be to overcome issues and concerns of privacy and confidentiality. As with online-shopping citizens still feel uncomfortable with providing personal data on the web and are concerned about its usage and storage. This information can easily exceed the limits of credit card numbers, names and addresses. Not to mention businesses, which provide even more crucial data. Therefore, clear guidelines have to be in place on how to address such concerns internally as well as communicate solutions externally. Technical improvements such as the implementation of security controls, safe document management systems, as well as increased transparency of procedures or allowing independent auditing could solve some of the problems (Jaeger & Thompson, 2003).

Internally, it will be crucial to sustain committed leadership and to develop performance evaluation measures. While e-government frees a lot of resources it cannot become a way for employees to avoid taking responsibility or their duties since they are not physically seeing or speaking to the citizen anymore or to blame technology as an excuse for all problems (Jaeger & Thompson, 2003). Among or even within countries variations in both the availability of technology as well as the ability to use them exist. Simply put, not everyone can have access from everywhere in the world. It would be wrong to invest into e-government strategies in those countries that require other services more desperately (Haldenwang, 2004). In addition, a person that simply lacks education or has limited abilities cannot be denied access to governmental services, and in nations in which more than one language is being spoken, ways need to be considered to not exclude a certain part of the population (Seifert & Petersen, 2002).

Finally, different challenges can be linked to the different stages on the life-cycle. Countries with low maturity have to initiate activities that can guarantee the foundation for service transformation and provide long term plans. Focus should be on services with high demand, businesses, and collaborations. Countries with medium maturity will have to target both citizens as well as businesses and ensure that services can be delivered accordingly. Functional barriers need to be removed in order to allow integration. High maturity countries will have to think of innovative ways in order to not lose their position and second further set themselves apart. New cost-effective strategies need to be sought that replace outdated ones and create a win-win situation. The goal is to achieve strategies that can achieve full integration.

6. Concluding Remarks

The paper explored several aspects of e-government. Despite many disadvantages e-government’s growth continues. Governments are expanding both the size and scope of their e-government strategies to not fall behind and grasp some of the advantages. Determinants of how and how well e-government initiatives are realized and utilized include the political ideology, resource availability, the technological infrastructure, and economic/social systems. Further investigation of e-Government implementations is needed to explore what works and what does not. The examination of e-government projects from different levels of government and different parts of the world offers a method to share knowledge about various e-government strategies. The majority of the current literature takes a rather theoretical than practical approach to e-government. This has in some way limited the country comparison part in this paper. However, it will be interesting to see how future research on different countries progresses and how the outcomes change the relative positioning of countries on the e-government life cycle.

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Regulatory Challenges to Media Convergence in South Africa

Siddhartha Menon

ABSTRACT

This paper has utility in focusing on regulatory aspects of the media convergence issue in order to explore why and how the notion of convergence is reflected in policy approaches drafted by government. The central motivating research question of why a country would set an agenda to respond to the phenomenon of media convergence is one of paramount importance to the field of international telecommunications policy. This paper adopts an exploratory case study structure to evaluate convergence policy in South Africa.

Keywords: Media Convergence, Policy Initiatives, Regulation, Social Shaping Theory, Technological Determinism, Cross Sector Entry, Technological Neutrality

1. Introduction

Convergence policy can have profound and systemic regulatory and legal implications that manifest in broad and pervasive consequences for the information economy’s sector development over the next several decades. The central motivating research question of whether a country would set an agenda to respond to the phenomenon of media convergence is one of paramount importance not only to the specific field of international telecommunications policy, but also to the broader intellectual inquiry of information and new media studies. This subject matter has salience in that it is endowed with the foundation, scope and depth necessary to identify the key problems or challenges surrounding the proliferation of media that is becoming increasingly integrated and digitalized. In addition this topic involves the important task of assessing the extent to which policy precipitates the phenomenon of media convergence and conversely the extent to which convergence has an impact on influencing the formulation of media policy.

This paper addresses this subject matter primarily from a regulatory perspective. This approach involves an exploration of why and how the notion of convergence is reflected in policy approaches drafted by government. Such a comparative perspective offers distinct value in drawing out insights into why the process of convergence is necessarily so slow and deliberate. In addition this approach is essential to drawing lessons on the areas where media convergence has faced the most pitfalls or obstacles. In many cases the practical, on the ground, realities in terms of the regulatory environments that govern media service provision do not mirror the often idealized rhetoric on convergence voiced by policy makers and industry alike. Many scholars (Verhulst, 2002; Hitchens, 1997; Marsden, 1997) have acknowledged that the media convergence phenomenon has been fraught with complications as policymakers and industry struggle to reach agreement on the best way to offer converged, integrated and digitalized services.

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Given the scope of the challenges that pervasive convergence faces, it is important to address the issue from a multi-faceted perspective. As Verhulst (2002) aptly points out “in addressing the new regulatory paradigm, governments do not have the comfort of being able to consider issues simply within the confines of their four territorial walls” (p. 435). Consequently, technological advances such as innovation based on converged services transcend traditionally defined political boundaries. Therefore industry and regulators need to be cognizant of such boundary erosion in the development of their services and regulation.

Media convergence is typically defined as a four-dimensional phenomenon comprising, technological, organizational, market and regulatory components. While it draws on all four dimensions, it is particularly useful to delineate the characteristics of technological dimension, which run through this paper. Specifically, on the technological dimension, media convergence is defined within two contexts: integration and digitalization. While integration has many meanings in different contexts, here it will be defined as a process of transformation measured by the degree to which diverse media such as phone, data, broadcast and information technology infrastructures are combined into interoperable architectural platforms and networks. This would integrate telecommunications, broadcasting and information technology networks. Digitalization, unlike the definition of integration presented here, is not so much defined by the physical infrastructure as by the medium. This distinction is raised in order to offer an additional lens for conceptualizing media convergence. The term may be measured or operationally defined by the proportion of diverse analog media such as conventional voice telephony and broadcasting which can be made available in digital form.

This paper discusses the convergence issue in South Africa in six sections. The process of facilitating convergence, which is manifested in this exploration, is important because it reflects how a regulatory agency can be influenced by transcending global media phenomena such as digitalization and integration. Consequently policy initiatives are being formulated within the context of a media environment where technologies and applications are becoming increasingly converged and distinctions between formerly separate media forms are becoming muted.

2. Literature Review

There is relevant research base (Yoffie, 1997; Baldwin et. al., 1996; Noam, 2000, 2004b, Noam et. al., 2004; Bauer et. al 2003, 2005; Guillory, 2006; Shin, 2006a, 2006b) that addresses regulatory dimensions of the phenomenon. This literature review integrates studies that encompass two key analytical threads: case studies and comparative analyses that involve multimedia convergence in more than one country. The existing research base on the regulatory dimension of convergence is still in its formative stages and could be further developed in two respects.

The first respect is that even though the relevant literature addresses several aspects of the regulation of convergence only a relatively few studies adopt a critical stance. This paper builds on some of the few studies (Blackman, 1998; Garnham, 1996a, 1996b; Benkler, 1998; Frieden, 2002; Noll, 2002) that offer critical perspectives on regulatory approaches to the phenomenon. The second respect is that based on a variety of factors some of the relevant studies tend not to accord a priority to the role of theory within the context of discussing the regulatory dimension of convergence. This study contributes to the research base by deliberately linking convergence to the relevant theoretical frameworks.

The literature on media convergence offers various case studies. These case studies are singularly effective in raising a host of issues that are integral to this paper. For example the relevant case studies (Just and Latzer, 2000; Shelanski, 2002, Koski and Majumdar, 2000; Henten et. al, 2003) address technological, organizational market and regulatory dimensions of convergence via a multitude of approaches.

The regulatory dimension will be focused on here as it is the most relevant to addressed the research questions posed in this study. Garcia-Murillo and MacInnes (2001) and Shelanski (2002) through case
studies of the Federal Communication Commission (FCC) have recommended that the Commission should undergo significant reform in light of the convergence phenomenon. These case studies suggest that “rather than organizing the FCC into traditional industries such as common carrier, cable, and mass media, bureaus could be re-organized into functions such as oversight rates and spectrum allocation” which would cut across industries (Garcia-Murillo and MacInnes, 2001: 431).

On the international front there have been a few prominent case studies on regulatory agencies in developing countries (Gillwald, 2006), which raise important themes that face policymakers. Gillwald (2005) addresses the South African case specifically and argues in order to be successful in pursuing ambitious goals such as convergence, South Africa’s telecommunications markets “demand more from a regulator than simply meeting the threshold requirements of transparency and predictability via so-called international ‘best practice’ models. Such a limited approach will not be sufficient to meet the challenges” (p. 469). Instead she argues for a strategic regulation, which she posits is necessary to enable innovative service provision such as multimedia networks and to facilitate fair competitive markets that promote the viability of the new entrants needed to build the South Africa’s information infrastructure that would support convergence.

3. Theoretical Framework

In order to assess the significance of this paper’s central motivating research question it is important to briefly consider how the media has been regulated in the past. Pool (1983) has explored the regulation of various analog technologies and media. He argues that a convergence of modes is upsetting what was for a while a neatly trifurcated system. This suggests that regulators, sensing the disquieting effects of convergence, began to address the development of new digital technologies as they ventured into un-chartered territories. Consequently, in order to obtain meaningful insights it is important to understand the trajectory of the media sectors over time. Pool (1983) addresses “convergence between historically separated modes of communication” (p. 27). Specifically he explores links between the telegraph and the telephone, the telephone and the radio and print and electronics from a historical perspective going back to the early 20th century. This work has important implications for the more recent research on media convergence for a number of reasons even though in the end the media that he referred to never converged. For example, his discussion sheds light on the uneasy relationship between AT&T and RCA in the 1920s which had carved out separate but complementary domains but were exploring technologies that could integrate their networks.

Theory is useful in understanding the ramification of policy initiatives within the context of convergence among media sectors. Specifically I will be focusing on two relevant theoretical models from the relevant established research base that are analytically useful in situating policy implications of media convergence namely: technological determinism and social shaping theory. Technological determinism serves as an apt example of a theory which explains how technological innovations, such as integration and digitalization, have deep and profound policy and societal implications. According to Chandler (1995) technological determinism may be defined as a conceptual school of thought that seeks to explain social and historical phenomena in terms of one principal or determining factor, namely technology. It is a doctrine of historical or causal primacy. Stefaan G. Verhulst’s “About Scarcities and Intermediaries: the Regulatory Paradigm Shift of Digital Content Reviewed” is particularly emblematic of the relevance of technological determinism to the thinking on new technologies such as the convergence. His work has unique value in that he draws a distinction between “hard” and “soft” variations of technological determinism that are particularly relevant to the convergence issue. For example, hard or strong technological determinism posits “that a particular communication technology is either a sufficient condition or at least a necessary condition for determining social organization and development”. Consequently, technological development is perceived to be an autonomous force independent of social constraints. Alternatively, soft or weak determinism “claims that the presence of a particular communication technology is an enabling or facilitating factor leading to potential
opportunities which may or may not be taken up in particular societies or periods”. However, it is important to point out that Verhulst (2002) does not particularly subscribe to the technological determinist perspective and at times is critical of its assumptions. The implication for those who formulate policy initiatives in this area is that those legislators and regulators who have a more clear idea on the strength and direction of the relationship between their policy initiatives and technology and users will be more likely to draft effective initiatives that have their intended impacts. This policy outcome is less likely to happen if the initiatives blindly follow “hard” or “soft” extremes without heeding finer distinctions. This policy outcome is less likely to happen if the initiatives blindly follow “hard” or “soft” extremes without heeding finer distinctions.

Social shaping theory (SST) functions as a countervailing theoretical paradigm that offers an alternative perspective on how policy initiatives on convergence are socially constructed and framed. Studies of SST emerged in the 1980s through a critique of the prevailing “technological determinism” tradition, which limited its scope of inquiry to monitoring the social adjustments required by technological progress (Williams and Edge, 1996). From the outset, the theory was influenced “by a desire to democratize technological decision making (so as) to subject it to forms of social accountability and control” (Winner, 1977, 1985). Much of the research on technology policy within the SST paradigm (Garnham, 1996a; 1996b) highlights the role of the state in the regulation and promotion of specific innovations. For example, the analysis of technological convergence focuses on “how the wider social system can limit choice and technological change” (Williams and Edge, 1996). SST is framed on the assumption that technological change “is patterned by the conditions of its creation and use, rather than developing solely according to inner technical logic” (Williams and Edge, 1996: 91).

The scholarship (MacKenzie and Wajcman, 1985) (Bijker and Law, 1992) (Russell and Williams, 1988) thus far has focused on at least two key socio-economic factors that pertain to new communication technologies – the medium associated with the technology and the processes of innovation. The implication for framers of policy is that the formulation of the initiatives needs to be deliberate and conscious of a variety of variables aside from narrowly defined technological developments. In addition the policy makers cannot merely rely in technology before instituting initiatives but must be proactive in the way that these documents are drafted and implemented in order for the initiatives to be as relevant as possible.

Ultimately while technological determinism and social shaping theory are useful in addressing the research questions which will be subsequently discussed, it is important to clarify their applicability to the subject matter at hand. The theoretical frameworks are admittedly limited in scope in that they are intended to apply specifically to media convergence as drafted in the policy initiatives and not to broader outcomes or conceptual variables such as the respective countries’ political system of government or broad indicators of media infrastructure development. Including these factors would cause the problem of over determination, which makes it difficult to separate out and identify the key individual relationships among the critical variables. As an exploratory case study the primary objective here is to offer a treatment of the cases that is specific to the text provided in the respective high level policy initiatives.

4. Research Questions

The research questions are also framed within the context of a transition from dated model to a new regulatory paradigm. The old model was organized into discrete sectors including telecommunications, broadcasting and information systems / technology where separate regulatory agencies functioned as stand alone entities designed specifically for each sector and there were only weak and desultory links between the sectors designed for narrow or specific application or services on a piecemeal basis. Many nations including South Africa seem to be moving to a new model where one single regulatory agency not only co-exists with the pre-existing regulators but also has a role that subsumes telecommunications, broadcasting and information technology sectors. In this model there would be pervasive and systematic links between the sectors across multiple platforms, networks, services, players and applications on a systemic basis. The
three research questions are as follows:

- Has media convergence become a “guiding vision” in drafting South Africa’s policy initiatives?
- How is the notion of media convergence reflected in South Africa’s relevant policy initiative?
- What obstacles are visible in the relevant policy initiative that detract from media convergence?

5. Method

The relevant literature (Yin, 2003) has pointed out that there are a number of advantages and disadvantages to case studies as a method of intellectual inquiry. One often cited advantage is that this design allows for insights into policy texts that would not be possible with most quantitative survey and experimental methods. Nevertheless, a commonly referred to drawback of the method is that it lacks the measures for generalizability or external validity that accompany quantitative methods. Consequently the observations of policy initiatives in the South African model are not designed to be necessarily generalizable to or representative of a broader population, but have intrinsic value in their own right.

Policy analysis that focuses on case studies (Rist, 2000) provides an apt methodological basis that is useful in addressing this paper’s central motivating research question of whether South Africa has set an agenda to respond to the phenomenon of media convergence. In methodological terms, the main research data sources were obtained from primary policy documents within the context of a case study design. So the method falls under the rubric of an exploratory case study, but the technique primarily utilizes document analysis of primary texts. In order to establish the replicability of the procedures adopted in this research, two specific procedures are explicated here.

5.1. Selecting the Country Case Study

South Africa was selected as convenient choice for an exploratory study. Specifically the country was chosen based on three purposively designed criteria. One South African policy makers are tackling issues of cross sector entry, technological neutrality and regulatory oversight that transcend their country’s broadcast and telecommunications sectors. Two the nation has recently instituted policy a initiative that establishes a new regulatory agency (the ICASA) to oversee the telecommunications and broadcast sectors, which subsumes some of the administrative authority of the institutions that preceded it. Three South Africa serves as an example of a developing country that is experimenting with regulatory approaches to media convergence within the context of increasing digitalization and integration in their electronic mass media sectors.

5.2. Selecting the Policy Initiatives

There were a number of narrowly drafted or short range and more substantial or long range policy initiatives on media convergence within the South African case and consequently not every initiative could be selected for inclusion. The policy initiative included in this study was selected based on three specifically defined parameters. Moreover these parameters were specifically designed to yield a current policy initiative that has utility in answering the heretofore specified research questions. In terms of the first parameter the policy initiative has to be substantive or high – level in nature rather than a more minor memorandum and prospective policy position paper. The second parameter limits the scope of policy initiative to that which establishes an agency structure specifically to promote convergence. The third parameter is that the initiative should contain text relevant to either digitalization or integration or ideally both. In the South African case the only initiative that meets all three parameters is the Independent Communications Authority of South Africa (ICASA) Act.

5.3. Two Procedures to Establish Replicability

In order to establish a methodology with a sound measure of objectivity, it is necessary to demonstrate specific methodological steps or procedures that are replicable. This is because it is important to clearly
“articulate what the procedures are so that others can repeat the research if they so choose” to and have a reliable methodical and systematic primer with which to do so (Berg, 2001, p. 232). Two specific procedures are operationalized here. The first entails a rudimentary form of a content analysis that involves counting specific terms that appear in the relevant policy initiative in the South African case. While this is a useful technique it is important to point out a key limitation of this approach. Specifically the absence of terms affiliated with media convergence may or may not reflect the importance or the lack thereof that the respective document accord to the phenomenon of convergence. Consequently a second procedure has been added which rather than counting specific words in the respective policy initiatives offers a more substantive policy analysis or interpretation of the relevant policy initiatives in South Africa.

- **5.3.1. Frequency Count Procedure:** The modified content analysis or more specifically the frequency count procedure involves a word search for the term “convergence” performed using the find function of a word processor on the scanned documents. Please see the accompanying Table for a synopsis of this data. The rationale for this modified content analysis procedure is based on the assumption that the relative quantities of the number of references to convergence allows for insight on the importance or significance that the ICASA Act attributes to the phenomenon.

- **5.3.2. Policy Issues Analysis:** There are three principle dimensions that apply to the convergence issue and play a pivotal role in driving the debate over international telecommunications policy that transcends a diversity of countries including South Africa. These dimensions include: cross sector entry; technology neutrality; competitive neutrality; the role of regulatory agencies. Each of these dimensions, which are explicated in the accompanying Appendix, may be supported by a wealth of evidence from the ICASA Act. This evidence could include specific or explicit text such as the issuance of tangible rights, licenses or precise rules from the policy initiatives along each of the four dimensions which would have implications for media convergence. The presence or absence of this direct evidence would establish the basis for responding to the issues raised in the Appendix with either a “yes” or “no”. The evidence would also be reflected in chapter headings or section titles form the respective policy initiatives which may not contain specific evidence on a dimension that would adequately respond to the issues raised in the Appendix one way or another. Consequently there may be evidence which may be presented in the form of implication, rather than explicit text, which will also be noted with a “yes” or “no”.

With respect to cross sector entry it is necessary to explore provisions in the initiative which grants exclusive general communications or multimedia service provision rights across sectors such as telecommunications, broadcasting and information technology. In addition it is useful to ascertain whether service providers from any particular sector receive preferential access to these multimedia licenses compared to service providers from another sector. Technology neutrality involves a legal and regulatory framework that treats technologies or services on the same basis regardless of the platform (e.g. wireless, wireline, cable, dsl and satellite) that they provided on. Here direct or indirect textual evidence could manifest in either sector specific or general communication or multimedia licenses that let service providers offer services across platforms. In terms of the role of the regulatory authority relevant direct or indirect evidence might manifest in the form of text that accords the regulator specific powers or authority to proactively intervene on the convergence issue which bind service providers and platform operators.

6. South African Case

- **Introduction to South African Policy Initiatives:** In the South African case policy formulation, regulation, and operations fell under the auspices of the Postal and Telecommunications Services Department which were later moved to the Post-Master General (PMG) under the Ministry of Posts and Telecommunications. The separation between the post and telecommunications responsibilities did not
happen until 1999 when Telekom, the state telecommunications operator, was corporatized and put under the supervision of the PMG and the Minister, which determined tariffs and fees. Soon after the operator was separated from the policy and regulatory functions, the government sold 30% of the company and still retains 70 per cent ownership.

The Independent Broadcasting Authority (IBA) Act of 1993 and the Broadcasting Act of 1999 regulated the radio and television industries. The 1993 law created the IBA and constitutionally protected the new regulator’s independence, in contrast with SATRA. The primary functions of the IBA were to issue licenses for the provision of radio and television broadcasting services as well as the supervision of content. In its efforts to foster participation of the black population, licensing requirements included a percentage of black ownership. The IBA regulated the South Africa Broadcasting Corporation, the public radio station. At the time South Africa decided to merge the functions of the SATRA and of the IBA the government had not yet opened its market to other competitors. The new agency, called the Independent Communications Authority of South Africa (ICASA), was created in 2000. The license of the second fixed line operator nonetheless did not happen until 2002. Surprisingly, in spite of the late privatization and liberalization in South Africa, convergence was beginning to happen as well but it has taken place primarily in the broadcasting industry. In the telecommunications market there was only one fixed line telecommunications operator and two mobile operators. The license for the third cellular operator was in the process of being granted at the same time that the merger of SATRA and IBA was happening.

The merger of the two regulatory bodies had been planned since 1997. At that time there was great controversy because the IBA had greater independence than SATRA. The South African Constitution contains provisions that call for the broadcasting authority to be free from political influence. The new regulatory body would thus enjoy the same independence. The actual merger of the two organizations did not happen until 2000. The law that brings together these two organizations is the Independent Communications Authority of South Africa (ICASA) Act, which does not abolish the Telecommunications or Broadcasting Acts. However the Telecommunications Act of 1996, which called for the establishment of an independent regulatory authority called the South Africa Telecommunications Authority (SATRA), made provision for the Ministry of Communication to intervene in legislative and regulatory processes in order to fulfill the short-term objective of making the incumbent attractive for investment. The law had important social objectives that aimed at increasing the extent of the network to allow access to the traditionally disadvantaged black settlements.

- **General Dimension: Cross Sector Entry**: In order to ascertain whether there was any direct or indirect evidence in the relevant South African policy initiative that is designed to promote convergence concerning cross sector entry issues it is important to address whether the policy initiative contains text on the issuance of general communication or multimedia licenses that would have implications for service provision that transcends sector boundaries as well as the issue of whether these policy initiatives contain explicit text that privileges or limits access to general communication or multimedia licenses to firms from specific sectors. The Independent Communications Authority of South Africa Act of 2000, does not contain any direct or indirect evidence that makes any mention of multimedia or media specific licenses or service provision rights in terms of cross sector entry or otherwise or that limits or privileges access. Rather the document is drafted for the primary purpose of specifying organizational and administrative roles for employees of the new agency.

- **General Dimension: Technology Neutrality**: In order to explore whether there was any direct or indirect evidence in the relevant South African policy initiative concerning technology neutrality issues it is important to address whether the policy initiative contains text on the issuance of either sector specific or general communication / multimedia licenses that let firms offer services across platforms. The Independent Communications Authority of South Africa Act of 2000, does not contain direct or indirect evidence that makes any mention of multimedia or media specific licenses or service provision rights in terms of multiple platform issues or otherwise.
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- **General Dimension: Role of Media Regulators:** This dimension provides sense of whether the ICASA Act contains direct or indirect evidence that accords it with concrete articles of power or authority, aside from licenses, to oversee service provision from firms that are based in multiple media sectors or from firms that provide service in a range of media forms including voice, video, data and audio. This is based on the hypothesis that since the ICASA was established with the mandate to promote convergence among media sectors the Act would give the regulator a substantial role to intervene in the sectors to pursue convergence. However the Independent Communications Authority of South Africa Act of 2000 does not contain direct or indirect evidence that endows any regulatory authority with concrete articles of power to oversee services based in more than one sector or that provide a range of media forms. Even though the Act was largely established with the mandate to oversee the transition toward media convergence between the broadcast and telecommunication sectors the initiative’s lack of direct or indirect evidence is due to its focus on administrative, personnel and organizational issues and consequently little if anything is said that is relevant to service provision concerns.

7. Findings

In terms of this paper’s findings, a number of conclusions were raised in response to the research questions.

**Research Question 1**

The first of the four research questions posed earlier in this paper asked: Has media convergence become a “guiding vision” for South Africa in drafting policy initiatives. The drafting of this Act was influenced by real world phenomena and in particular integration and digitalization. Consequently these technology affiliated forces have been conducive in forging a “guiding vision” for South African policy makers. While integration and digitalization of media forms play a profound part in framing media convergence policy, this is not to assume that these two technological forces have been solely responsible for directly determining the drafting of the policy initiatives or that the policy initiatives played a direct causal role in shaping the prevalence and proliferation of the technology. Rather these technological developments are phenomena that permeate today’s media environment and policy initiatives inevitably must be cognizant of these technological developments in order to formulate initiatives that are practical and have grounded applications.

**Research Question 2**

The second main research question poses the query: how is the notion of media convergence reflected in policy initiatives in South Africa, particularly in terms of regulatory approaches that embody either technological determinism or social shaping theory? To answer this general research question, the paucity of direct or indirect evidence from the ICASA Act, which is reflected in the preceding “Case Evidence” section tends to suggest that the regulatory approaches in the South African case embodies social shaping theory more than technological determinism. However the evidence from the Act does not offer a definitive answer. In response to the more specific questions, RQ 2A and RQ 2B, it is useful to consult the Appendix. For the ICASA Act listed in the Appendix there were a total of 8 responses to the questions posed on the three dimensions. None of the 8 responses suggested that direct or indirect evidence of policy instruments or mechanisms were being used on behalf of media convergence. A reading of 0 positive responses out of a total of 8 would suggest an answer of no to research question 2A and due to an absence of specific evidence in the policy initiatives an answer of yes to research question 2B.

**Research Question 3**

The third research question asked: what are the possible obstacles in the policy initiatives that detract from media convergence? As the “Case Evidence” section reflects there are at least two main regulatory obstacles to pursuing convergence that pervade the South African case. The first is that the ICASA Act lacks multimedia or general communication licenses, which can potentially play an influential role in fomenting
media convergence, particularly along the cross sector entry dimension. The second is that the ICASA does not endow the new regulator with substantial or concrete authority on behalf of convergence.

**Findings on the Frequency Count Procedure**

In the South African case the ICASA Act mentions the word convergence once. Moreover this Act has a frequency count as follows: “broadcast” - 19, “telecommunication” – 17; “information technology” – 0; “voice” – 0; “video” – 0; “data” – 0; “multimedia” – 0. Admittedly the frequencies do not provide conclusive evidence of the importance accorded to convergence. Rather these frequencies provides a partial, albeit useful, picture and a descriptive relative assessment.

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2 While there is no universally recognized scale or metric to assess the precise measurement or implications of a reading of 16 positive responses out of a total of 84 responses, it is important to consider this data in proportionate terms.
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About the Author

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The Development of E-government within the Context of the European Union: A Comparative Study

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ABSTRACT

The current study discusses the issue of e-government and its evolutionary course into the new age of information technology and Internet. It is attempted to gather and manage all scattered knowledge in a rational way and into a single context that focuses on the fields of information technology and administrative science. All concepts, data and empirical results have been taken from Greek and international bibliography, articles, other printed or electronic resources, as well as from regulations, circulars and ministerial decrees.

Keywords: E-government Economics, electronic Services, Information and Communication Technologies, E-Income Services, E-government adoption

1. Introduction

The development of telecommunications and the evolution of the Internet create a new society with high expectations and demands for all citizens. On the other hand, the state realizes that the adoption of digital technology can resolve important administrative problems and help re-determine the relationships among citizens or businesses. At the same time, the development of “information highways”, the extension of networks and the information revolution improve productivity and simplify bureaucratic procedures.

E-government constitutes the tool to achieve new modernized relationships between the state and all citizens, and to arrange all issues and procedures in the field of communication among public services, authorities and organisations. These can be achieved by focusing on the issues of interconnection and dysfunction of information systems in the public sector, aiming at the provision of faster, less expensive, transparent and safer client services of improved quality. The digitization of a vast amount of information held by central, regional and local authorities makes it possible to provide more efficient and rational administration services.

2. The Concept of E-government

The term “E-government” determines the trend to constantly improve public administration and the provision of services, with the contribution of Internet technology and contemporary communication means. It makes use of the capabilities of modern technology for the creation of systems and applications to access...
E-government represents the development of governing and the bidirectional relationship with other authorities, as well as the use of information technology, digital means and telecommunications. It signals the course towards the provision of government services through the Internet and the reinforcement of transparency and efficiency of public administration activities, with the aim to become recognized and accepted by citizens. E-government determines a new concept for public services to serve citizens and businesses, since it eliminates the need for customers to be physically present in the local authorities. The e-government cycle involves, among others, the following:

- **Electronic registrations** to public records (e.g. birth, marriage records, etc.), as well as corporate databases (such as pensioning records).
- **Electronic completion** and submission of applications by citizens or businesses, in addition to their electronic processing by the public sector (e.g. issuing of certificates, monthly VAT declaration).
- **Electronic transactions** (e.g. submission and settlement of tax returns) and financial dealings (e.g. tax payment) with the public sector and local authorities.
- **Support of social security services**, health and welfare services (e.g. purchase of social security stamps, patient history) by creating personal electronic records.
- **Electronic tenders** for the provision of supplies in less time and with increased transparency and reliability in the relationship between the state and the involved businesses.

E-government programmes vary in the sense that they reflect different national priorities, administrative structures, resources and technical capabilities. In general terms, however, all countries that apply e-government programmes use the term “e-government” to reflect the following (Makrymanolakis, N., 2002): (a) a “main portal” with multiple channels for providing electronic services to citizens and businesses instead of a plain website for each authority. (b) The development, modernization and efficiency of public administration through the interoperability of the systems, and (c) the self-service option for users, since it is possible for them to act alone bypassing any time-consuming and bureaucratic procedures through digital practices and electronic processes.

A basic element for the implementation of e-governing is the existence of a main strategy incorporating specific targets, time charts and mode of release into the various services, ministries and other authorities. In reality, however, the designing of a main strategy for the successful implementation of e-governing presupposes and requires mainly (Makrymanolakis, N., 2002), the following:

- A transition from a public-centered towards a client-centered attitude, without this change taking place at the expense of public sector employees.
- A brand new planning of procedures in order for the requirements of the new services to be included.
- Changes in the organisation scheme of public sector employees with emphasis on the electronic communication channels and internal automatization.
- Changes in the legal status in order to legalize the new practices (such as Internet mail, Internet signatures, etc.) and make them of equal value to traditional ones.
- Cooperation among the various public authorities on the creation of a virtual e-government.

E-government, if it meets the above requirements, may add a new vision in the relationship between governors and citizens. The public sector needs to adopt this new client-centered attitude, i.e. to provide its services based on the expectations and demands of the citizens and businesses.

### 3. Information Technology Architectures in E-governing

The first step towards the completion of e-government is to create an “e-government portal”. This electronic portal constitutes the main tool and access point for citizens and businesses to all e-government services, as
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well as the organizing services for “digital relationships” with the management. An “e-portal” is capable of reducing costs and limiting the time needed to complete a certain procedure. At the same time, it acts as an interconnection node to the electronic services offered by each Internet channel.

An e-portal is the main component of electronic architecture in public administration and is more developed than a number of Internet websites. From a single communication point, citizens have access to information, transactions and electronic communities offering the opportunity to exchange thoughts and worries.

The next step is the completion of the technological infrastructure. The corporate models of e-governing require the existence of fairly powerful standards, in order to achieve the smooth operation of servers, telecommunication and information networks, and databases. In order for the full supporting and successful operation of e-government programmes, the development of intranets and extranets and the evolutionary technological course of the Internet are certain to provide:

- **Speed**: It is estimated that the bandwidth will increase at least by 150 times. Video quality will improve accordingly resulting even in the replacement of Internet mail (e-mail).
- **Permanent connection**: Dial-up connections used are anticipated to be replaced with ISDN (Integrated Services Digital Network), DSL (Digital Subscriber Line) technologies and their successors. Soon it will be possible to stay permanently connected to the Internet through a computer, a cell phone or a TV set.
- **Accessibility**: Electronic centres will be created, where users will be able to search for information on the Internet.
- **User-friendliness**: The new Internet generation will not require particular technical knowledge on the part of users, thus enabling use and operability.
- **Intelligence**: Concepts such as structure, personalization, accuracy in retrieving information, and knowledge management will become real with the aid of new “intelligent” technologies.
- **Security**: The security of personal and copyrighted data will be protected due to the development of new applications enabling secured access of services and information.

Today information technology offers the possibility to communicate effectively at all levels and to save all electronic information of accumulated knowledge. The use of Internet mail and of document image processing, data workflow and document management systems optimizes procedures and encourages the development of e-government portals.

By studying e-government website portals (table 1), one may distinguish the following factors of success (Kramer, M. 2000):

At a further stage, choosing the software solutions that ensure operability, performance, aesthetics, innovation and security of the e-government programme supporting applications requires that: firstly, they have been developed based on open standards (open-architecture system), i.e. based on generally accepted standards that ensure maximum cooperation with other software and supporting applications. Secondly, the system must be designed to serve citizen, business and public service employee needs and must not constitute a customized copy of already existing software designed for a different use.

The last e-government stage is the capability of the portal to connect to third-party information systems (authorities, organisations or corporate), and mainly ERP (Enterprise Resource Planning) or other standard systems. Further towards the direction of integration, the use of other systems has also started to grow, such as CRM (Customer Relationship Management) (Pride-Ferrell, M. 2000), Knowledge Management, Data Warehouse systems, as well as intelligent systems for information downloads (Neural Networks, Data Mining).

4. Interoperability and Security in E-governing

Interoperability (Lygerakis, G. and Stergiou, M. 2002), refers to the ability of the systems to provide and receive services from other systems and to use them in the following ways: (a) to use existing technology and
Table 1: Factors for building a successful e-government portal

<table>
<thead>
<tr>
<th>Operability</th>
<th>Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Easy use - navigation,</td>
<td>Alternative speeds of the World</td>
</tr>
<tr>
<td>Emphasis on facilitating-serving</td>
<td>Wide Web,</td>
</tr>
<tr>
<td>clients,</td>
<td>Capability to accommodate</td>
</tr>
<tr>
<td>Provision of multiple options.</td>
<td>increased workloads.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Aesthetics</th>
<th>Innovation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attractive result in terms of</td>
<td>Integrated innovation services.</td>
</tr>
<tr>
<td>website aesthetics.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Security</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Web security,</td>
<td></td>
</tr>
<tr>
<td>Payment security issues,</td>
<td></td>
</tr>
<tr>
<td>Privacy issues.</td>
<td></td>
</tr>
</tbody>
</table>

system infrastructure, and (b) to exchange important information with heterogeneous systems and applications, ensuring communication, and (c) to develop integrated public services.

The aim of interoperability is to facilitate e-government implementation on the part of the public sector. The implementation of e-governing allows for a connected, compatible and homogeneous flow of information, complying with common standards on the connection and communication among public sector information systems. An important initiative for the successful completion of an e-government application is the development of XML standards (XML Working Group), which can resolve interoperability and data sharing problems between different organisations. Attention must be paid to the concept of “compatibility” between applications and the e-government information software, in order to provide customers with improved access to integrated services. This fact ensures the following:

- Alignment, acceptance and application of standards used on the World Wide Web (www).
- Adoption and application of XML (eXtensible Markup Language), as the primary standard for the incorporation, flow and integration of data and presentation tools.
- Adoption of a “Web Browser” in order to connect to public sector information systems and its use as the main tool to access e-government services.
- Addition of “Metadata” in all available governmental information, ensuring that they are described and expressed using common definitions.
- Demand for commitments when it comes to abiding by the interoperability context in the public sector.

The basic human right for the protection of one’s private affairs constitutes the Achilles heel of electronic transactions and undergoes constant impingements by modern technological developments, as personal data are being gathered at an international level. The e-government user wishes for any personal data to remain secure and needs to be assured that they will not be accessed by non-authorized parties.

European Union Directive 95/46 constitutes an important development in the protection of personal data and their distribution. This Directive attempts to compromise the protection of human beings from unlawful processing of their personal data, the exercising of their rights and the possibility to use information technology in a way that is protected by the law and is even favored in certain cases.

On the other hand, we are running through a period when printed documentation has in many cases been replaced by electronic entries. In order, however, for an electronic entry to become accepted as part of an electronic transaction, it is required that its authenticity is validated, which in turn presupposes that the person from which it has originated has provided a signature. It must be clarified though that we are referring to digital signatures, i.e. an information encryption method that may guarantee that the content is authentic and unaltered. This process provides the security that is required in information trafficking and constitutes...
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a fundamental element in the secured operation of electronic transactions and in the protection of e-government users’ personal data.

5. E-government in Greece

Public financial services apply e-governing and cover several dealing categories of tax affairs. The European Union, after evaluating all offered electronic services, has granted the Ministry of Economy TAXISnet web pages with the right to use the “E-government Good Practice” label. However, this is not the case with other services, such as driving licenses, vehicle registration, submission of declarations to the police department, etc., for which only basic services are available or such services are not offered electronically.

According to the Hellenic Republic Ministry of Development, the rate of increase in the number of users is expected to exceed 60% for the current year against 33% of the previous year. Yet, Internet use still remains at low levels compared to the average use in the EU (Figure 1). For example:

Demographic evidence of Internet users (based on study elements) are of particular interest: Internet users, to their vast majority, belong to the age group of 18-24, are of high educative level, are highly paid and live mainly in the cities. Most of these users are male and connect to the Internet from home or from work.

Currently Greece, within the context of the “Information Society” programme, has adopted four levels set by “e-Europe” to determine the level of automatization in offered on-line services within EU member states. More specifically (Cap Gemini – Ernest & Young, 2002): (a) information, (b) interaction, (c) two-ways interaction, and (d) transaction.

Information involves web pages that offer purely informational and news content on governmental activities. It is provided through a number of websites created by public services, ministries, authorities and other organizations, and constitutes the simplest type of e-government process, in terms of information technology and technological infrastructure.

Within a more integrated context, information services are offered through the Citizen’s Guide web pages (www.polites.gr) and through the e-Government guide pages (www.e-gov.gr), which operate as a reference
In terms of information, Internet will enhanced by the addition of the “Ariadne” project web pages (www.polites.gr). The project is implemented by The Ministry of the Interior, Public Administration and Decentralization, involves prefecture and local authority services and aims at the decentralization of public services. The “Ariadne” project is literally the unification of scattered websites that exist in each ministry or public authority. Along with the network, an electronic service center will also exist for citizens to help them with their transactions and limit bureaucratic procedures.

Interaction involves all communication websites by government authorities that provide users with the option to print various forms (e.g. applications, certifications, etc.) or to download electronic documents. Interaction comes next in terms of simplicity of informational and technological requirements and is offered by several public services, ministries and organizations, such as: The Hellenic Ministry of Transport and Communications (www.yme.gr), the Ministry of Macedonia and Thrace (www.mathra.gr), the Hellenic Capital Market Commission (www.hcmc.gr), the Social Security Organization for the Self-employed (www.tebe.gr), the Greek Manpower Employment Organization (www.oaed.gr), the National Organization for Medicines (www.eof.gr), the Athens Chamber of Small and Medium Sized Industries (www.acsmi.gr), the Piraeus Chamber of Handicrafts (www.bep.gr), and Ktimatologio S.A. (www.ktimatologio.gr).

Two-ways interaction involves interactive web pages of public authorities and services that allow for completion, registration and direct sending of applications. This category also includes websites that apply user identification methods before initiating any electronic process. This is a more complex electronic procedure in terms of informatics and technological requirements, and in Greece it is only available in a limited number of public authorities and services, such as: The Hellenic Ministry for the Environment, Physical Planning and Public Works (www.minenv.gr), the Thessaloniki Chamber of Small and Medium Sized Industries (www.veth.gr), the Athens Chamber of Tradesmen (www.eea.gr) and the National Confederation of Hellenic Commerce (www.ese.gr). Moreover, the Ministry of Aegean has launched the “Asterias” project (www.ypai.gr/asterias/default.htm), which aims at connecting the islands with prefectures authorities, where the completion and direct sending of digital applications is possible without physical presence being necessary.

Transaction involves websites that offer users the option to carry out complete electronic transactions with a public service or organization. It constitutes the most complex electronic procedure that exists in terms of informatics and technological infrastructure while, at the same time, it requires user identification in order to secure involved personal data. Electronic transactions between public services and citizens or businesses are made possible by the following authorities: (a) the Ministry of Economy (www.taxisnet.gr), (b) the Social Insurance Institute (www.ika.gr), that provides the option to electronically submit employer information and detailed periodic statements, and (c) the Hellenic Foreign Trade Board (www.hepo.gr), involving the provision of information regarding insurance in all business export stages (transport insurance, storage insurance, etc). It would also be interesting to look into an initiative launched by the National Printing Office (www.et.gr) regarding a system for reproducing Government Newspaper (FEK) issues in CD-ROM version, as well as their electronic distribution. Also note the presence of an independent authority, the Greek Ombudsman (www.synigoros.gr), which offers citizens free services on resolving disputes with public authorities.

Finally, “www.e-gov.gr” is a portal that has been created by the e-Government Laboratory of the Faculty of Informatics and Telecommunications, National & Kapodistrian University of Athens, and gives e-government resources. The aim of the above portal is to inform citizens, businesses, public administration officers and local authorities of all projects and results of e-governing services, as well as to inform researchers of best practices and results. The above-mentioned are examined from the end user’s point of view, also
counting for all technological parameters relevant to our target, and using the following motto: “On-line with citizens, off-line with bureaucracy”.

6. E-governing in the European Union

The “Information Society” programme for eliminating bureaucracy and Europe’s development boom are mostly based on the use of Internet capabilities and on the growth of e-governing. A goal has been set in Lisbon: “…to make Europe the most competitive and dynamic economy of knowledge…” within the next ten years. It should therefore achieve the following:

- Modern e-public, e-government, e-learning and e-health services,
- A dynamic environment to accommodate e-commerce,
- Extensive bandwidth at low costs, and
- Secure information technology infrastructure

For the development, spread and utilization of e-government, the “e-Europe” business plan has been established. This plan is supported by a series of other community programmes, such as: (a) the “e-content” digital content development programme. (b) the “Interchange of Data between Administrations (IDA)”, data exchange programme, which allows for the use of telematics for the interconnection of public administration authorities at a European level. It also supports the interoperability of “back-office” procedures, the standardization of offered services and the foundation of a multilingual portal for providing information to citizens and businesses. (c) the “Information Society Technologies (IST)” e-governing service that allows for the financing of research initiatives and relevant projects.

The definition of an information system interoperability framework in the public sector constitutes a top priority within the EU, and measures are taken to ensure interoperability and access to inter-European networks to allow electronic data exchange among member states. Thus member states promote e-governing, that is the use of technology to serve their citizens and businesses faster and more effectively.

The two following graphs show Internet penetration rates for EU member state citizens, as well as the rates of web page hits for websites relating to e-governing (Figures 2,3):

The number of member states that have launched e-government programmes as a means of promoting public services and providing efficient public administration is constantly growing. Differences between e-governing programmes among the various member states depend on factors related to the familiarity of citizens to computers and the emphasis paid by governing authorities to citizen or business trends and initiatives (Table 2).

After this descriptive analysis of the European framework regarding the implementation of e-governing, an overview follows for certain member states that have distinguished in this role.

Britain’s target has been to offer all services through the Internet. The e-government programme includes access to 200 organizations and central public administration services, as well as to 482 local authorities. The organization for access to the above has been made through the central portal www.ukonline.gov.uk, which has been designed to support over 5 billions of communications and transactions per year (tax returns applications, agricultural subsidies, etc). This portal basically acts as a source of information on all subjects. Its main priorities were: (a) quality of offered services, (b) direct response to client requests (citizens, businesses, authorities), and (c) designing of the system based on client needs (customer-focused) and not according to governmental structures and procedures (process-led).

Britain has created a database incorporating descriptions for all projects and involved officers. This database allows for the use of existing human resources in future projects. Furthermore, funds have been committed for the dynamic development of e-government. A positive element has been the increased penetration of citizens to the Internet. According to statistics, 38% of households have Internet access and
51% of adults have used the Internet at least once in the past. Yet, the number of websites offering integrated services and transactions is still limited. Out of 73 services participating in e-government, 51 are of informative nature, 18 offer bidirectional communication and just 4 offer integrated electronic transactions.

The “e-government Interoperability Framework (e-GIF)” programme uses XML as the main standard for the unification of information within the context of interaction among ministries, the public sector, foreign governments, businesses and citizens. The “e-GovTalk” initiative is continuously in contact with IT companies.
Table 2: Rate of e-governing implementation in the EU

<table>
<thead>
<tr>
<th>Country</th>
<th>April 2002</th>
<th>October 2001</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ireland</td>
<td>85%</td>
<td>68%</td>
</tr>
<tr>
<td>Sweden</td>
<td>81%</td>
<td>61%</td>
</tr>
<tr>
<td>Finland</td>
<td>70%</td>
<td>66%</td>
</tr>
<tr>
<td>Denmark</td>
<td>69%</td>
<td>59%</td>
</tr>
<tr>
<td>Norway</td>
<td>63%</td>
<td>63%</td>
</tr>
<tr>
<td>Great Britain</td>
<td>63%</td>
<td>50%</td>
</tr>
<tr>
<td>France</td>
<td>61%</td>
<td>49%</td>
</tr>
<tr>
<td>Spain</td>
<td>58%</td>
<td>50%</td>
</tr>
<tr>
<td>Portugal</td>
<td>56%</td>
<td>51%</td>
</tr>
<tr>
<td>Greece</td>
<td>54%</td>
<td>39%</td>
</tr>
<tr>
<td>Italy</td>
<td>51%</td>
<td>39%</td>
</tr>
<tr>
<td>Iceland</td>
<td>50%</td>
<td>38%</td>
</tr>
<tr>
<td>Austria</td>
<td>49%</td>
<td>40%</td>
</tr>
<tr>
<td>Germany</td>
<td>46%</td>
<td>40%</td>
</tr>
<tr>
<td>Belgium</td>
<td>43%</td>
<td>23%</td>
</tr>
<tr>
<td>Netherlands</td>
<td>42%</td>
<td>37%</td>
</tr>
<tr>
<td>Switzerland</td>
<td>35%</td>
<td>---</td>
</tr>
<tr>
<td>Luxemburg</td>
<td>22%</td>
<td>15%</td>
</tr>
</tbody>
</table>

Source: Cap Gemini- Ernst & Young, 2002

to ensure the adoption of widely accepted standards. A project named “U.K.GovTalk Group” makes it possible to increase interoperability among public sector departments while it also monitors international updates on XML. Furthermore, the “e-Government Gateway” initiative (www.gateway.gov.uk) attempts to develop a pilot programme with the name “Intelligent forms”, which replaces traditional application forms with electronic forms in order to provide a bidirectional relationship in daily transactions.

The German government has prepared for future times by launching the “Bund-On-Line” programme (www.bund.de), which unifies over 100 public authorities and offers more than 350 services on-line. The programme aims at providing full support of governmental services and a more direct contact scheme for all citizens. It provides a number of services offered by competent institutions, administrative authorities and other public services. Also, it gives visitors the opportunity to examine government and public services structure in depth. The programme offers the possibility to carry out direct transactions on a variety of matters, while one of its most special characteristics is the job search option.

Other important “e-government” portals are:

- The portal of Germany’s Federal President (http://www.bundespraesident.de) with his resume and access to his schedule of speeches and activities. It is also suggested to make a virtual tour in “Bellevue Palace” (the President’s official residence in Berlin) and in “Villa Hammerschmidt” (the President’s official residence in Bonn). (Information is available in German, English, French and Spanish).

- The portal of the Federal Government (http://www.bundesregierung.de) that gives information on the country (history, population, economy, etc.) and the various policies practiced by the Government. A particular column is dedicated to European affairs, while a section is devoted to media representatives. Moreover, the portal also includes the Government’s work schedule. It also provides links to the websites of the Chancellor and several ministries websites, thus constituting an integrated portal for the whole government. (Information is available in German, English, French and Spanish.)
The Federal Chancellor’s portal (http://www.bundeskanzler.de) allowing for a better understanding of Chancellery within the German institutional mechanism. There also information on the Chancellor and all the highlights of her political actions. (Information is available in German, English, French and Spanish).

Finally the portal of the Federal Foreign Office (http://www.auswaertiges-amt.de) offering all press releases and public interventions of the Minister. The main guidelines of Germany’s foreign policy are explained and there is also a particular section on Europe. Practical information is also provided for citizens wishing to travel or relocate to other countries.

The Danish Government has established an IT council, in which government officials discuss operational issues involving the use of information technologies. The Council assigns the development of information systems to private suppliers, based on the following: (a) competition among suppliers cuts down prices on system development, (b) private suppliers are more innovative and employ more specialized staff, (c) the public sector must not produce what may be obtained by the private sector, and (d) the public sector needs to focus on its main operational affairs (which do not include system development).

The “Danmark.dk” website (http://www.danmark.dk) is the portal to all public services in the country. This successful portal is due to “Kontapunkt”, a company of advanced electronic technology and know-how which, together with the competent public authorities, provides the content for this portal. The portal has also created associates, such as: the “Ritzau Agency” that provides the news and the “Gyldendal Encyclopaedia” that provides material on the country and culture.

The aim of the above portal is to diffuse information to citizens and those who wish to deal with the country’s public authorities (custom’s, financial services, etc). The portal is designed for citizens, business people, journalists and reporters, public officers, students, children, teachers, visitors, exporters, etc. Access to information is carried out through navigation by subject, an alphabetical index and a search engine. For example, the column “News” informs of current normative regulations that have come into force. The portal offers information on all required daily life activities and actions and when a subject is not covered, the corresponding links are given to search the information. Competent authorities contact information and web page links are also included.

The portal is managed by the country’s Ministry of Foreign Affairs and the National IT and Telecom Agency. It has been designed using Portal 9iAS Oracle platform solution and it is shortly expected to develop a fully customized information environment by using CRM technology (Citizen Relationship Management). The “Danmark.dk” website offers its information and services in Danish, English, Spanish and German.

Other important e-government portals are:

- The Royal House portal (http://www.kongehuset.dk), which includes information on the history of monarchy, a presentation of the Palace, the Queen’s activities schedule and House press releases.
- The Prime Minister’s portal (http://www.stm.dk) providing links to the ministries. It includes information on the Prime Minister, relevant news, speeches and his work schedule.
- The portal of the Ministry of Foreign Affairs (http://www.um.dk) offering a detailed presentation of the country. Moreover, the main political issues are analyzed and there is a special column dedicated to the European Union. The website also informs of the Ministry’s organizational structure, its press releases and the addresses of diplomatic delegates in foreign countries.

In Sweden, the “SverigeDirekt” programme (www.sverigedirekt.se) constitutes a portal to the public sector, state services and local authorities. It is addressed to all citizens and offers practical information on daily life affairs and relationships with the State. Access to information is achieved through navigation by subject, an alphabetical index and a search engine. The portal is based on the SHS standard, developed by
the Country’s management and development office in cooperation with the tax office and the security agency. It constitutes an infrastructure on the information exchange between citizens and businesses, and the State.

The main principles ruling the portal are security, interaction and exchange of information with the public sector. By looking more closely into the case and experience of Sweden on e-governing, we run into a number of additional portals providing information and offering on-line services, such as the following:

- The portal of Monarchy (www.sverigeDirekt.se), which explains the role of the King and offers historical data of the institution and an outline of its internal function.
- The government’s portal (http://www.regeringen.se), offering a short presentation of its members (resumes, public interventions, work schedules, etc.). It is supplemented by links to the various ministries, thus constituting a complete portal. The Press and Information sections allow visitors to access all press releases and, at the same time, it provides a legislative database and an alphabetical list of subjects with links leading to competent authority websites.
- The Ministry for Foreign Affairs portal (http://www.ud.se), offering a presentation of the Ministry and contact information of its delegations. The main issues of foreign policy are also analyzed in relation to the Nordic Cooperation, the United Nations and the European Union. The portal also offers a database that allows visitors to search for specific press releases, articles and publications on the above issues.

Finally, the “Kista Portal” should be mentioned, which is one of the oldest municipal portals in Sweden. It is a point of communication for people that live and work within the district of Kista and an access point to integrated and modern services (e.g. on-line traffic surveillance cameras).

7. Concluding remarks

The continuous changes in the international environment, mainly those relating to the terms and conditions of Internet maturation, make it necessary to monitor and examine e-governing through modern bibliography and articles. The above is attributed to the broadness and importance that has been gradually paid to e-government due the Internet’s developing course. This fact has resulted in a great number of scientific fields (informatics, technology, economy and management, politics, sociology, medicine) to become engaged in this subject and create varied knowledge.

The aim of implementing e-government programmes is to improve the quality of offered public services on the part of the government. Quality is measured by specific indices, such as less time needed for carrying out certain procedures and the improvement of customer service.

After a series of visits to the e-government websites of four member states, and having seen the published minutes of the “E-Government Working Group” meetings and after having processed all data and results emerging from recent studies on e-government, it has been attempted to study their performances. The following conclusions have been reached:

Britain and France have relatively high percentages of unavailability for a number of on-line services (35% and 40% respectively) in comparison with Greece that comes next with 25%.

Denmark has the highest percentage (35%) of integrated transactions that reflects a high level of electronic technology and know-how organization. Along with Greece, they offer information and news services at a percentage of 35%.

Sweden has the lowest percentage of unavailability of services (10%), the highest percentage (35%) in the provision of interactive services and the second highest percentage (25%) following Denmark in the provision of integrated transaction services.

When it comes to the provision of two-way interaction services, the percentage is approximately 10% for four out of five countries. Greece has only achieved 5%, which only involves two-way interaction services.
offered through the Greek Manpower Employment Organization, from which users may download, complete and send application forms or resumes in order to find a job.

Greece has the lowest percentage (10%) in carrying out transaction services. Only two well-known TAXISnet offered services contribute to this percentage and they relate to the submission of tax returns and value added tax.

To conclude the present study, we reach the conclusion that Nordic countries are more faithful and adapted to the requirements of the European “Information Society” initiative, in order to provide direct public services. It should also be noted that Greece holds a satisfactory position and perspective, and appears to offer modern and reliable e-government applications.

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Law and Regulation of E-government Procurement (EGP) in India

Sandeep Verma

ABSTRACT

Electronic Government Procurement (EGP) using ICT (Information & Communication Technology) promises to enhance efficiency and transparency in utilisation of public funds. This paper examines the law and practice of EGP in India given the underlying issues of regional dispersion of technology; legal foundations of electronic procurement; participants’ knowledge of the bidding process; and protection of sensitive commercial information. It looks at both the gains made and the distortions introduced by this electronic process, and then suggests a forward course of action incorporating the changes that could be made to improve the existing laws and regulatory practices relating to EGP.

Keywords: Electronic Government Procurement, Information Technology Law, Government Procurement Law, India

1. Introduction

In most developing economies, Government Procurement continues to be an important economic intervention, both in terms of the contract volumes given the preponderance of the public sector in such economies, as well as the distributive nature of benefits under public procurement through socio-economic reservations or preference criteria. There is however little research on the bottlenecks to efficiency and transparency in public procurements in India. Views range from one extreme of the Central Vigilance Commission (CVC) identifying “government tenders as a major source of corruption” (CVC, 1998) to a more balanced and realistic view taken by some academicians that the criticism should be one of deviations from the rules in practice rather than of the absence of rules. Some of these practices are selective/restrictive advertisement, selective sale of tender documents, substitution of tender papers, permitting and soliciting modification of bid after public opening, deliberate delay in processing of tenders, selective leaking of information and splitting awards for no good reason (World Bank, 2003). Some additional bottlenecks that have been identified by researchers are biased technical specifications, delays and non-transparency in payments to contractors (Verma, 2004), and multiple in situ and ex post interventions by various executive, judicial and constitutional authorities (Verma, 2006). Reports of physical intimidation and obstruction to intending bidders are also not uncommon in rural areas, especially in public works and construction contracts.

Most of these legal and regulatory issues can be classified into two broad categories: issues of Access to Knowledge (notice of tenders, knowledge of bidding rules and decision-making systems, lack of clarity of technical specifications, non-transparency in payments etc.), and issues of Access to Opportunity (selective sale of tender documents, obstruction/intimidation of bidders, modification/substitution of tender papers etc.).
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Adequate research exists to show that introduction of EGP mechanisms would bring in greater transparency in Government tenders and purchases (Bhatnagar, 2003a); lead to greater savings and improved funds availability for re-appropriation (American Management Systems, 2001); and also result in downstream computerisation and streamlining of contract and inventory management, thereby bringing in further efficiencies. Internet-based technologies can help not only to promote efficiency, but can encourage transparency and build trust in government (Seifert and Bonham, 2003). Consequently, a number of countries, including India, have established policy-making and/or regulatory bodies for EGP; and have enacted laws and regulations for governing various aspects like procurement procedures and promoting “best-value decision making”, contractor/bidder registration, security protocols and use of digital signatures, and norms on disclosure of procurement decisions. This paper looks at some of these initiatives in India from a legal and regulatory perspective as to how they have affected access to information and access to opportunity; and how some of these efforts could be further fine-tuned for enhanced competition and participation.

2. Uncitral Model Law and EGP

The UNCITRAL Model Law on Procurement of Goods, Construction and Services (the Model Law) is intended to serve as a model to States for enactments aimed at ensuring competition, transparency, fairness, economy and efficiency in their procurement processes. In its thirty-sixth session, the Commission expressed strong support for suitable modifications to the Model Law so as to allow novel issues and practices, especially issues arising from increasing use of electronic communications and technologies in public procurement. Accordingly, the Working Group I of the UNCITRAL dealing with this issue, in its working paper (UNCITRAL, 2004) sets out a number of policy objectives for electronic government procurement, for example, ensuring functional equivalence of electronic and paper-based messages, technology neutrality, mandatory or optional use of electronic publication, centralized publication system, publication of contract awards, consent of suppliers, and use of reverse auctions. Many of these issues arise in the following discussion on the legal foundations of electronic procurement in India, and the section on access to ICT infrastructure and digital signatures technology.

3. Public Procurement and Laws of Access to Information, Opportunity and Competition in India

The right to Information, right to access knowledge, and right to equality of opportunity have long been identified as being critical to balanced human development. “Open Access to Knowledge” is the key theme of the Berlin Declaration. The right to information, especially in the public domain, is based on the premise that a vibrant democracy requires an informed citizenry and transparency of information, and that both of these are vital to its functioning, to control corruption, and to hold governments and their instrumentalities accountable to those who are governed.

Equality of opportunity, which is another equally important right available under all modern constitutions, has been recognised as a basic human right absolutely critical to ensuring equality of citizens and sustainable human development. Opportunity, which can be looked as the sum total of access to information and the capacity to participate, is thus a vital requirement for a progressive society. This notion of opportunity as a political right is also linked in an interesting manner with competition and public good as understood in economic theory, as increased and equalised opportunity for participants is the basis for a competitive market and through it, the basis for optimum public good.

3.1. Right to Information

It would therefore be useful to look at the position of the right to information under the Indian legal system. The Right to Information Act, 2005 is the first federal law in India covering statutory right to information and obligations of public authorities, although a large number of provincial governments had made available these rights within their respective jurisdictions a few years prior to the central act. It is now mandatory for public officials to provide information as may be asked for by any member of the public, but in so far as notice of contract opportunities are concerned, they are still not covered under the scope of this act. In the absence of a legal framework that supports free access to information, their potential for greater transparency can remain limited (Bhatnagar, 2003b).

In so far as electronic publication of contract opportunities is concerned, the only directions in this regard are contained in various orders of the CVC which mandate such publication on government websites. Orders of the CVC are binding on departments and corporate agencies of the federal government, and thus, there is in fact, constitute an indirect but a clear mandate for electronic publication of notices of tender opportunities. But such a mandate is lacking at the provincial levels, as procurement rules in most cases do not make it binding upon the procurement officials to place such information on the internet, although, it must be admitted that ad-hoc efforts do exist in most cases.

3.2. Law regarding Competition and Access to Opportunity

As for access to opportunity is concerned, the same is broadly mandated by procurement rules specifying that tender papers should be freely available to all intending buyers on a cost-basis wherever applicable; that a generic system of technical specifications be adopted to ensure lack of bias; that no tender can be rejected without sufficient grounds existing for doing so; that all tenders submitted before the closing time be scrutinised and so on. Thus, at least in law, sufficient access to opportunity has been ensured. Another issue relating to access to opportunity is the Competition Act, 2002 in India, which forbids any enterprise (including State enterprises) from entering into an agreement that limits supply, markets or provision of services; from entering into any “tie-in arrangements” that require a purchaser of goods, as a condition of such purchase, to purchase some other goods; from “refusal to deal” by restricting by any method the persons or classes of persons to whom goods are sold or from whom goods are bought; and from indulging in practice or practices that result in denial of market access. Many of these competition issues become critical when examining the anti-competitive impact of many electronic public procurement projects in India which completely deny the option of submitting bids by traditional paper-based methods and which solely mandate electronic bid submission.

3.3. Electronic Publication under the Information Technology Act

Further, The Information Technology Act, 2000 (the IT Act) grants explicit legal recognition to the electronic medium as a medium of publication for rules, regulations, and orders- such an electronic gazette is recognised as a perfectly legal substitute for the regular “official” gazette- the fact remains that in most Indian states, the official gazette itself is not the legally- mandated medium for publication of procurement-related information. Thus, there is no effective mandate in the IT act per se for various government agencies to compulsorily publish tender/purchase information of concern to potential bidders/suppliers in an electronic/ internet- based format. This publication of procurement information in an electronic form remains at the discretion of the procuring agency rather than as a strict government mandate for most provincial governments.

Thus, in so far as the right to information of contract opportunities through traditional media is concerned, this right is clearly mandated under the procurement rules of respective governments, although, as stated earlier, the enforcement of this right leaves much to be desired. On its part, the IT Act explicitly recognises electronic publication as the legal equivalent of traditional publication methods.
4. Legal Foundations of Electronic Procurement in India

A number of reforms based on Information & Communication Technology (ICT) have been attempted in India in the past few years to bring about transparency, fairness and accountability in public procurement systems, both in government departments as well as in many public corporate agencies. They have ranged from basic electronic tendering as in the case of Andhra Pradesh Government (a process which converts into electronic format the traditional sealed-bid, simultaneous, first-price auction) to newer systems like electronic reverse auctions in the case of SAIL (Steel Authority of India Limited), BHEL (Bharat Heavy Electricals Limited), the DGS&D (the Directorate General of Supplies and Disposals) and the Indian Railways.

The IT Act, as amended from time to time, has greatly facilitated this process by providing legal recognition to use and acceptance of electronic records; authentication of such e-records by means of digital signature technology; and publication of rules, regulations, orders etc. in electronic gazettes. However, the underlying principles behind some of the newer auction systems like reverse auctions are apparently in conflict with the procurement framework prescribed for the public sector, which strongly disallows negotiations, counter-offers and bid-price disclosure under any circumstances. The General Financial Rules (the GFR) of the federal government (Government of India) recently updated in 2005, for instance, contain no provisions on e-tendering or e-reverse auctions. The same situation exists in the case of most states where negotiations are strongly restricted if not banned altogether. Since e-tendering systems merely transform into the electronic domain the prescribed sealed-bid, simultaneous, first-price auction largely practiced in the Government, it can at best be indirectly inferred from a legal reading of the GFR together with the IT Act that e-tendering is not strictly illegal in public procurement systems. However, e-reverse auctions, inherently incorporating multiple counter-offers and negotiations, could be construed as violative per se of the GFR; and in so far as these reverse auctions incorporate bid-price disclosure (but not bidder-identity disclosure) to participating bidders, they could be held to be in further conflict with the GFR provisions.

The only saving grace in favour of e-tendering and e-reverse auctions seems to be certain guiding orders issued by the office of the CVC, which allow e-procurement/reverse auctions provided they are conducted in a fair and transparent manner; and which allow switchover from manual paper-based tendering systems to e-procurement/e-sale wherever practical and feasible. It remains to be tested whether these guiding orders could in fact override the mandatory provisions in the GFR prohibiting negotiations and counter-offers. Thus, the legal and the regulatory framework in India for electronic government procurement is really “minimalist” and lacking in detail that is necessary for establishing electronic government procurement as a robust and reliable procurement alternative.

5. Salient Features of EGP Projects in India

An interesting feature of all EGP projects in India is that wherever these electronic systems have been introduced, the option of submitting bids through the traditional paper-based option has been completely discontinued, which automatically raises concerns of the possibility of technology acting as a barrier to entry in a procurement market, quite the opposite of the intended objectives of increasing competition. In the case of the state of Andhra Pradesh, this has in fact been applied to all procurements above $25,000 approximately, which covers a substantial part of the overall procurement activity of the provincial government. In other projects, electronic procurements have been introduced on a pilot basis for certain procurement decisions, but the particular decisions are not related either to product type or the value of tender. As a result, potential bidders use electronic means to scan tender opportunities as well as bid submission for these particular electronic tenders, while they also use traditional means to participate in other contract opportunities. Thus,

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3 A reverse auction is a dynamic procurement system based on negotiated multiple counter-offers, with real-time price-disclosure to all bidders while keeping their identities confidential; and an electronic reverse auction is the electronic mechanism which facilitates such price-disclosure while keeping bidder identities secure.
in the case of Andhra Pradesh, the problems of selective publication and limited participation have been replaced by technology as a barrier to entry and competition; while in other cases, this problem has been further compounded by bidders being forced to incur extra costs to continue both paper-based as well as electronic methods of participation so that they can cover all intended government procurement opportunities.

5.1. Access to Knowledge of Tender Opportunities

Electronic notification of tender opportunities is provided through the use of internet as the worldwide web. Most government departments and their corporate agencies, both at the federal level and the provincial levels, have their own websites where such information is made available, although there is lack of frequent updation of these sites, and there are very often problems of disorganisation in the availability of information, since there is very little standardisation in terms of product types. Also, since there is virtually no progress on maintenance of suppliers’ lists, notification by email is virtually non-existent. Thus, a supplier of a particular product would have to scan all possible websites of various procuring agencies, both at the federal as well as the provincial level, to know the venues for sale of his product, and this information is not available to him in an automatic, timely or organised manner. Most of these government websites are really unprotected, and digital verification and authentication of downloaded tender papers is not possible. However, the advantage with making available full tender papers including technical and financial bids on the internet, is that effort on part of bidders to travel to the physical premises of the procuring entity merely to obtain contract papers gets reduced. But as stated above, in the absence of digital verification and authentication of these downloaded tender papers, almost all bidders make it a point to get their printouts physically verified, thus rendering these time savings to a much lower level than that is possible through the use of electronic media.

The Government of India has taken up a very ambitious project of placing all contract opportunities on the worldwide web, but once again, there are problems of infrequent updation, and lack of standards-based categorisation. The non-participation of provincial governments and their corporate procuring agencies on this site is another serious issue. On this matter of information through websites, the state of Andhra Pradesh has the best setup where information is compulsorily made available, and there is substantial categorisation of tender opportunities.

Publication of tender opportunities on the electronic media has the capacity to take care of access and opportunity issues like selective publication of notices inviting tenders and selective sale of bid documents, but electronic publication per se, unless properly administered, has the problems to raise another set of similar problems through alternative mechanisms. As discussed above, the overall position of access to information and knowledge of tender opportunities through electronic media in India is therefore on the lower side, and certainly in need of substantial improvement on various parameters viz., timely updation of data, compulsory consolidation of tender opportunities at a central website (at least at the provincial level and at the national level for the respective government departments and their corporate agencies), appropriate standards-based categorisation to enable quick browsing and location of information, facilities for digital verification of downloaded bid documents, and provision for electronic notification of tender opportunities through email.

5.2. Access to Knowledge of Bidding Rules

The prevalent auction model in government procurement in India (barring a few cases of auctions of government financial securities, and with the exception of reverse auctions wherever followed) is the traditional sealed-bid, simultaneous, first-price auction. In case of sale of a product, the highest bidder wins the contract, and in the case of purchase by the government or its agencies, the lowest bidder wins the contract. Wherever a two-part bid involving a technical and a financial bid is in vogue, the model that is followed is simultaneous submission of technical and financial bids, followed by a technical evaluation of the bidders and rejection of
some bids based on certain minimum qualifying marks, and then followed by opening of the sealed financial bids of the technically qualified bidders. A system of evaluation by appropriately weighing the technical bid marks and the financial bids is usually rare, and invitation of financial bids after technical evaluation only from technically qualified bidders is even more rarely followed. It may however be noted that the system of strong technical or financial capacities on part of bidders has the same effect as selective invitation of bids from a limited number of participants, and this problem has arisen in practice in the case of a limited number of poorly designed tenders.

A problem has however been noted in the case of e-reverse auctions followed in some of the EGP projects in India which is one of lack of sufficient intimation in advance of critical bid parameters like definition of the unit bidding, specified unit for bidding, start time and duration of the auction, rules on extension of the duration of the auction in the event of bids being received towards the end of the pre-specified duration, start bid price, price increments and any reduction in price increment in the auction in the event of inactivity, and the number of critically minimum bidders to start the auction process. It is this author’s thesis that all these attributes are an essential part of planning of bid strategy by any bidder, and non-availability of this information sufficiently in advance constitutes a serious lack of access to knowledge for an intending bidder, and thus a serious handicap to his or her effective participation. In fact, in the limited cases where reverse auctions have been followed in India, the application service provider (the private party providing the electronic reverse auction platform) reserves the right to delay the announcement of these bidding rules or modify rules specified earlier at the time of the online bid (Metaljunction, 2005 and Indian Railways, 2006). Thus, while a reverse auction per se is a highly transparent system of bidding, with real-time bid price disclosure, the fact remains that in its application in a number of EGP projects in India, the delay in availability of bidding rules well ahead of the start of the online auction process ends up converting this process into a non-transparent system, with serious handicaps to access to knowledge on bidding rules.

5.3. Trust in System Integrity and in Bid Challenge Procedures

An important adjunct to issues of access to knowledge and access to opportunity is the participants’ trust in the proposed framework. The author’s thesis is that in any given system which is known to repeatedly compromise on the integrity of decision making, the levels of trust would be eventually driven down so low that even open access to information would not be a sufficient condition to ensure its widespread use. This in fact has been the problem with the practice of public procurement in India, where allegations of biased design of technical specifications, cancellation of tenders without sufficient cause and justification, non-redressal of genuine grievances, introduction of delays by unscrupulous bidders through bogus complaints and use of internal networks within the government, substitutions of tender papers, selective participation, and non-transparent delays in payments at a later stage in the guise of technical testing eventually leading to serious financial losses for genuine bidders are common. Over a period of time, the level of public trust in public procurement has been driven down so low that very few “good” bidders participate, and even they may have to “markup” their bid prices to take care of such eventualities.

EGP per se takes care of just a few aspects of the components of trust, namely, the problems of substitution of tender papers, selective publication of tender notices, and selective sale of tender documents. The other issues of biased design of technical specifications, delays in payments to genuine bidders, cancellation without sufficient cause etc. outlined above remain even with the electronic format. One of the reasons why not many complaints are actually coming up on decision making under EGP projects in India is the fact that it is a new system and bidders are largely unaware of many of these issues as they are asked to place complete trust in the system given its reliance on computers and the lack of human interface, which they have done so far indeed.

A couple of issues would perhaps highlight this issue further. Given the problem of frequent drop in teleconnectivity, midway disconnection or lack of connection would be important issues for participating bidders.
The present manner of structuring of the government-service provider relationship places substantial discretion with the private-sector service provider to cancel an e-tendering process if some of the bidders are unable to access the module due to infrastructure problems such as sustained power failures or telecommunications breakdown. Although on paper, approval of the government procurement agency is necessary for this cancellation, the fact remains that in practice, they would have virtually no headroom to differ from the service provider’s report given their complete technical reliance. There are no independent provisions to monitor the service provider’s report on lack of access to connectivity, and thus a strong monopoly has been placed on the private service provider on the control of the auction process. Information on how complaints of disconnection or lack of connection will be received in the case of particular auctions, how they will be enquired into and verified, and what the experience has been in the past is simply not available. Similarly, although e-tendering systems allow for bidders to modify their bids, there is no system to allow participating bidders or the interested members of the public (researchers for instance) information on the number of times the winning bidder modified his/her bid. Such information and statistics would be critical not only to an independent evaluator, but even for a participating bidder to decide whether s/he would like to participate in such a process at all.

The absence of clear provisions for bid challenge (also known as “bid contests”) already has adverse implications for trust-building in the bid process even for paper-based bid submission. Converting this process into an electronic format makes it even more difficult for participating bidders and independent observers to detect irregularities. The widely held view is that electronic bid submission requires regulation of tendering facility operator, and that such operational regulation is in fact an important prerequisite. There is a need for detailed regulations that guide the operations, and they should be embedded in user agreements that define processes such as how parties will operate, participate and resolve disputes in EGP transactions (World Bank, 2002). To add to some of the problems brought about by electronic tendering, almost all EGP projects in India have been outsourced to private parties without adequate monitoring and supervision by the procuring agency for detection of irregularities by the service-provider, and these projects usually provide for an exceedingly monopolistic role of the service-provider in bid dispute resolution. These issues directly impinge on the level of trust that can be placed on the fairness and accountability of the procurement procedures, given the fact that it is even more difficult for a bidder to detect irregularities on an electronic platform that is completely owned and operated by a service-provider. As compared to a paper-based procurement system, an electronic system that is inadequately monitored thus makes meaningful access to knowledge and access to opportunity much more difficult both in theory and in practice.

5.4. Access to ICT & Digital Security Infrastructure

In terms of electronic communications technology, India is now one of the fastest growing markets in the world, but issues of a digital divide remain. The number of mobile phone users in India has grown stands at 59.8 million in 2005-06, and the overall tele-density has increased from 3.53 per thousand in 2001 to 9.13 per thousand in 2005. Since electronic procurement systems are designed to work only on full- internet access platforms, and not on mobile telephony platforms, the number of traditional fixed telephones is important to assess the actual availability of internet; and it is interesting to know that this number is stabilizing rather than showing considerable growth. The number of broadband subscribers was 188,600 as of 1Q/2004, and the number of internet users has grown from 0.7% (7 million) of the population in 2001 to 3.6% (39.2 million) in 2005. The geographical spread of usage is however a matter of concern, as close to one half of the total internet users (48.6 per cent) were located in the top 8 metros, with smaller towns accounting for the remaining (Chandrasekhar, 2003). These figures are much higher as compared to the National Readership Survey 2005 (NRS 2005), which reported the total number of internet users in India as being close to only 11 million in 2005, with 8 million users in urban areas and just 3 million users in rural areas. As compared to this number of internet users, the total number of newspaper readers in India in 2005 was 200 million, with 101 million readers in urban areas and the rest in the rural areas. Thus, every one out of five
persons in India reads a newspaper, while at best only one out of thirty persons in India has meaningful access to internet.

Two findings emerge from this data: one, that penetration of the internet in terms of population coverage is low as compared to newspapers (one-twentieth to one-sixth depending upon the source of data), and two, that there is a serious urban-rural divide in the use of the internet (just about 25% of the total internet users being from rural areas). This digital divide and comparatively serious lack of access to the internet has important implications for design of EGP projects that mandatorily require electronic bid submission and do not have options for paper-based bid submission.

The cost of access to ICT vis-à-vis traditional access is another area that impacts the competitiveness of the procurement market. The typical monthly expenditure for one provincial-level major newspaper works out to about $2 per month. If a bidder were to subscribe to three major newspapers (which would cover practically 90-95% of information on tender opportunities), the cost of this access to information works out to a mere $6 a month, and this information is available to the bidder at all times of the day. On the other hand, the cost of internet access, even on public kiosks is at least $0.50 per hour, and the cost of internet access on privately owned and unshared resources would be even higher at $30-$40 a month, excluding the cost of ownership and maintenance of the computer. We are thus looking at effective costs of access to information on tender opportunities that would range from a minimum of $15 to $20 every month. Thus, while electronic publication may work out to be cheaper for the public agency procuring the goods as compared to publication in the traditional media, and better quality information could be provided electronically to suppliers (UNCITRAL, 2004); there could be a situation that access to such electronically published information is more expensive for the target audience- potential bidders in this case, virtually curtailing the number of participants and hence seriously restricting the competition.

The problems of access to ICT in general are replicated with the case of access to digital security technology, which in India implies access to digital signatures, as only bids authenticated with digital signatures under PKI are legally acceptable. The added dimension here is that it typically costs $70 per annum per bidder to obtain and retain a Class II digital signature. The overall costs are about three times higher, if one includes the costs for subscription to directories to certificate revocation lists and the costs of obtaining copies of certification practice statements of the certifying authority. This figure also excludes the cost of generation and electronic storage of digitally signed documents, which if privately held, could be as high as the cost of procuring and maintaining a computer at about $400 per annum), and which if shared, as in the case of kiosks, are about $100 per annum per bidder. The cost of electronic storage is in fact an additional cost, as bidders under most of these systems are required to separately keep a physical copy of their electronic bid for their record-keeping.

This skew in physical, financial and quality access to ICT clearly has adverse implications on information symmetry and competitiveness for electronic procurement systems where the internet alone is used for transmission of information on tender opportunities and for bid submission. The situation gets worse in the case of electronic reverse auctions, which require continuous and uninterrupted access for bidders for time periods ranging from a few hours to a few days, and it is almost unthinkable that small- and medium-sized bidders can effectively participate in such auctions systems in the public domain.

However, the advantages of electronic publication of tender opportunities remain what they are for the internet in general, namely, that no longer can a situation exist where information is selectively provided to a few bidders by publication in newspapers with limited circulation. Electronic submission of bids also has the advantage of getting around the problem of physical obstruction in bid submission in the traditional system, and even of physical intimidation of smaller bidders can be avoided at least at the time of bidding, if not at a later stage.
5.5. Electronic Auctions and Law of Privacy/ Data Protection

To highlight another typical aspect of reverse auctions, but one that is equally applicable to the case of e-procurement in general, there is a definite need to bring in legal clarity on the extent of protection available to sensitive commercial data and the intellectual property that could be required to be submitted by an intending bidder for participating in such processes; and whether his/her mere participation in such an auction could be treated as voluntary consent to waiver of his/her rights on ownership of such data. The state of protection of private data in India is weak as compared to many industrialised economies, and the only protection for electronically submitted information is to be found in the IT Act which provides for civil and criminal offences like penalties for unauthorized access, tampering, publication for fraudulent purposes, unauthorized access, and even for breach of confidentiality and privacy. But it is interesting to know that many service agreements entered between government procuring agencies and application providers make no mention of service provider’s liability for breach of confidentiality of private information, and expects bidders to indemnify the service provider from all liabilities as a pre-requisite to participation in the electronic tendering system.

On the other hand, the RTI Act leaves full discretion with the competent authority (to be enjoyed on a case-by-case basis) for public disclosure on request of such commercial information, which by itself would be a cause of concern to a participating bidder. It needs to be clear as to how the RTI Act would interact with the IT Act and the GFR to allow a greater degree of comfort to bidders to repeatedly and effectively participate in such processes with the confidence that their vital commercial information would, in fact, be protected from arbitrary disclosure by the buying authority under the GFR or the competent authority under the RTI Act. This situation had arisen in the case of electronic procurement by one of the biggest steel manufacturers in India, where there were reasons to believe that sensitive market data (including lists of customers, their demand potentials and actual realised prices) had been severely compromised (Hindu Business Line, 2004).

5.6. Agglomeration of Quantity in Electronic Auctions

There is sufficient research to show that electronic procurement, especially reverse auctions, yield necessary efficiencies only in cases where there is either bulk buying for single users, or where agglomerated small buying is undertaken on behalf of a large number of buyers. Also, such procurements work best when dealing with established and responsible players (Turley, 2002). There has been no policy on part of the government procuring agencies in India to lay down such a policy for a class or classes of products, nor has any classification been done on the basis of value of the procurement decision. This agglomeration is a matter of concern for evaluating access to opportunity, since it would have two automatic impacts on competition, one, that the number of players itself could get limited, thus increasing monopolistic/oligopolistic behaviour and chances of collusion thereby substantially reducing access to opportunity, and two, this could lead to a situation of conflict with other socio-economic aims of procuring agencies, for example, use of larger contract volumes and framework agreements would tend to favour large bidders rather than small and medium-sized enterprises, the promotion of which is an important engine of growth for many developing economies.

5.7. Technology and Competition

The issues of access to ICT and digital signatures technology in India have already been discussed in a previous section. Electronic Procurement projects in the public domain could in theory be either hybrid systems, where electronic notification and bid submission is an optional process and paper-based traditional bids could also be accepted; or they could be “solo” electronic processes, where bid submission through electronic means is mandatory, and paper-based bids are just not accepted. Since all e-procurement projects in India in the public domain have been solo systems, it would be interesting to look at how mandatory electronic participation in procurement processes could affect competition. While a hybrid system...
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incorporating both electronic and paper-based bids gets rid of issues of lack of access to opportunity that arise in a purely paper-based system, a solo electronic system introduces a new barrier to entry especially for smaller bidders- that of access to ICT, which as already discussed, is a skewed function, and has the potential of restricting competition rather than enhancing it. Thus, the manner in which EGP projects have been undertaken in India limit supply and provision of services; and effectively amount to a “refusal to deal” by restricting the persons or classes of persons to whom goods are sold or from whom goods are bought; and could be held to be violative of the competition law in the country.

In all cases of e-procurement projects in the public sector in India, access to Windows OS-based computer systems is an additional and necessary requirement. Thus, in addition to barriers set by cost skew, availability and regional dispersion of ICT, there is an additional barrier, namely, the lack of technology platform neutrality. Thus, bidders with access to open source-based operating systems such as Linux, UNIX and its variants, and other alternative operating systems are at a definite disadvantage when competing with other bidders who have access to the “preferred” technology platform.

In this context, it is interesting to note that the guidelines of both the UNCITRAL and the MDBs6 on incorporation of electronic means into the public procurement space (Wallace, Yukins and Matechak, 2005 and IADB, 2005) identify three major suggestions in view of concerns with the market-distorting aspects of technology: one, that electronic participation in government procurement should not be mandatory but must include options for paper-based systems; two, that electronic publication of tender opportunities and contract awards must be promoted but not solely mandated; and three, that there should be no additional financial burden on potential bidders as use of these technology platforms (basically, no fees). The fact that these guidelines were formulated keeping in view the differential access to technology even within the developed countries must be contrasted with the practice in many cases in India where the use of e-procurement and obtaining of digital signatures has been made mandatory; and where the effective user-charges for participation in such e-procurements work out on the higher side, which could have impacts on the competitiveness of the procurement market and could reasonably be expected to finally result in greater sub-letting of electronically awarded contracts.

One solution proposed to the problems of access is to provide direct EGP system access as designated facilities at subsidized, gradually escalating costs with training and support activities. In many countries, instead of mandatorily requiring electronic bid submission, the EGP systems have been designed to accept off line paper or electronic mail documents, with clear procedures on handling sequence, filing and reproduction (World Bank, 2003). Hybrid systems that allow both paperless and paper-based options combine the value that can be obtained by paper-based and electronic procurement systems, without diluting any of their respective strengths; and do away with the barriers to entry that exist in either of the systems.

6. Evolving a Comprehensive EGP Framework

One of the first priorities in evolving a comprehensive EGP framework has to be the setting up of a regulatory forum that is empowered to evolve and to enforce policy guidelines on electronic procurement; to assume the co-ordination role to resolve issues arising out between various government departments and public agencies; to set standards; to provide and/ or utilise funds for this purpose; and to deal with all other matters of strategy and detail. This becomes even more important in view of the political system prevalent in India where all states have their own procurement systems, treasury procedures and application formats where the task of integrating all these varied systems becomes that much more vital.

Another important priority in India is the changeover required in the particular auction formats recognised by law. In all the Indian states, including the Central (Federal) government, the prevailing system of procurement auction is the traditional sealed- bid, simultaneous, first price auction. The other auction formats, particularly, the (English) ascending- bid auctions, or other auction systems like Vickrey auctions, reverse
auctions and uniform-price/multi-unit auctions are neither well understood nor legally recognised. It is these alternative auction formats that need specific legal recognition for EGP to become a reality.

The issues with use of electronic communications in government procurement raise interesting questions of access to knowledge and opportunity. These initiatives, when properly designed, can eliminate problems of selective publication of tender opportunities, raise trust in the procurement process, and address the problem of selective sales and bid submission, thereby bringing in a greater number of players into the government procurement market. However, it is important to keep in mind the local levels of internet penetration, physical access and regional dispersion of ICT infrastructure, and the costs of participation before getting head-on into such systems. A hybrid procurement system, that allows for both paper-based as well as electronic bid submission can virtually eliminate all problems associated with both a purely manual and the purely electronic systems, while maintaining the strengths of the electronic procurement system in bringing about greater transparency, accountability and efficiency. A purely electronic marketplace can actually restrict access to knowledge and opportunity under certain circumstances rather than enhancing it. Similarly, making avenues for electronic bid submission by providing facilities in dispersed geographical locations, adequately supported by training, can help in overcoming problems of access. The system design is therefore of critical importance in overcoming barriers set by technology so as to ensure maximization of access to knowledge and access to opportunity under EGP projects.

Complementary to the twin issues of access to knowledge and access to opportunity is trust-building in EGP projects. Regulatory frameworks would need to be established for dispute resolution in the e-world in the backdrop of the long-term impact of outsourcing of application platforms and use of private notarization services; and must incorporate issues of integration of the proposed arbitration authorities with the fora already established for the civil and the criminal offenses under the IT Act. Even the limitations of the Public Key Infrastructure technology (in use under the IT Act in India) must be carefully examined and addressed vis-à-vis long-term verifiability of digital signatures after certificate revocation and/or expiry, the requirement for re-verification of digital signatures for complaints handling, and the long-term storage and retrieval of electronic records.

e-Procurement would thus obviously require extensive groundwork on the issues raised above, and still many more issues like reforms in the overall contract management, taxation of e-commerce, use and maintenance of suppliers’ lists for framework agreements (rate contracts under the DGS&D systems), use of market intelligence for transformational bidding and “true best value buying” for reverse auctions, and balancing aggressive competitiveness with concerns of possible contractual lapse after award of tenders. Putting in order a legal and regulatory framework for e-Procurement in India and elsewhere has become an absolute imperative, given the wide interest and adoption of electronic means both on a pilot and on a full-fledged basis, and given the intense “competitiveness” in the public and the private spaces when it comes to big procurement opportunities. Disputes on many of these issues could come up for resolution and addressing sooner than later, and it would be a wise strategy for the Governments concerned to pro-actively lay down the law and the guidelines to ensure full protection to bona-fide decision-making under these projects; to ensure that the momentum gathered in the past few years is not lost; and to ensure that the sanctity of access to knowledge and access to opportunity- the hallmarks of a liberal democracy and a rights-based approach to sustainable human development the world over- is fully safeguarded and nurtured.

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E-government: Macro Issues


About the Author

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Development of E-government in Malaysia: The Role of Leadership and Organisational Efficacy

Hazman Shah Abdullah and Maniam Kalianan

ABSTRACT

The e-government is prophesied to alter the character of governments – become more efficient, more responsive, more accountable and more democratic. Few studies have examined the intra-organisational factors that determine the pace and quality of a technology driven government. This study examines leadership and perceived organisational efficacy of Information and Communication Technology (ICT) posited as two key factors in e-government uptake within a sample 91 public agencies in Malaysia. The findings paint a picture of an unevenly distributed and generally weak agency level leadership and as posited, high ambivalence about the organisational efficacy of ICT. The twin influence of weak leadership and poor perception of ICT efficacy will delay the progression of e-government to the transaction stage. The rhetoric of ICT driven agency transformation is not matched by leadership and belief in e-government benefits.

Keywords: E-government, Technological leadership, ICT Efficacy, change management

1. Introduction

ICT and the Internet in particular has opened new possibilities for the government and the governed, just as it has for the businesses and its customers (Moon, 2002; Shedler & Summernatter, 2003; Curtin, Sommer & Vis-Sommer, 2003). Over the past decade many governments including the Malaysian government, have planned and implemented programmes intended to launch the government into the digital realm (Curtin et al., 2003; Muhammad Rais & Nazariah, 2003; United Nations Division for Public Economics and Public Administration (UNDPEPA), 2005). The highly complex bureaucracies that grew to regulate the economy and society through the highly differentiated but usually lowly integrated machinery (Marche & McNiven, 2003; Davison, Wagner & Ma, 2005) can eventually be reconstructed through ICT. Governments of both developed and developing countries have embraced ICT to improve the quality of public service, increase public access to information and to energise more participation in civic affairs (Becker, 1998; Moon, 2000; Shedler, 2001). According to a United Nations study, 94% of its 191 member states used the Internet in some manner to deliver information and services (UNDPEPA, 2005).

Despite the impressive growth of e-government particularly through the Internet in making information and services available to the people, the intra-governmental changes have been slow, adhoc and plagued by poor planning, management and leadership (Kunstelj & Vintar, 2004::133; Ho, 2002; Moon, 2002). Many researchers have opined that the less difficult initial phase is over and the next phase in the e-government
E-government: Macro Issues

evolution will require fundamental changes in organisation, mindset and laws to make significant progress 
(Layne & Lee, 2001; Vivienne, 2000; Vintar, Kunstedj, Deeman & Bersic, 2003; Yong, 2003; Kunstelj & 
Vintar, 2004; Vriens & Achterberg, 2004; West, 2004). The online transaction stage requires governmental 
organisations to massively digitize and integrate their back-end operations, develop new skills and resources, 
and bring down digital and legal barriers to enable seamless integration of services within and across 
government agencies and to present greater service convenience to the public (Holmes, 2001; Reddick, 
2004a, 2004b). The “transact” stage is expected to proceed very slowly and clumsily given the complex, 
tricky and risky nature of changes needed (Vintar et al., 2003; Hazman et al., 2005). This study is intended 
to examine the internal readiness of Malaysian governmental organisations whose websites were examined 
as part of a larger study on e-government. Two critical elements (from list of many factors) i.e. leadership 
and perceived benefit of e-government to the agency are posited as the main impetus or barriers to further 
development of e-government in Malaysia

2. E-government Readiness – An Organisational Perspective

The concept of e-government readiness has been variously defined and measured (Reddick, 
2004a; Kunstelj & Vintar, 2004). The United Nation’s study views e-government readiness as comprising 
the info-structural intensity, web features and e-democracy (UNDPEPA, 2005). A similar methodology is 
also used by West (2000) in his annual survey of global e-government readiness. While the societal indices 
show the potential uptake of e-government, it does not show the state of e-government development. What 
is often curiously lacking is the measure of the internal or agency level e-government readiness from a 
leadership standpoint. Kunstelj & Vintar’s (2004) excellent critical review of the many surveys of E- 
government in EU, did not venture far enough to examine the indicators of leadership factors. This study 
seeks to fill this gap in e-government studies. Accordingly, the focus is internal agency readiness for e- 
government.

The exalted ranking of Malaysian e-government by United Nations, Brown University, Taylor-Nelson 
Flores, The Economist and Accenture surveys are mainly due to the reliance on the English language websites 
of central and key agencies of the federal government or looking at the ICT infrastructure. These agencies 
have shown remarkable consistency on two key factors viz., leadership and a deep belief in the efficacy of 
ICT in overcoming the organisational, management, and service woes that typically beset public services. 
The leading e-government agencies namely, Road Transport Department (e-Insurance, e-Traffic rules test, 
e-Road tax, e-License renewal, e-Vehicle registration) Higher Education Department (online applications 
for universities), Immigration Department (e-passport, e-visa), the Treasury (e-Procurement, e-Registration 
of vendors, e-Custom), Royal Malaysian Police (E-summons), Public Services Department, Subang Jaya 
Municipality and KL City Council (e-Permit, e-Taxes, e-Fees and fines, e-Complaints) and Tax Department 
(e-Filing, e-Tax) share a common trait in their agency leaders. They evince a very strong belief in the 
efficacy of ICT in promoting good management and governance, in improving and extending the services 
to citizens and in making agencies more transparent and accountable for performance. Their vision, interest, 
commitment, vigor and energy results in comprehensive plans and drives the plans forward overcoming the 
usual inertia of change experienced in government. They often appear impatient, at times arrogant and 
dictatorial. They are able to develop careful rapport with the users as they automate, re-engineer and improve 
the services, and remove many bureaucratic impediments along the way. They are able to convince the 
agency staff of the utility of ICT in making the agency more efficient and effective, progressive and modern 
and develop better relationship with the citizenry and central agencies. In contrast, other agencies have 
taken a tactical route of starting websites usually through the help of the IT vendors with little changes in- 
house. They do not or are incapable of transcending the public relations value that the e-government drama 
provides. They lack vision, do not display confidence in ICT, fail to show understanding of ICT and always 
appear tentative and wary of the technological invasion. Their attitude rubs of the rest in organisation providing 
leadership to inertia, support for status quo and highlight the risks of ICT to the agency, citizens and sometimes
even to national security.

It is against the backdrop of contrasting pictures of progression, stagnation and regression of e-government in the Malaysian public agencies that the present paper and analysis takes special significance. There is an overproduction of surveys of e-government that track the visible digital developments in services for the public. But these digital artifacts are lagging supply side indicators (Kunstelj & Vintar, 2004). It is important to both identify and discuss the leading indicators of e-government change at the agency level. We believe that leadership and organisational efficacy of e-government are two key factors that indicate the rate of progress or lack thereof of e-government at the agency level (Beaumaster, 2002).

3. Leadership

Leadership has long been identified as critical to major changes in business and government (Kotter, 1995; Senge, 1992; Burns & Robins, 2003; Streib & Willoughby, 2005). Leadership again stands out as a major factor in the all remarkable accounts of major progress in transforming the regular government into an e-government (Beaumaster, 2002; Gupta, Kumar & Bhattacharya, 2005:167-172). The leader’s commitment to true change is normally manifested through a powerful vision, palpable passion and creative mechanisms including indicators of and for its implementation. The relevant government’s vision and strategies are important to chart the path of e-government given the resources, people’s capacity to interact via ICT, the attitudes and political priorities (Streib & Willoughby, 2005). This statement of policy and direction must cascade down to all levels of the administrative machinery to develop adequate change momentum. The readiness at the agency level will to a large extent determine how fast these visions and plans can become reality for the people. Based on extant literature in e-government and change management, a number of key variables are posited as playing a key role in readiness of the public agencies to progressively develop the e-service component of the total service delivery. The planning variable examines the commitment of the agencies reflected in the existence of plans and policies or intention to have policies and plans in the near future (Moon, 2002; Vriens & Achterbergh, 2004). These policies include Internet use policy, email policy and plans on e-government. The policy and planning dimensions indicate preparation for e-government beyond the usual rhetorical commitments expressed in reports and press releases (Schedker & Summermater, 2003).

The resource variables examine the availability of human, technical and financial resources to support the e-government plans. Foremost among the human resources requirements is the presence of technical personnel who is charged with e-government responsibilities (Ho, 2002; Vriens & Achterbergh, 2004). The status and stature of this person is important indicator of the importance and influence ICT has in strategic matters (West, 2004). The influence of the unit under which ICT matters are placed is also an indicator of the view of ICT in the affairs of the organisation. The allocations for e-government expenditure are also captured to reflect on the budgetary priorities – which are more accurate indicators of the importance of e-government within the organisation. The extent of use ICT vendors for e-government related expertise shows the ability to leverage on outside resources or the lack of sufficient technical know-how in-house. It also demonstrates transformational leadership capacity to conceive of the changes in new ways including the development of smart partnerships with private institutions to push the e-government to a higher plane than is possible through the traditional route.

The role of leadership in e-government can be characterised by using Bass’s (1985) leadership typologies i.e. transactional and transformational but with an additional typology called symbolic leadership. The symbolic leadership relates to the leadership interest in being seen as following the tide. The rush to join the ICT bandwagon is the usual instinct to appear modern and fashionable. They are more interested in the publicity value. Beyond the web site creation, there is no interest or plans to proceed further. This is called the symbolic leadership. The transactional leadership is able to see how ICT can improve the agency efficiency and also effectiveness. Service improvements and general improvement in the image of the agency is a
strong motivation. Efficiency is the main interest. This type of leaders sees and seizes the opportunity to actively automate with or without re-engineering of the processes. Agency orientation is paramount for this type of leaders. The transformational leader in e-government sees ICT as a resource that raises the opportunity to reconceptualise, reshape, re-engineer the organisation and also to re-engage with the clientele. While service improvements are important, ICT is used to make the agency more accessible, sensitive, responsive and open up new channels for consultation.

By adding the leadership element into the Siau & Long’s 5-Stage Model (2005), the importance of leadership types at the various levels of e-government development can be illustrated (see Figure 1).

![Fig. 1: Leadership and E-government Development Trajectory](image)

4. E-government Benefits

The efficacy of e-government is for most part an uncontested truth (Foley, 2005). The benefits are many for the citizens but costs and productivity gains for the agency are still an uncertain claim (Holliday, 2002; Strejek & Theil, 2002). Although the complexities and difficulties of e-government transformation is widely recognized and reported, the benefits from an organisational standpoint have rarely been discussed (Foley, 2005:5; Haldenwang, 2004). In most developing countries, the online public services exist along side the traditional over the counter services. This creates additional pressures and costs, not savings in the interim (Haldenwang, 2004: 424; Saxena, 2002:26). The presumed benefits of e-government to the citizen i.e. fast, flexible, choice, self-service etc. and to the government i.e. cost saving, better image, less complaints, less corruption etc. at large is simplistically viewed as adequate justification for national interest and agency enthusiasm in e-government. This view sees the government agencies as apolitical, rationalistic and passive. Such a naïve view has been contested and soundly dismissed in public administration for a long time now (Simon, 1947; Wildavsky, 1962). The agency leaders always reconstruct the national agenda in terms of their own interest. From this pluralistic and political perspective of organisations especially public organisations (Morgan, 1986), the actual and perceived benefits of e-government to the agency will dictate the pace and depth of change that will take place. The perceived benefits of e-government or e-government efficacy are a powerful motivator of adoption and change (Au & Enderwick, 2000; Moon, 2002). In fact, there
is sound theoretical basis to posit that intentions are precursor to behaviour (Fishbein & Azjen, 1975). The Technology Acceptance Model (TAM) and its many variations posit perceived utility as an important mediator of ICT acceptance by individuals (Davis, 1989). The same can be extended to organisations such as the government agencies. Although a national e-government vision is convinced of the potential benefits of ICT deployment, this belief must cascade down and be shared by the agencies in terms of their more personal, local and empirical experiences. The role of positive affect on adoption of technological change has been widely theorized and tested (Davis, 1989; Hazman & Munirah, 2004). This variable examines the aspects of the perceived benefits of e-government for the agency.

5. Research Method

The study is a cross-sectional sample survey of 165 randomly selected public agencies (from 580) of the federal, state and local governments whose websites were evaluated in a different but related study. It is intended to examine leadership and the efficacy of the digital service to the agency. Only 91 of the 165 mailed questionnaires were returned providing a response rate of 55%. The survey looked at the access to ICT infrastructure by the staff, technical human resources, the availability of e-government and associated policies and agency leadership. Based on the web-sites that was observed in phase 1 of this study, questionnaire was developed in both English and Bahasa Malaysia –the national language, and pilot tested on 5 agencies and found to be without problems. The instrument to obtain data on the internal arrangement was adapted from a similar UN instrument. The United Nation Public Administration Network (UNPAN) questionnaires were adapted for the specific purpose of this study. The objectives of this study require basic descriptive analysis. However, some post hoc analysis of the relationships was carried out to provide an empirical insight into possible correlations.

6. Results

Table 1 shows the general profile of the agencies that were studied. Reflecting the rapid uptake of e-government, all but one agency have websites. Most (78%) of the agency websites were less that 5 years old with a third of the websites established less than 3 years ago. For a majority of the agencies a reasonable

<table>
<thead>
<tr>
<th>No</th>
<th>Profile</th>
<th></th>
<th>No</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Have Agency Websites</td>
<td></td>
<td>Yes</td>
<td>90</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>No</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>Age of Agency Website</td>
<td></td>
<td>&gt; 1 year</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1-2 years</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>&gt;2-3 years</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>&gt;3-4 years</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>&gt;4-5 years</td>
<td>18</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>&gt;5 years</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>NA</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>Level of Government</td>
<td></td>
<td>Federal</td>
<td>29</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>State</td>
<td>42</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Local</td>
<td>19</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>NA</td>
<td>1</td>
</tr>
</tbody>
</table>
span of time has passed since their establishment and expectations of improvements and expansions are not unreasonable. State agencies comprise 46% of the agencies in the sample while federal and local agencies make up 32% and 21% of the sample respectively. There is a slight over-representation of the state agencies in the sample.

E-government Plans

In 1995 e-government was identified as one of the 8 flagship projects under the Multimedia Super Corridor (MSC) (Maarof & Soon, 1999). The Malaysian government has developed a national ICT and e-government vision to guide the transformation of the public sector in tandem with the private sector. The K-economy Masterplan also envisions rapid transformation of the government through the intensive and intelligent use of ICT especially the Internet to support the economy (ISIS, 2002). Despite the strong political interest and leadership and active central agency oversight, the corresponding uptake of e-government at the agency level as judged by the development of a documented e-government plan or strategy, is low. Table 2 shows that about half of the 74 agencies which provided responses, did not have an e-government plan (Some agencies which did not respond to the question were asked again through telephone interviews. The respondents did not know if such a plan existed. To be safe they did not answer this question).

Since all but one of the sampled agencies had websites, we cross-tabulated the presence of agency website with the existence of e-government plan. Table 3 shows that about half the agencies had developed websites and presumably provided some services to their clients without an overall or long term view of how ICT especially the Internet will be deployed in the organisation. This tends to support the view that many agencies embarked on the web based services through a process of what DiMaggio & Powell (1983) calls “mimetic isomorphism” i.e. emulating others. Obviously, e-government in many cases did not proceed along a planned route.

This lack of interest prompted the Chief Secretary of the Federal Government to urgently call for ICT blueprint in all federal government agencies (Hamidah, 2002). However, it is heartening to note that a majority of the agencies which did not have an e-government plan, indicated that one will be developed.
within the next year (see Table 2). But without effective monitoring of the agencies, this intention towards a planned e-government deployment usually will not result in something positive.

It is altruism in public administration as it is in management in general that top leadership involvement and identification with a project or policy will give it importance, priority and stimulate acceptance. The location of ICT responsibilities is an indicator of how important this agenda is in the organisation. Accordingly, there appears to be a correlation between the presence of an e-government plan and the location of e-government within the purview of the head of the agency or a technical department. Both influence and ability seem to coincide with the existence of an e-government plan.

For e-government to progress beyond the publish or billboard stage, derivative policies must be developed to guide the employees actions and behaviour in the new realm (Yong & Koon, 2003). Not only must the back-end processes be computerized and integrated, a whole range of policies must be developed and applied to guide employee behaviour towards the new work environment. It is imperative that the employee-employee and employee-customer interface is properly thought out and progressively framed via policies (Nooraini, 2006).

To begin with employees must be provided with emailing facilities. All employees in 38% of the agencies were provided with emails while in another 19% of the agencies only some of the employees had email facilities (see Table 5). That less than half of the agencies had made emails available to all their employees is a serious set back. Without this communication tool the connectivity between the employees and employees and the public cannot be developed. Accordingly, a minority of the agencies has written email policies but there is a strong desire to develop one in the near future. Similarly, only 23% reported the existence of an Internet policy with 71% indicating that one will be available within a year (Table 4).

<table>
<thead>
<tr>
<th>Table 4: Location of Responsibility for E-government Policy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall Responsibility for the Web</td>
</tr>
<tr>
<td>Agency Chief's Office</td>
</tr>
<tr>
<td>Do You Have an Overall Strategy</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Total</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Table 5: Internet, Email Policies and Access</th>
</tr>
</thead>
<tbody>
<tr>
<td>ICT Policies</td>
</tr>
<tr>
<td>Have an Internet policy</td>
</tr>
<tr>
<td>Plan to have an Internet policy</td>
</tr>
<tr>
<td>Have written e-mail policy</td>
</tr>
<tr>
<td>Plan to create e-mail policy</td>
</tr>
</tbody>
</table>

Based on the data presented here on the existence of e-government plans, email and Internet policy, the progress of e-government in these agencies cannot held to be coherent, organised and hence, not rapid. The national level leadership in e-government and ICT is not matched by the agency level leadership as judged by the development of agency e-government plans and policies. Ad hoc and piecemeal development is likely to characterize e-government development without strong leadership to systematically integrate e-government into the agency strategic plans.
E-government: Macro Issues

Table 6: Provision of Official Email

<table>
<thead>
<tr>
<th>Extent of availability</th>
<th>No</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>No employees</td>
<td>2</td>
<td>2.8</td>
</tr>
<tr>
<td>Some employees</td>
<td>17</td>
<td>24</td>
</tr>
<tr>
<td>All employees</td>
<td>33</td>
<td>46.4</td>
</tr>
<tr>
<td>NA</td>
<td>14</td>
<td>19.7</td>
</tr>
</tbody>
</table>

Technical and Financial Resources

E-government requires that staffs in the agency are trained to operate in an ICT environment. Just as firms need a Chief Information Officer to plan and mobilize the use of the ICT resources to further agency goals more effectively, so must the government agencies. There is a need for a dedicated officer to handle e-government issues. The existence of a full time officer to attend to the e-government matters provide some assurance that ICT needs are given some importance in the agency. Table 7 shows that 58 agencies that responded to this question, 19 had full time staff to look after the web based services. By and large, full time officers were available where there was an IT or MIS department. In 16 cases the responsibility for the web-based services was part of the responsibilities of other officers. There were also volunteers who minded the web in the agency. The presence of full-time ICT staff is indicative of the availability of technical resources to aid both planning and implementation of ICT projects and also to provide advisory services to agency managers who are not as ICT literate.

Table 7: Status of Webmaster and Location of E-government Responsibility

<table>
<thead>
<tr>
<th>Department with Overall responsibility for the Web</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>IT/MIS/Computer Dept.</td>
<td></td>
</tr>
<tr>
<td>Finance</td>
<td></td>
</tr>
<tr>
<td>Others</td>
<td></td>
</tr>
<tr>
<td>Full-time</td>
<td>16</td>
</tr>
<tr>
<td>Part time</td>
<td>3</td>
</tr>
<tr>
<td>Part of Another Position</td>
<td>16</td>
</tr>
<tr>
<td>Volunteer</td>
<td>1</td>
</tr>
<tr>
<td>Others</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>37</td>
</tr>
</tbody>
</table>

Technical and Financial Resources

E-government does not come cheap. The Ninth Malaysian Plan (2006-2010) has allocated a whopping RM 12 billion (1RM = 3.67USD) for ICT including e-government. Large initial capital outlay is needed to create websites, acquire the hardware and software systems, train staffs, to digitize old records, create new database systems to hold data and to develop security systems to ensure integrity of the system. Although central agencies fund and develop shared systems, most of the e-government projects have been funded by the agencies themselves through specific development grants. Obtaining funds and approvals require aggressive leadership during the budgetary negotiations (Beaumaster, 2002). Hence, the allocation for e-government is an indicator of interest and importance of e-government in the agency. It must, however, be stated that some of the finances for e-government may be provided under other items like equipment, travel, services, maintenance etc. It is reasonable to say that the actual financial availability is more than the amount cited here. The allocation cited in Table 8 is not large in absolute terms but the true size can only be understood in
relation to the total budget of the agency. These allocations would probably allow the agencies to continue to rely on the vendors to support the web services.

Table 8: Allocations for E-government in RM (3.8 RM = 1USD)

<table>
<thead>
<tr>
<th>Allocation</th>
<th>No</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-50,000</td>
<td>40</td>
<td></td>
</tr>
<tr>
<td>51,000 – 100,000</td>
<td>11</td>
<td>12</td>
</tr>
<tr>
<td>101,000 – 150,000</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>151,000 – 200,000</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>201,000 – 250,000</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>&gt; 251,000</td>
<td>20</td>
<td>22</td>
</tr>
<tr>
<td>NA</td>
<td>7</td>
<td>100</td>
</tr>
</tbody>
</table>

E-government Benefits

E-government is not merely a technology issue. To benefit fully, the deployment of ICT must coincide with or occasion a rethink of the structural arrangements for internal management and service delivery both within and across organisations. Automation, re-engineering and transformation of the organisational processes should result from a well planned e-government strategy. To motivate change, the agencies must admit to and believe in the benefits of e-government (Hazman & Ala’adin, 2001).

A high majority of agencies do not believe that e-government reduced the need for staff contrary to the belief that efficiency gain is the instrumental reason for e-government (see Table 9). A majority of the agencies do not believe that e-government reduced time demands of the government. In fact, 65% reported that e-government increased demands on the staff. The agencies were almost equally divided on the question of e-government changing the role of the staff. Paradoxically, a high majority of the agencies were automated and Internet enabled with little improvements in efficiency. Revenues did not rise despite administrative cost did. However, a majority of the agencies agreed that it is too early to assess e-government ICT plan makes it clear that online services are supplementary service channels for those who are interested and seek the flexibility that the traditional services do not provide. Added to this is the fact that, in many agencies only the front-end is e-enabled via kiosks, telecentres and the Internet. The back-room processes are still undigitised and unintegrated. Consequently, online applications and subsequent processing requires a human bridge. The online and the

Table 9: Perceived Impact of E-government

<table>
<thead>
<tr>
<th>No</th>
<th>Effects</th>
<th>Yes</th>
<th>%</th>
<th>No</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Reduced staff requirements</td>
<td>11</td>
<td>12</td>
<td>80</td>
<td>88</td>
</tr>
<tr>
<td>2</td>
<td>Changed role of staff</td>
<td>44*</td>
<td>49</td>
<td>46</td>
<td>51</td>
</tr>
<tr>
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<td>Increased non-tax revenue</td>
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</table>
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manual systems do not integrate seamlessly. This adds to the increased workload and pressure faced by the staff in dealing with the citizens.

7. Discussion

Most surveys of e-government have examined and concluded, on the basis of the digital service windows of the public agencies and info-structural readiness, the state of e-government in the world (Taylor Nelson Sofres, 2002; UNPAN, 2002, UNDPEPA, 2005; Kunstelj & Vintar, 2004). While the websites provide valid evidence of the state of e-government, it does not reveal all. These surveys provide various types of supply side metrics indicative of what has taken place rather than a harbinger of what is to come. The state of leadership within the agencies i.e. vision, plans, policies and strategies, the availability of technical and financial resources, the plans to launch services and perceptions of how e-government impacts agencies internally are hidden from view. Consequently, the picture painted of e-government is a rather limited one at best and a distorted one at worst. The readiness to move from the ‘publish’ stage to the next ‘transact’ stage is lacking in most agencies surveyed (Edmiston, 2002; Holden, Norris & Fletcher., 2003; Kunstelj & Vintar, 2004:133; Reddick, 2004a, 2004b). E-government plan at the agency level is mostly non-existent even though there is strong interest in developing one in the near future (Hamidah, 2002). Perhaps, agencies still expect the central agencies like Malaysian Administrative Modernisation and Manpower Planning Unit (MAMPU) which developed plans and strategies, to take the lead. Raised on a regular diet of top-down and centre-to-periphery approach to innovations and changes, the government agencies may be expecting just that. As has been argued earlier, the transition to the transact stages will be slow. Without a carefully planned transition, the e-government evolution from the ‘publish’ to the ‘transact’ stage will be slow, chaotic, duplicative, insular and suboptimal. This stage requires careful planning of the information architecture and the digitization of the manual back-end operations. This stage represents a major re-engineering exercise with implications for staffing levels, training and retraining and many pockets of people who previously wielded significant influence in the manual system, will face elimination (Norris, Fletcher & Holden, 2001; Nooraini, 2006). The government agencies cannot retrench easily. The lack of plans and policies are also because of the unavailability of technical staff who can inform and guide these plans in the agency. Consequently, there is heavy dependence on the vendors who are likely, in the absence of strong client knowledge and specification, to chart the e-government path that will be profitable to them. While the use of vendors helps to offset the lack of in-house technical capabilities, excessive dependence can be exploited by the vendors to sell outdated and restrictive systems that create serious legacy issues when inter-agency connectivity is developed. However, the rising attractiveness of externalizing internal services to enhance efficiency and the promotion of outsourcing of internal services may actually delay the acquisition of in-house technical resources. The likelihood of e-government planning increases if the agency chief’s office is responsible for it. Clearly, top management interest and commitment, as in all other change initiatives; seems to produce some planning for e-government.

Given the euphoric proclamations that e-government will transform the government radically by improving service delivery, remove agency silos, re-engage the public and generally promote participation and democracy, it is easy to believe in the infinite efficacy of ICT (Cortada, 2002; Criado & Ramilo, 2003; West, 2004). The perceptions of the key managers in the public agencies determine to a large extent how fast e-government progresses. The respondents believe that e-government make additional demands on the staff time, expands the scope of work and does not reduce demand for staff. Therefore, from a human resource standpoint, e-government is more hassle. From the process standpoint, a majority of the agencies believe that the agency processes have not changed or become more efficient. Administrative cost, contrary to popular belief, has not been reduced either (Caldow, 1999). The reservations and uncertainties about the benefits of e-government are consistent with the postulation by Siau & Long (2005:456). They argue that the benefits of e-government are limited in the early stages of e-government but experience sharp increase in the later stages. The case for e-government at the agency level is not necessarily a very compelling one. The many international surveys
that report a very progressive and exalted position of e-government in Malaysia are supply-side oriented metrics. They assumed that the impact is positive and will escalate with the growth of e-readiness in the society and greater e-government. The strong commitment perhaps even “over-commitment” by the political leadership is arguably driving the march of e-government than experienced ICT efficacy at the agency level.

The e-government initiative is probably viewed as a national project driven from the top. Hence, the agencies in the periphery tend to comply and make some progress. Locally driven change to e-government requires a strong shared belief in the efficacy of the ICT in the delivery of agency services particularly to meet the rising expectations of a rather vocal clientele. E-government probably suffers from a common disease that afflicts change initiatives – poor perception of utility. The negative perceptions can also be attributed to the e-government strategy of viewing online services as supplementary to the conventional mode. Hence, the agencies have to cope with the dual system of delivery which necessarily makes additional demands on the staff who are less effective in the new ICT-based work environment. The contribution of e-government to the agency may not be, at this early stage of e-government, commensurate with the resources invested and effort expended. The negative perceptions of e-government are quite natural, understandable and expected. Hopefully, further development of e-services, higher Internet penetration among the public and better e-payment systems, e-government will begin to deliver the benefits as claimed and experienced in many other jurisdictions in the world.

8. Concluding Remarks

The level of e-government readiness in Malaysia portrayed in this study is quite inconsistent with the glowing reports by many international surveys. As has been stated, this paper examined the readiness by examining the leadership and the perception of e-government efficacy at the agency level. The view of e-government from the quality of the website, although a widely used approach in assessing e-government, is not adequate when investigating the readiness to progress from the ‘publish or broadcast’ stage to the ‘transact’ stage. The extent of planning and resource availability will determine the speed of change and also the quality of e-government that can be expected. Greater interest and commitment of the agency managers must be created by, not only issuing change circulars and national e-government vision documents, but also by providing more technical assistance to the agencies to plan and implement the changes, some of which are fundamental and demand new competencies. Without centrally guided planning and implementation of digitization of agency records and information, the next stage of e-government will be slow, chaotic and insular. The state of e-government readiness as illustrated by this study is still massively wanting. The utopian conception of e-government as a singular portal with seamless integration of virtual departments and agencies is still a notion in the realm of technological possibility in Malaysia. Agency level leadership and e-government efficacy will dictate the actual uptake of e-government in the public agencies. This survey paints a somewhat mixed state of internal readiness of the government agencies. Leadership is still wanting and e-government efficacy must be experientially validated. Unfortunately, the gains for the agencies may come late in the e-government implementation. More must be done to cultivate agency level leadership for e-government. Continued reliance on central directives and plans alone will not produce the expected e-government progress. Agency level commitment must be carefully developed for rapid development of e-government given that the transaction stage which most agencies are poised to enter will throw up more complex challenges. The real test is about to begin and the existing set of indicators used by international survey will not be a good guide.

Acknowledgement

The authors gratefully acknowledge the financial assistance provided by the Institute for Research, Development and Commercialisation, Universiti Teknologi MARA, Malaysia.
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Ontario Government Approach Towards E-government

Shalini Mathur

ABSTRACT

This paper describes how a middle-tier jurisdiction transformed itself into a world leader in e-governance in less than five years. It highlights some major achievements by one of the most successful e-governments in the world, as well as the benefits realised by applying Information and Information Technology (I&IT) to the workings of the government in an all-encompassing way. It also covers the foundation on which Ontario’s e-government was built, and describes some of the key strategies within the I&IT framework that have been deployed in various service delivery initiatives to position the Ontario Public Service at the top.

Keywords: E-government, Ontario Public Service (OPS), Information & Information Technology (I&IT), Electronic Service Delivery (ESD), Common Components, Information Technology Infrastructure Library (ITIL)

1. Introduction

Canada holds a unique leadership place in the world’s e-map as a high-performance government generating maximum public value at all levels of its government. The e-government program in Canada continues to set the standards for the rest of the world in all the major categories of e-government maturity encompassing service breadth, service depth and customer relationship management. It has consistently ranked as number one for at least five years now; in fact, over the years it has increased its lead over its closest challengers, Singapore and the United States. Canada is referred to as one of the three “Innovative Leaders” in the Accenture report, and is the only country to have raised e-government toward a new plateau referred to as Overall Service Transformation.

The vision and goal of Canada is to be known around the world as the government most connected to its citizens, a vision that has been fully realised over the past few years. It is ranked number one because it has increased the effectiveness and efficiency of serving the public by providing a broad spectrum of government services online. It has also received top marks for the governance structures that were developed to manage the needs of its citizens.

Within Canada, since 1997 Ontario has focused on becoming the public service against which others compare themselves. In 2002 it won the gold medal from the Commonwealth Association for Public Administration and Management (CAPAM). It was committed to becoming a world leader in electronic service delivery by 2003, and Ontario Public Service (OPS) has not only met this target comfortably, but has continued beyond it towards greater levels of e-government maturity. Today, over 1000 services are
already available electronically within Ontario, a number that has more than doubled in a short time span of three years. These services provide the public with faster and easier access to their government.

The emphasis on customer satisfaction sets Ontario apart. These days, the customers typically want faster, more flexible service; one-stop shopping; more choice about where, how and when they get that service; and convenient 24/7 access to government services. Art Daniel of OPS Restructuring Secretariat has described the trend in this way: “People don’t have time to waste on routine paper transactions. They don’t want to spend an afternoon lining up at a government office. They want to do their business quickly and easily. It’s up to us to get out of their way.”

In Ontario, e-government means applying information and information technology (I&IT) to the workings of a government in an all-encompassing way to serve the public more effectively and make the economies more competitive.

Ontario’s e-government strategy is to use electronic tools to address four key dimensions:

- Deliver routine services to the public in an easier and faster way using electronic channels,
- Transform large public systems, such as health, education, justice, land management, and transportation,
- Open up opportunities for two-way interactions with citizens, and
- Change internal government management processes.

Taken together, these four dimensions add up to the transformation of government through information and communications technology, helping the Ontario residents and businesses realize the promise of the digital age. The goal is the achievement of better service quality, greater citizen trust in government, better value for taxpayer dollars, increased client satisfaction, and increased economic growth.

This paper focuses on Ontario government’s approach to e-governance. It describes some of the online services provided by the Ontario Public Service, highlights some key achievements of the OPS, and presents the foundations and building blocks that enabled Ontario to progress to where it is today.

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Fig.1
2. Highlights of OPS Achievements

The Ontario government has successfully achieved its target of increasing Ontarians’ satisfaction with government services to become a world leader in delivering services electronically by 2003. In moving toward this target, they have significantly expanded the range of electronic services available to Ontario’s citizens to improve quality of life. The electronic channels include the Internet and e-mail, and also kiosks, call centres, interactive voice response systems and fax-on-demand systems.

Some major achievements of OPS e-government initiatives are

- Making more than 75% of all government services available electronically
- Going beyond putting information online by offering transactional capabilities electronically
- Integrating OPS services to provide seamless access from a customer’s perspective
- Offering improved service through new call centre technology.

Substantial benefits have already been realized, including “soft” benefits of changing government-to-citizen and government-to-business relationships, and installing a level of trust in dealing with the government that was previously lacking in the general public.

Some of the other benefits realized are;

- Dramatically reducing the time taken for government services, from several weeks to a few minutes
- Substantially improving accuracy by cutting down on mistakes made by manual calculations and manual form filling etc.
- Reducing client frustration of lining up in government offices or waiting on over-crowded telephone lines
- Easier, more convenient access to government services with extended time windows

A few specific examples of services offered in each of the four dimensions mentioned above are listed below. The lists are by no means exhaustive; they only include a few key examples of each service category. Further details, including complete listing of all the online services, are available from the Ontario government’s public website, www.gov.on.ca.

2.1. Electronic Service Deliver

- Ontario Student Assistance Program (OSAP) – an on-line application process that resulted in the immediate processing of OSAP loan applications, down from an average of 10 weeks prior to the introduction of online application processing.
- Virtual service centre featuring Life Event bundles – assistance is provided for dealing with various events like marriages, having a baby or planning for retirement etc. Resources and services from several different ministries and levels of government have been gathered in bundles to provide the citizen with focused and organized information.
- ServiceOntario self-help kiosks – a number of self-service kiosks or public access terminals that function much like sophisticated automated bank machines and allow the customer to use bank cards to access a wide range of government services.

2.2. Sectoral Reform

- Telehealth Ontario provides health related services over the internet and phone, and has received more than 2 million calls since its launch in December 2001, with the volume of calls increasing progressively to an average of approximately 3,300 calls per day.
- Land Information Ontario – An information infrastructure that supports the province-wide sharing of geospatial data. LIO works to ensure that Ontario’s geospatial land information is accessible, well-managed, easy to integrate and affordable.
E-government: Macro Issues

- **Environet** – an Information Technology vision and strategy for the delivery of the environmental programs. The Environet envisages and provides for individual management information systems to collect and report data.

- **Major Case Management System** – this is a single computerized case system for the management of predatory offence cases across the province. It has been implemented in 66 police services across the province, with 3450 major cases entered to date.

- **Elections Ontario** – An automated enumeration system that has reduced on the ground enumeration by 90% by using data from Land Information Ontario

- **Ontario Business Connects (OBC)** is an example of government-to-business interface transformation. It provides online services to the business community through electronic workstations. OBC is the government’s initiative to simplify access to government programs for business clients and streamline registration, renewal and reporting processes for Ontario businesses.

2.3. e-Citizen Engagement

- **Ontario Smart Growth** - Ontario’s Smart Growth vision focuses on fostering and managing growth in areas across the province and is based on three principles: strong economy, strong communities and a clean, healthy environment. This requires integrated decisions by all levels of government affecting municipal infrastructure on issues such as transportation, land use, housing and public investment, and to ensure these decisions improve Ontario’s quality of life.

- **Ontario Knowledge Network** – The Info-GO service provides search capabilities for the government services offered by an organizational hierarchy such as ministry. It lists the services provided by individual branches and sections within the selected organization. Telephone lookup service is also provided under info-GO.

- **Ontario Parks** – A centralized park reservation service was introduced in 1999 that enables the campers to make reservations on site in the parks over the Internet. Ontario Parks website, www.ontarioparks.com, presents maps and other useful information as well as online booking facility.

2.4. Streamlining Internal Operations

- **Workforce Information Network** – From a Human Resource (HR) point of view, managing an organization the size and magnitude of the Ontario Public Service (OPS) can be a challenge to say the least. In an effort to create efficiencies within the OPS — so government workers can spend more time serving the people of Ontario and less time on administrative tasks — the government has introduced the Workforce Information Network. Called WIN for short, it truly is a winning HR management information network tool that provides an enterprise-wide solution to meet the varied needs of all government workers, from ministry managers to employees.

- **Integrated Financial Information Systems** – A system used to make and track all financial transaction in the government except payroll. It is based on Oracle financials and provides easy access to a number of financial and accounting services to members of the OPS.

3. The Beginnings

Like most other governments in the world, Ontario started out by providing information electronically to its citizens. Ministry of Transportation was leading the government with its introduction in 1991 of Compass road navigation system, which displays real-time traffic conditions about urban highway on overhead signs. It informs the motorists of such events as lane closures, congestions, traffic flow etc. so that the motorists can make informed decisions about their route.

The first interactive transaction service, ServiceOntario, was introduced in 1993. It is the largest service delivery restructuring project of any jurisdiction in Canada, and consists of a number of self-service kiosks or
public access terminals that allow the customer to use bank cards to access a wide range of government services. They are located conveniently in major shopping centres and government offices across the province, are available seven days a week. The use of bank debit cards for ServiceOntario kiosks was introduced in 1998, and today these kiosks provide a wide range of services including: vehicle license sticker renewal; drivers license renewal; address change for driver license; health card and outdoor card; obtaining and renewing outdoor card for fishing and hunting; getting a used vehicle information package or driver records; and paying provincial court fines etc.

A major breakthrough in Ontario’s march towards e-government occurred in 1998, with the approval of Ontario Government’s Information and Information Technology (I&IT) Strategy. This fundamental strategy laid the foundation for e-governance in Ontario, and is discussed in detail in the following sections.

4. Information and Information Technology Strategy

To make e-government happen requires a complete re-design of the internal operations of the government and the operating systems of the broader public sector. By applying I&IT strategically to all areas of government activities where it makes sense, the government can provide its customers with seamless, efficient and effective service and provide better value to its taxpayers. The goal of the OPS is to ensure that Ontario is the best place to live, learn, work, do business and visit.

The foundation for e-government was laid in 1998 with the approval of Ontario Government’s Information and Information Technology (I&IT) Strategy. Comprehensive and groundbreaking, the strategy proclaimed a vision that remains the fundamental direction for I&IT in the government today. It provided a roadmap for harnessing technology to enable the OPS to do business differently to improved services that increased public satisfaction. The strategy also enabled the streamlining of government’s internal operations to get a better value for taxpayer dollars. An enterprise I&IT architecture was established in the OPS as a guiding framework, like a blueprint directing the construction of a building. Constructed on this foundation are two other key building blocks: an emerging Electronic Service Delivery Strategy and a series of initiatives to transform major public sector systems. The I&IT strategy fundamentally altered the way the I&IT function is planned and managed throughout the OPS. It called for:

- A common I&IT infrastructure across the entire government
- Creation of corporate, government-wide I&IT policies and standards for inter-operability, stability and security
- The restructuring of the I&IT into a government-wide organization, with clusters of ministries sharing a CIO
- Governance and new ways of managing accountabilities for I&IT resources.

A further underlying objective was systems integration to overcome the traditional barriers between program areas since their computer systems could not communicate. In line with this strategy, the government was restructured to have a corporate I&IT organization, and eight I&IT “clusters” were formed that regrouped the ministries providing a common theme of services. A conceptual layout of the clusters is given in figure II below, and the details of the clusters are given in Appendix 1. In a move towards e-government, the strategic I&IT investment directions are:

- Constructing a common infrastructure;
- Maintaining and renewing ongoing business solutions; and
- Progressing on strategic business transformation initiatives
5. Towards a Common Infrastructure

A common I&IT infrastructure permits interoperability, facilitates information links within and beyond government and enables integrated, customer-centred services. Within OPS, a common I&IT Enterprise Architecture was developed based on Zackman’s Framework, and a number of common components and artefacts were identified that can be reused in the development of portals, thus realizing cost savings and efficiency. The shift toward electronic service delivery – referred to as GO-e-2003 at the time – represented a key building block in Ontario’s e-government. This was followed up by the development of a comprehensive portal guide, which provided guidelines on developing government websites for easy, seamless access to the public. Based on the I&IT framework, common infrastructure components were developed at various levels of the I&IT architecture model, and include technology infrastructure, application infrastructure and information infrastructure. These are described in detail below:

5.1. Technology Infrastructure

Hardware including servers, network, mainframes, desktops, telephones etc. It serves as a fundamental utility for the delivery of e-government services. As a utility, it is robust, ubiquitous, dependable and efficient. Projects across the OPS are using this common architecture to accelerate development, reduce costs and align with other initiatives. The reuse of common technology infrastructure is projected to produce a 50% cost savings. Some of the major infrastructure accomplishments are:

- **Integrated Network Project (INP)** An OPS-wide integrated network that provides wide-area network and local area network services seamlessly across the OPS. This enables ministries to satisfy growing business requirements with a modern network at competitive pricing and virtually limitless capacity. It has enabled the program areas to implement network-based solutions, and has also enabled them to manage known matrices and service profiles. In effect, the network has become a commodity that is available seven days a week, and 24 hours a day.
- **Common Technical Footprint**: This involves standardization of basic technology platforms, interfaces, programs and support processes. This has resulted in a consistent operating environment across the OPS and economies of scale. As a step towards the common technical footprint, a new business model
The IT Service Desk Project is implementing standard processes, technology platforms and tools across OPS service desks. Three Centres of excellence (CoEs) have been established, one in each of the Transportation, Justice and Central Agencies clusters. These CoEs serve as seed beds for Information Technology Service Management (ITSM) practices. Common ITSM and Information Technology Infrastructure Library (ITIL) processes are applied as integral parts of the service delivery model. Examples of these processes are incident management, configuration management, service level management, problem management and change management.

The first generation technology infrastructure is now complete and is serving as a fundamental utility for the delivery of government programs. In the next stage of development, the I&IT focus will be primarily next-generation common infrastructure to support changing ministry business objectives and program needs.

5.2. Application Infrastructure

The computer software that processes data and includes common components that are reused to perform the same routine functions in different systems. The infrastructure uses three electronic delivery channels – public access terminals, call centres and the Internet. The use of common components has resulted in faster, more effective and less costly development. It has also helped to reduce complexity and bring greater consistency across the OPS.

5.3. Information Infrastructure

Data that is organised to create value through common data definitions, information architecture and a consistent data structure. The aim of a common information infrastructure is to maximize the opportunities to appropriately link and share data. The prime information infrastructure priorities are Knowledge Management to improve decision-making and stakeholder relationships, and identifying common data elements that can be used across the enterprise, such as name and location.

Within the OPS, service management and delivery models are being developed following the best practices and recommendations of ITIL. General awareness of e-government principles, architecture, ITIL and government directions was created by organising on-going training sessions, conferences, architecture open houses and public sector trade shows.

6. Security Strategy

Another integral part of the I&IT strategy is the development and implementation of a security strategy. Public trust is essential for the success of any e-governance initiative. There is a need to establish end-to-end security in all I&IT environments while connecting all the three types of infrastructures described above. In March 2002, a Corporate I&IT Security Strategy was designed to create a secure electronic operating environment. It covers the IT systems themselves, as well as the facilities that house them and the people who run and use them.

The Integrated Security Interface is a common component providing customers with electronic credentials to access services, coupled with firm assurance that their privacy is protected and their transactions are secure. Secure transactions are enabled over open networks using Public Key Infrastructure. The components of Security strategy include Security Policy, Security Awareness, Threat and Risk Assessment, Security Classification of Information, Business Continuity Planning, Physical Security, Incident Analysis, Personnel Security, Security Organization and IT Security.
7. Major challenges

Some challenges have been encountered during the implementation of the electronic services, but most were dealt with by providing innovative solutions as summarized below.

- **The challenge**: The original need for paper validation – during pilot project, the forms were still filled out by hand, signed and fed into the machines, which couldn’t tell if the piece of paper was correct or not.
- **The Solution**: Legislation was changed to allow electronic transaction without a signature, and the need for paper forms was eliminated.
- **The challenge**: The enormity of transforming business requirements into system specifications.
- **The Solution**: Deployment of common I&IT infrastructure and architecture components, defining an Enterprise Portal Strategy.
- **The challenge**: The requirement for new software, hardware, version upgrades, and new security measures.
- **The Solution**: Using ITIL recommended best practices in handling incident, change, release and other service delivery and support processes to introduce changes and new releases in a controlled manner and thus minimising any adverse impact on production environment.
- **The challenge**: Bringing separate ministries, separate processes, locations, technologies and cards together into one single service – the variety of services offered involves accessing different databases from different Ministries geographically located far apart. The Ministries providing automated services include those of Transportation, Health, Natural Resources, Attorney General and Consumer and Business Relations; as well as the private sector.
- **The Solution**: Partnership-building.

8. Moving Forward

Ontario has successfully used I&IT to support the internal government transformation as well as making the government services readily available to the public. The government will continue to use I&IT to support its strategic priorities by broadening the scope of transformation to fully engage stakeholders in creating a transparent and accountable government. An outwardly focused e-Ontario strategy is being developed to:

- enable government and cross-jurisdictional collaboration to drive social development, economic competitiveness and regulatory harmonization
- support integrated, cross-jurisdictional service delivery through multiple channels that is customer-focused, seamless and convenient
- develop enterprise management systems and approaches that derive more value from investments e.g. legacy systems, back office re-engineering, horizontal funding, project management and internal capacity building
- Connect government and citizens through increased transparency and citizen engagement opportunities.

9. Concluding Remarks

In this paper, we have taken a brief look at one of the most successful e-governments in the world, and briefly discussed the strategies deployed by it to achieve an impressive range of services. These services have changed the ways the public is dealing with the government, and have generally provided a very high level of customer satisfaction, which is the ultimate measure of success. As both the provincial and federal governments in Canada continue to lead the world stage in service transformation, the other countries have the advantage of “fast tracking” their moves towards e-government by building upon the experience already gained by Canada. The strategies described here, including consolidation of different government departments into a few “clusters”, introducing an I&IT framework, and subsequently developing a series of common underlying infrastructures to support electronic service delivery initiatives, can easily be adapted by other
governments across the world to suit their needs and accelerating their own march towards e-government.

Acknowledgements

The author wishes to acknowledge the help and support by a number of colleagues towards the preparation of this paper. My sincere thanks to Lisa Sherin, Karl Cunningham, Mary Settle and the others within the OPS for pointing me to the right resources during my research. I’d also like to acknowledge the constant help and encouragement provided by Steve Charikar. Special heartfelt thanks to Prof. M. P. Gupta of IIT, New Delhi, India not only for his valuable time and encouragement in continuing the pursuit of this project and persuading me to finish the paper; but also for offering to include this work in the International Conference on e-governance proceedings. Last but not the least I acknowledge the understanding and support given by my family while I pursued my work during many evenings, weekends and even while we were on family vacations!

Appendix 1 – The I&IT Clusters of Ministries

- **Land and Resources I&IT Cluster (LRC)**
  The LRC provides Information and Information Technology support to four ministries:
  - Agriculture, Food and Rural Affairs (OMAFRA)
  - Environment (MOE)
  - Natural Resources (MNR)
  - Northern Development and Mines (MNDM)

- **Central Agencies I&IT Cluster (CAC)**
  The CAC provides Information and Information Technology support to the central organizations of Cabinet Office (CAB), the Ministry of Finance (MOF), and Public Infrastructure Renewal (PIR).

- **Community Services I&IT Cluster (CSC)**
  The CSC is responsible for the provision of I&IT services to several ministries and related agencies including:
  - Ministry of Citizenship and Immigration
  - Ministry of Culture
  - Ministry of Education
  - Ministry of Intergovernmental Affairs
  - Ministry of Municipal Affairs and Housing
  - Ministry of Tourism
  - Ministry of Training, Colleges and Universities
  - Office of Francophone Affairs

- **Health Services I&IT Cluster (HSC)**
  The HSC provides services to the ministries of Health and Health Promotion.

- **Children, Youth and Social Services I&IT Cluster (CYSSC)**
  The CYSSC provides services to the ministries of Community and Social Services and Children and Youth Services.

- **Economics and Transportation Cluster**
  The two clusters of Economics and Business (EBC) and Transportation (TC) are now one cluster as a result of realignment. The cluster provides services to the Ministries of Labour, Economic Development & Trade, Research & Innovation, Transportation and Energy.
Justice I&IT Cluster (JTS)

JTS is the IT cluster responsible for providing IT services to the Justice Enterprise. The Ministry of the Attorney General and the Ministry of Community Safety and Correctional Services form the majority of the Justice Enterprise in the Province of Ontario.

Government Services Cluster

The new Government Services Cluster is responsible for providing IT services to the Ministry of Government Services.

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About the Author

Shalini Mathur is a senior IT specialist in the provincial government of Ontario, Canada; and is currently working as a Technical Team Lead responsible for providing IT services for large, complex enterprise-wide data centres with infrastructure consisting of multiple mid-range server farms. She works closely with service and capacity planners, solution designers and operational support staff to ensure quality and timely services are provided to the satisfaction of the various ministry program areas within different ministries and clusters of the OPS. Her academic background includes an honours degree in Computer Science and Physics, a master’s degree in Radio Astronomy and a diploma with highest honours in Business Management.
A Preliminary List of Target Services of E-governance

Nicolae Costake

ABSTRACT

The present paper was inspired by the EU Ministerial Conference in Manchester EGOV 2005, having the logo “Transforming Public Services”. A Ministerial Declaration was adopted, followed by the Industry’s Declaration. Very interesting and effective exchanges of information and experiences took place during the sessions and the exhibitions organized in the Conference’s framework. The main idea was the best services for the main customer: the citizen. However, there was no answer to the possible question of the target public services, representing the goals of their transformation.

A possible answer to this question, based on a system engineering-like approach is proposed. Three categories of main customers: are considered: citizens, civil servants and organizations. Internal and external stakeholders are also considered. The conclusion is presented as a list of necessary e-governance Services and their precedence. They are structured in two categories: (i) e-Services for public (citizens and organizations) and (ii) e-Services supporting the societal management.

1. The Message

The message of the present paper is: E-government is a component of a needed informatized societal management. It is necessary to adopt a broader view defining target e-Services: a) to assure the environment and processes proper to the development of civilized life of the citizen including the corresponding development of businesses answering to their requirements and b) to assure the performance of the executive, judicial and legislative societal activities and its permanent improvement, including the adaptation to the changes generated by the technical and technological progress and the globalisation in the context of the Information Society.

2. Background

The EGOV 2005 November EU’s Ministerial Conference in Manchester was an important event. It was oriented of the problems of “transforming public services” and supported by sessions and exhibitions. (see EGOV, 2005). A Ministerial Declaration ([Ministerial, 2005]; [Timmers, 2005]) was adopted, followed by the Industry’s Declaration [EICTA, 2005]. Full inclusion by design, integration, stimulation the innovation and sharing best practices were considered the key development directions. The Ministerial Declaration, as well as practical all authors declared the citizen as the key customer of e-government. The transformation of public services was discussed from various aspects and points of view (see http://www.egov2005conference.gov.uk and [Booz, Allen, Hamilton, 2005]

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Many points of view were expressed about the concept of e-government, as shown in reference literature (see e.g. [Gupta and Kumar and Bhattacharya, 2005], [Antiroikko and Pakk. 2006]). A point of view [Scholl, 2002] (in fact shared by many governments) is to distinguish between governance and technology which supports governance, provides government services and enables actions of citizens upon governance. Other authors (e.g. [Glassy and Chappelet, 2003]) underlined a development of e-government. The European Commission used the following definition: for e-government [Role, 2003]: “use of ICT in public administration, combined with the organisational change and new skills, in order to improve public services and democratic processes and strengthen the support for the public policies”. One can recognize following components: technology (ICT); scope (public administration – suggests Executive Authority); management (organizational change and new skills); objectives (improve public services and democratic processes, support public policies – these are implicitly considered exterior to e-government). Belgium’s e-government Strategy [Vanvelthoven, 2005] considers essential information sharing and business process re-engineering. The strategy is oriented on three axes: a) “ICT and the Belgian state” (such as e.g.: high speed network connecting all the administrations; authentic information sources => registers of uniquely identified basic entities); b) “ICT & Belgian Society”(such as e.g.: eliminate barriers(including financial) to ICT; increased feeling of security => universal e-ID card; web services for citizens); c) “Belgium an ICT Knowledge Region”: involve national ICT Industry to acquire e-government experience and support exporting e-government systems and services. The importance of Information Quality was also underlined ([Klischewski and Scholl, 2006]. UK’s “Transformational Government” document [HM Government, 2005] considers technology “as a strategic asset and not just a tactical tool”. The vision is “making government transformational…keeping up with a continuously changing, globalised society”. UK’s “National Strategy for Local Government”[Office, 2005] has the following objectives: “a) to create a common framework within which local strategies can be planned in confidence; b) to describe the necessary support to be put in place nationally; c) to identify common priorities in technology and joined-up services that will contribute by reducing costs” for the local bodies. The main focus is on transforming the public services to multi-channel e-Services, for the benefit of citizens and businesses, renewing local democracy, promoting economic vitality and local e-government based on: co-ordination of local and central governments; promoting local planning; developing support for technical solutions and training; developing local e-government national projects; supporting local governments and local partnerships; integrating services around customers; establishing standards; supporting privacy and data sharing; establishing a national infrastructure. Conclusions referring to different socio-economic environments are also important (see e.g. [Mitra and Gupta, 2005]).

However, no answer was given to the possible question of the target public services. This answer implies the specification the scope and of the e-governance strategy in the context of the requirements represented by the i 2010 Initiative for meeting the Lisbon objective. The “meeting of the Lisbon objective” implies the existence of a set of key performance indicators. It is equivalent to the definition of the governance’s performance in answering requirements for socio-economic development.

One can notice the emerging idea of a need of a double approach in using ICT in e-governance:
• developing e-Services for citizens and organizations, for continuously improving the living and business environments;
• developing e-Services specific for societal management based on integrating the information systems of the Executive, Judicial and Legislative Authorities within their scope and within the socio-economic system (central and local levels), in order to increase the quality of the societal decisions. (Of course the international level can be added. It was considered out of scope of the present paper, but does introduce essential changes.

In the following sections, this double approach is analysed. It starts by a short discussion on governance defined as societal management, including basic technical and economic aspects. Basic requirements are deduced. On this basis, the target governance e- services are proposed also with
3. The Governance Problem

In the present paper the term “governance” is associated the entity “socio-economic system” (SES). The discussion will remain at a high level, to remain compatible to a reasonable volume.

A basic model of a SES is presented in figure 3.1 (This model does not mention explicitly the Spiritual Authority).

The structure shown in figure 3.1 is an artefact, a result of the human activity. In the absence of the humanity, the living species had a slow and steady evolution towards complexity and diversity (increasing the intrinsic information) in a dynamical equilibrium in which the rate of reproduction and the own capabilities are automatically adapted to the availability of biological (live and death) and non-biological resources for consumption as food. The small number of possible automatic closed loops of the inert world were increased by a large number of automatic closed loops of the living world. Humanity, apart the sense of property has the capacity to accumulate experience by perceiving and communicating information and transforming it into knowledge. Conscious actions could be supported by technology. Technology brought productivity and permitted specialization of activities. Productivity brought the capacity to exchange goods (reciprocal transfer of properties).

Exchange of goods or services needed of money, for easing the process. Money brought the market, as an automatic process to determine prices. Technical and technological progress started. So did the capacity to develop artificial environment and conserve, grow or gradually destroy natural resources and equilibrium. The needs developed from food, shelter and clothing to accumulation of well-being, wealth and social security or power, and further to sophisticated ones. Contradictions appeared. Men are unequal. Limitation
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of resources generate individual conflicts, or wars. Individual interests and collective interests may diverge. The state (instantiation of the societal management subsystem) appeared to assure stability, synergy, conflict solving and generation and respect of the law and order according to known formal rules. A first solution of assuring a viable functional SES was that of the layered society, reproducing itself. Every layer was defined by rights and obligations which reflected themselves in wealth. The exception was the move from a layer to another one, except to the lowest layer (initially slaves (suppliers of free forced services) by falling prisoner of war or by failing to pay debts. In the layered SES the rule is the predetermined inequality of chances. This category of SES is not interested in the technical and technological progress. The modern SES offers more or less equal chances, stimulating the progress. However, in the conditions of unpunished breach of law and / or lack of democracy and / or competition, the SES can shift to a quasi-layered one.

The actions of the state upon the societal operational subsystem can be classified in following categories:

- Individual services for the population and organizations, such e.g. as: the 20 e-Services specified in the e-Europe programs, recordings and certifications of events, identities, relationships and states etc.
- Products and services for groups of population and organizations, such as e.g.: education, health, social security, culture etc.
- Products and services for the SES (central, sectoral, local, individual levels), such as: supply and enforcement of laws and other regulations, protection of property and order, development strategies and planning, supply of public coherent information and reports, conflicts solving and punishment of breaches of the law, financing of own activities, public acquisitions and investments, of general interest works and activities, influencing the financial processes by controlling supply of money and inflation and supplying banking regulations to keep under control maximal or minimal values of interests and conversion rates, assurance of anti-disaster protection, assurance of the respect of the rights and obligations of the citizens and residents, assurance and development of international relationships and cooperation (including credits and disbursements), assurance of national defense and strategic reserves etc.
- Gathering and collection of information and financial means by taxes (and similar), fees (for some specific products and services), profits from owned enterprises, reduction of losses due to poor governance or fraud (e.g. non-declaration or false declaration of properties, incomes or transactions) or corruption (e.g. incorrect reductions or postponing approvals concerning due tax payments) etc.
- Organization, collection, processing and reporting of electoral feedbacks and of proposals and complaints from citizens and organizations etc.

Provided that higher performance from the point of view of the tax payers is accountable and guaranteed, public activities can be transferred to the private sector.

A consequence of the above presented is that the economic performance of the businesses in the sense of adding value (in the societal operational subsystem) depends not only on their endowment, on the international business environment and on the performance of their management, but also on the performance of the societal management as the major factor influencing the national business environment.

It is obvious that the most important source of revenues of the state is the economic growth resulting from near optimal strategic and current societal decisions by generating normative acts tuning or developing automatic virtuous societal loops and supply of information and support for the societal operational subsystems. Pre-requisites are: assurance of the quality of the collected information, decision support information and tools, simulation of the likely effects of proposed normative acts, performant democratic feedback including for avoiding intoxication by power, generalization of the use of quality management etc. Performance of management supposes (i) precise division of decisional authority over the whole domain of the SES (managerial action), (ii) definition of long range and general interest objectives, defined by a set of key performance indicators and (iii) coherent decision de-centralization, which implies coherent information
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i.e. a logically centralized integrated information system. With other words, governance is also a complex system engineering problem (see some illustration in Annex A). The requirements on the quality of the societal decision-making increases with its hierarchical level. The history presents many examples of results of competent and incompetent societal managements. The problem of the performance of societal management is particularly important in present time, as suggested e.g. by:

- The gap of more than 100:1 of the ratio between the values of the GNI / capita in USD (51.8k in Norway and 0.35k in Burkina-Faso say, according to World Bank’s data for 2004). These data being averages, if one considers rich and poor groups of population, the gap is certainly much higher than 2 orders of magnitude.
- The critical global problems concerning demography, accumulation of highly destructive weapons, climatic changes, irreversible consumption of limited reserves of hydrocarbons, irreversible destruction of species, underground economies, terrorism, slavery etc.

The opinion is expressed that, due to the complexity of the SES, the conventional technology used in strategic and tactical societal decision-making is no more capable to meet the performance requirements, e-governance becoming a necessity. New e-Services should complement the ones considered in e-government. They are part of the development and implementation of an e-governance Strategy, in the sense of specific e-governance Architecture and roadmap (see e.g. [Costake and Galindo, 2005]). The European Commission prepares the road towards this type of system architecture (see http://europa.eu.int/comm/IDABC). Examples of technical documents and European projects are marked in Annex B.

4. A List of The E-governance Target E-services.

The following table 4.1 is a proposal for the target Public e-Services. Users multi-channel access is assumed as a general characteristic. It tries to suggest a technical vision of e-governance at country level. It has also in mind a need for a proactive approach to an ICT market characterized by: (i) high economic potential; (ii) traditional obstacles (such as e.g. lack of transparency, too complicated workflows and procedures, lack of inter-departmental communications and collaboration, departments are looking to their own needs, not to their customers ones etc. (see [H.M. Government, 2005]); (iii) recognized socio-economic importance, attracting foreign grants and loans. Optional provisions are mentioned in brackets [ ] .

5. Concluding Remarks

Following conclusions result:

- The increased requirements for performance in societal management cannot more be met by the traditional "pen and pencil" technology. Informatized societal management gradually becomes the necessary keyword.
- A double approach is needed:
  - developing and improving e-Services for citizens and organizations (usually called e-government);
  - preparing and improving societal decisions
- 15 categories of specific e-Services were identified.

6. A Possible Next Step

The proposal is expressed to give the interested specialists the time for reflection and to possibly organize at ICEG 2007 a section on Informatized Societal Management, inviting public decision-makers, and specialists in ICT and management to share ideas and experience on the subject.

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<table>
<thead>
<tr>
<th>No</th>
<th>Category</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Basic public services</td>
<td>Provision, follow-up and updating of ICT development and e-Governance strategy (including key standards and aggregate planning)</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>Shared basic informational resources (general interest nomenclatures, registries and databases, [official statistical data warehouse])</td>
</tr>
<tr>
<td>3</td>
<td></td>
<td>Public knowledge base (multilingual definitions of concepts - including synonyms and antonyms if applicable, administrative-type procedures, ICT standards)</td>
</tr>
<tr>
<td>4</td>
<td></td>
<td>One-stop recording and certification of events or states (e.g.: birth, ownership)</td>
</tr>
<tr>
<td>5</td>
<td></td>
<td>One portal access to public information</td>
</tr>
<tr>
<td>6</td>
<td></td>
<td>Definition and computation and publication as time series of official societal key performance indicators</td>
</tr>
<tr>
<td>7</td>
<td></td>
<td>Public and coherent statistical information and basic statistical models relevant for micro-economic and macroeconomic analysis</td>
</tr>
<tr>
<td>8</td>
<td>General services</td>
<td>One-stop 12 e-Europe services + New services (such as e.g.: advanced e-Democracy, and Identity Management (including certification and authentication) for citizens and residents</td>
</tr>
<tr>
<td>9</td>
<td></td>
<td>One-stop 8 e-Europe services + New services (such as e-invoicing, e-reporting etc.) for organizations</td>
</tr>
<tr>
<td>10</td>
<td></td>
<td>e-Public acquisitions (common goods, public supply for investments, public works, including follow-up of contracts, results and customer satisfaction and publication of tenders [and supplier’s performances] + New services for public institutions and civil servants</td>
</tr>
<tr>
<td>11</td>
<td></td>
<td>Decision supports for public institutions based on data warehouses and business intelligence</td>
</tr>
</tbody>
</table>
| 12 | Specific services for the Legislative activities of the State (Parliament, government, other central and local institutions having delegated authority to draft/generate normative acts) | a) Information system supporting generation of normative acts (e-Documents work flow based on e-Documents and e-archives, granting public access in certain steps, updating current work draft database[s], final issues public legislative and jurisprudence database [as a normal result], interfaced to the EU and other international legislative databases) 
 b) Automatic generation of virtual acts (valid at a given moment, taking into account all the active amendments)  
 c) Simulation of likely consequences of the draft normative acts, before submitting to approval  
 d) Computer-aided logical analysis of the content of draft normative acts  
 e) Analysis of the actual consequences of the implementation of a normative act  |
| 13 | Specific services for the Judicial and Auditing activities of the State (Courts, prosecutor’s offices, penitentiaries, other investigating or auditing organizations) | a) Database of active judicial cases + follow-up of their trajectory within the Judicial System and the implementation of final judicial solutions + data warehouse for calculating judicial performance (e.g. durations, uniformity of solutions)  
 b) e-Publicity of final solutions  
 c) Information feedback to Legislative / Executive Authorities, suggesting necessary improvements of the legislation  |
| 14 | Specific services for the Executive activities of the State (Government, ministries, other executive central institutions, provincial and county councils, townhalls, and their subordinated institutions + organizations to which executive state activities were outsourced) | a) Integrated information systems for managing public activities such as, e.g.: concerning people and organizations (health, education, labour, jobs, social security property, competition), multi-layered geographic information system, disaster management etc.)  
 b) Linked integrated information systems for public sectors such as e.g.: agriculture, forestry, fishing, energy, transports, financial etc.  
 c) Regional and local integrated management information systems (for the councils and town halls, with three orientations: (i) serving local communities and businesses; (ii) administration of public private property; (iii) management of subordinated enterprises  
 d) General strategy and planning information systems (optimization of decisions concerning e.g. taxation and banking interests, allocation of subsidies etc.)  
 e) Solutions for best meeting expectations of citizens and organizations, promotion of e-Business and e-Banking, provision, follow-up and updating of socio-economic development strategies etc.) based on modelling and supported by the statistical information system  |
| 15 | E-governance integrated information system | a) Anti-underground activities (including corruption) integrated information system (minimization of the main losses in the functioning of the economy)  
 b) Governance by adjustments and developments (Governance by commands restricted to emergency situations)  |
| 16 | Connections to International information systems | a) Loose connections such as e.g.: reporting to, payment of fees and contributions, offering information, receiving information, offering help, receiving help  
 b) Strong connections such as: integration of statistical information systems, interoperability of administrative information systems, world information systems (weather forecast, geographical information system, transport and communications information systems, police information systems etc.)  |
References


5. Ministerial Declaration approved unanimously on 24 November 2005, Manchester, United Kingdom of the EU’s Ministerial Conference EGOV 2005, Manchester


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ANNEX A

E-governance Model –1 (Informational coherence, general feedback, judicial and legislative authorities)
Draft laws

ANNEX C

E-governance Model –2 (Societal operational subsystem –only consumer market is represented, general feedback, executive and legislative authorities)
E-governance Model –3 (Examples of possible problems, disturbances and/or vicious loops)

E-governance Model –4 (Examples of generation of virtuous loops by new societal information circuits and improvement of solutions)
E-government: Macro Issues

ANNEX B
E-GOVERNANCE INFORMATION SYSTEM (and IDABC Projects)
Java Economy in India: A Conservative Estimate

Rajanish Dass1* and Rashi Goyal1

ABSTRACT
Java and Java based applications have caught attention since their inception. With the IT sector grabbing the centre stage of the Indian economy due to its fast growth, Java plays a major role in boosting this sector. This becomes pertinent from the fact that majority of the software services and solution providers use Java as a key platform and the numbers of Java developers in the country are increasing at a substantial pace. This paper attempts to assess and quantify the economic impact of Java in India. The aim of this paper is to come up with a rough-cut worst case analysis, so that the actual impact on the economy can be said to be at least as good as the findings, but will be much more in all circumstances. For this, the major components of the Indian Java economy have been identified and estimations have been made to calculate the Java-based revenues for each of these. Alternative calculations have been done to cross-check the consolidated figure and to try to reach a conservative baseline estimation of the Java India Economy. These have then been considered both as a percentage of the Indian GDP and the Global Java economy to get a better perspective of their magnitude. With conservative approximations, the lower-bound value of the Java Economy in India is approximately over 2.1% of the Indian GDP.

1. Introduction
Invented by Sun Microsystems in 1995, Java has become an integral and essential part of today’s technology world. Back in 1998 when Java 1.1 was released, it saw a big boom in its acceptance with 2 million downloads in the very first year. The applicability of Java was so ubiquitous, that Java was used in Mars Rover that touched the grounds of Mars in 2004.

Due to its portability, multiplatform capabilities and strong security features coupled with its open standards, Java is being used for diverse applications through out the globe. These ranges from interactive Internet usage, real-time graphics, mobile gaming and instant camera imaging to developing intelligent electronic devices, powering onboard computers in toys and cars to securing electronic transactions in retail and finance. Today, Java is one of the fastest growing programming environments in the world (Press Release, 2003) and Java software is run on more types of consumer and embedded devices, smart cards, ATMs, thin clients, PCs, servers, and mainframes than any other software. It has also spawned off a loyal and ever-growing worldwide community of over five million Java developers.

With its large developer population, the ongoing mobile revolution and its reputation as a fast emerging IT hub, India has emerged as an important IT destination. A large chunk of the software service providers from India use Java for developing solutions for their clientele. In a way, Java has provided essential thrust

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to the Indian IT momentum; so much so, that today at least half of the Indian IT workforce consists of Java developers.

Looking at the deep impact that Java has provided to the global technology usage and considering that IT industry happens to be a key component of the Indian economy, in this paper, we have tried to pull together some numbers to quantify the economic impact of Java in India. With no similar studies in circulation, we have based the calculations on data freely available from reliable secondary sources. The aim of the study has been to come up with a pessimistic approximation of the Java impact on the Indian economy, so that the numbers may be taken as the bare minimum floor value of the total probable impact. To ensure that our calculations are robust, we have also cross-checked them through an alternative rough approximation about the size of the Indian Java economy.

The rest of the paper is outlined as follows: Section 2 deals with the available literature in this field. In section 3, we briefly discuss about the methodology that we have followed. Section 4 discusses about the impact of Java on the Indian IT-sector of India and in section 5, we have come up with the impact of embedded Java in India. Section 6 talks about the opportunity costs gains obtained by using Java (which could not be fully quantified and added to the overall calculation owing to lack of data). In similar lines, in section 7, to show the impact of Java, we have also discussed about the rise in the employment in the country along with increased tax collections (which again were not added while finally consolidating the numbers, to avoid overlap from previous parameters) and consolidate these findings in section 8. The alternative, back-of-the-envelope calculation is presented in section 9, which actually conforms to the overall findings. We conclude our findings in section 10.

Java’s entry in the Indian market is a very recent phenomenon which probably explains the dearth of available literature about its economic impact on India. According to Sribhibhadh, most forecasts about the economic size of an industry focus only on the direct revenues obtainable from the software and fail to recognize the related business opportunities created by the halo effect of the software (Sribhibhadh, 1999). A study by the Business Software Alliance and Price Waterhouse focusing on the economic impact of the software industry in Southeast Asia concluded that there was a multiplying economic effect of about 1.7 for both upstream and downstream industries.

This study also showed that some of the significant benefits to the economies of Indonesia, Malaysia, Philippines, Singapore, Thailand and Vietnam from the software industry included better employment rates, addition in the skilled workforce, higher fiscal revenues in direct and indirect taxes, and greater global competitive advantage (Andrade, 1998). Further, Sichel provides an economic perspective of the Computer Revolution in the US and concludes by stating that IT has played a major role in the U.S. productivity revival (Sichel, 1997). Stiroh has discussed how economists measure the impact of IT using the hedonic theory of prices. He has provided empirical estimates of this impact both at the macroeconomic level and at the level of individual firms (Stiroh, 2001).

2. Methodology

Due to the lack of relevant accurate data, some approximations, along with relevant logic for making these approximations, have been made in the current estimation process.

The basic methodology that we have followed is as follows: The two major contributors of the Indian Java economy were identified as the Indian IT sector and the Java embedded appliances and devices. In the former case, it was assumed that for a particular technology, the IT revenues are directly proportional to the number of developers and programmers of that technology. With this assumption, the total Java revenues from the relevant IT sector components were calculated and added up. In the case of embedded Java, it was found that a substantial market existed for primarily three areas, mobile gaming, mobile ringtone and the smartcards. While the mobile gaming revenues were available, the revenues were mobile ringtone were calculated in two
ways, from the number of mobile handsets in India and from the global ringtone market and the more conservative figure was taken as the final one. For the smartcard market, the 2004 figures were available and these were scaled-up by the predicted annual growth rate in this segment.

Two other major contributions of Java to the Indian economy are due to its being based on open standards and also because of the economic efficiencies generated in the Domestic IT sector. These savings in opportunity costs, though being an important contribution of Java to the Indian economy, could not be completely quantified due to the lack of available data. Further, other focus areas like Java-related state and centre taxes and salaries of the Java employees were not included in the subsequent calculations as a substantial part of their contribution has already been covered previously.

Finally, the consolidated figure arrived at by adding up all these components was cross-checked through back-of-the-envelope calculations. For these calculations, the size of the Java economy was viewed as roughly a function of the number of Java developers in the economy and the magnitude of the Indian Java economy was determined by considering the number of Indian Java programmers vis-à-vis the global Java community.

3. The IT Sector

With a double-digit year-to-year growth of 28% and annual revenue estimates of $36 billion for FY06, the Indian IT sector is one of the fastest growing in the world (IBEF, 2006). Much of this momentum can be attributed to the free availability of the robust Java framework which has allowed a multitude of small Indian start-ups to compete successfully with global peers.

For instance, Pramati Consultancy, a smalltime software company was able to build India’s first application server using Java. Thanks to the open source software and strong online support, it gave tough competition to many global majors. Another little known company, CG Mearsk, a JV between Crompton Greave and Mearsk, uses Java to develop next generation applications for mobile phones. These are just two of the many examples of the success stories that have been charted in the Indian IT map during the last decade or so. It is not surprising that almost 50-60% of projects of any IT company are Java based.

The Indian IT sector consists of Hardware, Software and the Services Sector. The impact of Java on this sector can be measured by estimating the revenues from development and maintenance of Java-based software packages and applications both for foreign and domestic Indian clients.

The IT services can further be categorized into Hardware Services, Software Services and Training Services. The majority of Indian IT companies are service companies involved in developing customized software solutions, system and network integration projects and IT consultancy services. The total revenues from the software services were placed at $19.6 billion in 2005-06 (Datamine, 2006). To get a rough idea of Java-based software services, this figure has been scaled down by the Java percentage of software developers. A similar exercise has been done for the training services which include both the corporate training programs and the individual training classes for software programmers. Hardware services include facilities management, own systems maintenance and third-party maintenance. These have not been considered in the calculations as the Java component of these services would be very less and also no reliable parameter could be found to estimate these. The total value as calculated in Table 1 comes to $10.22 billion.

4. Embedded Java

Embedded Java refers to Java-based software applications which run on dedicated hardware like mobile phones, consumer electronic components, control systems etc. as opposed to computer workstations. Java embedded hardware includes appliances, toys, handhelds, mobile phones, PDAs, pagers, video games, entertainment devices, computers, industrial and automotive components and consumer electronic goods like TV and Washing Machines running on Fuzzy logic. In India, out of all these, the usage of Java in mobiles,
particularly mobile gaming has seen a stupendous growth in the recent past and has emerged as a high potential area. Due to its open standards and operating system (OS) neutrality, Java has become the language of choice in developing mobile applications. It has also led to the emergence of specialized game development studios such as Paradox (a 100% Reliance subsidiary) and Bangalore-based Dhruva Interactive in India.

According to a NASSCOM report, the Indian mobile game-development industry is a $100 million business with an annual growth rate of 100% (Table 2). The domestic demand comprises 20% of this business and this share is expected to grow to 30% ($ 150 million) by 2010 (Shinde, 2001). Not only these, a large number of these games are being developed in India and the country is slowly becoming an outsourcing hub for global wireless mobile gaming market.

Apart from gaming, the mobile, the lucre of 80 million people armed with handsets and willing to pay for entertainment is also pulling scores of media companies, the telecom operators and other aggregators (mobile content or mobile solutions companies) to offer a host of data services — from contests and ringtones to weather forecasts, games, banking and astrology services etc. on the mobile phone. In 2005, the Indian music industry alone got about Rs 140 crore or 20% of its revenues from mobile music (Kohli-Khandekar, 2006). From Table 3, a conservative estimate of the mobile ringtone market can be placed at 116 million USD.

Another focus area is the Java smart Cards market. Analysis by Frost & Sullivan has put the Indian Smart Card industry at $47.5 million in 2004 with an annual average growth rate of approximately 50% leading to a figure of $62.4 million for 2006.

An even higher growth rate of the Indian smart card market is expected from 2006 onwards owing to the launch of the national ID card project which is estimated to result in the issue of over 600 million ID cards. (Table 4). Other factors like a large population base, rising employment levels and the entry of MNCs in India are also expected to contribute of the growth of the smart card market in India (Menzefricke & Jeremiah, 2005).

5. Opportunity Costs

Two other major contributions of Java to the Indian economy are due to its being non-proprietary and also because of the economic efficiencies generated in the Domestic IT sector.

Table 2: The growth of the Indian Mobile Gaming industry

<table>
<thead>
<tr>
<th>Year</th>
<th>Market Size ($ million)</th>
<th>Growth Rate</th>
<th>Local</th>
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<tbody>
<tr>
<td>2004</td>
<td>5.6</td>
<td>69%</td>
<td>-</td>
</tr>
<tr>
<td>2005</td>
<td>18.16</td>
<td>81.9%</td>
<td>-</td>
</tr>
</tbody>
</table>
| 2006 | 100                    | 80%         | 20 (=)
| 2010 | 340                    |             | 150(=)

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Table 3: Estimating the Java revenues from the mobile ringtone market

<table>
<thead>
<tr>
<th>Description</th>
<th>Estimated Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Java Enabled handsets worldwide, 2004</td>
<td>350 million</td>
</tr>
<tr>
<td>Java enabled mobile ringtone market worldwide,</td>
<td></td>
</tr>
<tr>
<td>2004</td>
<td>3.5 billion</td>
</tr>
<tr>
<td>Total number of handsets in India, 2006</td>
<td>83 million</td>
</tr>
<tr>
<td>Percent of Java-enabled handsets in India, Nov 2005</td>
<td>40%</td>
</tr>
<tr>
<td>Total Number of Java enabled handsets in India, 2006</td>
<td>33.2 million</td>
</tr>
</tbody>
</table>

Table 4: Revenues from Smart Card Market

<table>
<thead>
<tr>
<th>Description</th>
<th>Estimated Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revenues in 2004</td>
<td>$47.5 million</td>
</tr>
<tr>
<td>Growth Rate</td>
<td>48.4%</td>
</tr>
<tr>
<td>Revenues in 2006</td>
<td>$104.6 million</td>
</tr>
<tr>
<td>Percent of Java Smart Cards</td>
<td>60%</td>
</tr>
<tr>
<td>Estimated Java Smart Card market, 2006</td>
<td>$62.4 million</td>
</tr>
</tbody>
</table>

Table 5: Total revenues of the Indian Embedded Java Industry from major focus areas

<table>
<thead>
<tr>
<th>Focus Area</th>
<th>Estimated Revenue</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mobile Gaming market</td>
<td>$100 million</td>
</tr>
<tr>
<td>Mobile Ringtone market</td>
<td>$116 million</td>
</tr>
<tr>
<td>Estimated Java Smart Card market, 2006</td>
<td>$62.4 million</td>
</tr>
<tr>
<td>Total</td>
<td>$278.4 million</td>
</tr>
</tbody>
</table>

However, it is very difficult to quantify these advantages or even provide a rough estimate of the magnitudes involved. Hence, these have not been completely included in the final consolidated figure. Instead, only a pessimistic approximation of the benefits obtained from the non-payment of any license fees for using Java have been considered. Nevertheless, their magnitudes are by no means negligible and they have been discussed briefly in the subsections below.

5.1. Open Java

Java and Java-based software packages are based on open standards and this ensures interoperability between products from different vendors and empowers the customer to easily choose between the various...
products. By preventing vendor lock-ins, Java reduces the risks and the associated migration costs of the product. This also ensures more competition between the vendors, more efficient markets and a level playing field. Software developers also prefer to work on non-proprietary software because it enables faster development and is more collaborative. Finally, freely available Java also fosters innovation by reducing the cost of software development (Brittan, 2003).

To calculate the savings accrued due to Java being open, we have tried to calculate the total license cost the Indian Java community would have had to pay for the next-best-alternative (.Net) had Java not been there. For these calculations, we have assumed a 1:1 ratio of developer and Java installed PCs. This figure is grossly understated as it does not take into account the opportunity gains to all the Java users in the country including the Java-enabled mobile handset users.

5.2. Increased Efficiencies

Various estimates place the Indian e-commerce market in 2006-2007 between $600 million and $1 billion (Sahad, 2006). Even by conservative estimates, this represents a 100% increase over the 2005-2006 period and a stupendous 300% rise over 2004-05 (IMAI, 2006). Almost all of these e-commerce sites are use Java for ensuring secure, real-time transactions, dynamic content generation and carrying out functions like data mining, keyword search etc.

Table 6: Savings due to the non-payment of license fees for using Java

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Number of Developers in India, 2003</td>
<td>0.6 m</td>
</tr>
<tr>
<td>% of Java Developers in Indian IT pool</td>
<td>50%</td>
</tr>
<tr>
<td>Java Developers in India, 2003</td>
<td>0.3m</td>
</tr>
<tr>
<td>Growth rate of Indian IT Sector</td>
<td>30%</td>
</tr>
<tr>
<td>Total Number of Java Developers in India, 2006</td>
<td>0.66 m</td>
</tr>
<tr>
<td>Cost of .Net License</td>
<td>$1111</td>
</tr>
<tr>
<td>Total Savings</td>
<td>$ .73 b</td>
</tr>
</tbody>
</table>

6. Other Factors

Other indicators of the impact of Java on the Indian economy include the growth rate in the number of Java programmers, an increase in their average salaries and the contribution of Java in the taxes by state and centre.

Increased Employment

The growth rate of IT developers in India is estimated to be 30 percent per annum making it one of fastest growing service areas. According to a study by NASSCOM and McKinsey, India will have more than 3.2 million IT employees by 2012 generating $119 billion in revenues (Keller, 2004). In its Strategic Review Report 2006, NASSCOM has predicted that the Total IT Software and Services employment will reach 1.28 million at the end of 2006 (IBEF, 2006). Out of this IT pool of 1.3 million, approximately 50% or .65 million are estimated to be Java programmers (Pillai, 2003).

Better Compensation

Apart from the rise in employment of Java developers, the average compensation of the IT employees has also been increasing at a rate of 17.9% which is about 28% higher than the average national increase in...
average salary of 13.9% (KellyServices, 2006). Among the average salaries for open source technology programmers also, the average salary of Java developers are 5.6% higher than the industry average (Gutiérrez, 2006).

Taxes to the Government

The increased revenues obtained by the use of Java also contribute towards the state and centre taxes and the subsequent welfare and developmental activities. As a rough calculation [Exhibit 3(b)], the corporate and excise taxes from Java related revenues equal roughly $ 3.7 billion USD and the income tax component would be approximately $ 1.98 billion taking the total to $ 5.5 billion.

Table 7: Total Salaries of Java Developers in India

<table>
<thead>
<tr>
<th>Tax component</th>
<th>% Levied</th>
<th>Taxed Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Packaged Software (Excise duty)</td>
<td>8%</td>
<td>$250 million</td>
</tr>
<tr>
<td>Company revenues (Corporate tax-domestic company)</td>
<td>35.7%</td>
<td>$9965 million</td>
</tr>
<tr>
<td>Individual Income (assumming annual salary above 2.5 lakh)</td>
<td>30%</td>
<td>$6.6 billion</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>$11.48 billion</td>
</tr>
</tbody>
</table>

7. Consolidation

The first three components cover a major part of the Indian Java economy. However, owing to lack of data and reliable assessment parameters, these components could only be quantified partially. The savings in opportunity costs due to Java being an open standard and its role in the increased efficiencies of the domestic IT sector could only be discussed and appreciated. Nevertheless, adding up the revenues from these components, the consolidated figure stands at approximately $11.48 billion USD for the year 2005-06.

8. Alternative Estimation

A back-of-the-envelope calculation of the size of the Java-related IT revenues can be made by considering that the total Java economy is proportional to the number of Java developers. Then, by comparing the size of the Indian IT pool to that of the global Java workforce, and taking the other factors to be similar or negligible, the size of the Java economy in this way comes out to be approximately $14.65 billion [Exhibit 4]. To put this in perspective, the GDP of India for the year 2006 is $ 695bn and the Java economy is over 2.1 % of this.

15 http://www.diplomatist.com/dipo2nd06/story_01.htm
16 http://itoutsourcingindia.com/india/
17 http://www.hsbc.co.in/in/personal/pdf/highlights_05.pdf#search=%22income%20tax%20percent%20at%20%25%22
E-government: Macro Issues

Table 9: Consolidated figure

Table 10: Alternative Estimations

| Source of Java Developers in India, 2005 (Schwartz, 2004) | $ 100 bn |
| Size of Indian Java Economy, 2005 | 4.5 mn |
| Total Number of Java Developers worldwide, 2005 | 0.6 mn |
| Total Number of Developers in India, 2003 | 0.3 mn (=50%) |
| % of Java Developers in Indian IT pool | 30% |

| Java Developers in India, 2005 | $14.651bn (=$11.27bn + $3.381bn) |
| Java Economy as a % of Indian GDP | 2.1% |

9. Concluding Remarks

The difference in the consolidated figure and the back-of-the-envelope calculation can be easily accounted for by considering that the former does not take into account the embedded Java revenues which are only partially considered in the back-of-the-envelope calculation of the usage of Java in India. Indeed, even the figure of $14.6 billion estimated by the latter method is an extremely conservative estimate because it does not account for the secondary effects or the related IT spending. For the world Java economy of $100 billion, (Schwartz, 2004) which would translate into $16.06 billion for India.

Thus, by considering only the primary spending, the lower bound of the more easily quantifiable components, the lower bound of 1.6% – 2.1 % ($11.5 billion - $14.6 billion) of the non-quantifiable factors, it can be safely said that the Indian Java economy is around 2.5% of the Indian GDP. From a global perspective, the world’s Java economy. The growth rate of Java in India is higher than its global growth and in future, Java’s economic impact on India is only likely to increase as the Indian Java Economy comes of age.

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Re-engineering Government: A Critical Analysis

Gopal Meena

ABSTRACT
Citizens interact frequently with their respective governments in lifetime from womb to tomb for either furnishing information or getting information or services. Governments are the largest custodians of the information relevant to their respective citizens but ironically access to government services or information is cumbersome, uncoordinated, and not citizen-friendly especially when numerous government departments are involved. Technology intervention by way of e-governance in the existing government system can bring about a sea-change in all organs of the system namely organisational structure, process, procedures, rules, regulations, use of technology and work culture, habits and mindset of the employees. This paper throws some light on importance of government reengineering.

Keywords: Re-engineering, Re-Structuring, Re-inventing, E-governance, Mindset change

1. Introduction

"Reengineering is the fundamental rethinking and radical redesign of business processes to achieve dramatic improvements in critical, contemporary measures of performance, such as cost, quality, service, and speed."

—Hammer and Champy, 1993

Reengineering a government requires radical changes in its functions, processes and structures that critically examines, rethinks, redesigns missions and visions, redefines structures and streamlines work processes and service processes within a political environment. As most of the procedures in use, in the government are age-old, obstructive and complex, and they require major re-thinking and re-orientation. Re-engineering advocates streamlining these complex processes/procedures for present day requirements with the scope of continuous improvement in future.

Re-engineering is not simply an enhancement or modification of what exists at present. It examines work in terms of outcomes, not tasks or unit functions. Generally re-engineering entails dramatic overhaul, rather than marginal improvements. It focuses on rethinking from the ground up, optimising efforts, getting rid of non-value-added activities and finding more efficient ways of working, thus eliminating obstructive work that is unnecessary.

Re-engineering of government involves reorientation of existing government machinery. Re-engineered government is mission-driven, citizen-centric, result-oriented, efficient, transparent and effective, which renders quality services.

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(Phone: +91-11-23007142, Email: gopalmeena@drdohq.res.in)
2. Why Reengineering of Government?

The Prime Minister of India, Dr. Manmohan Sigh rightly said that changes are sweeping not only in India but also in the whole world, particularly during the last two decades. Today, we are living in an increasingly integrated and globalised world. Distance in many ways has lost its old meaning. Distances are shrinking and markets are merging. In this era of liberalisation, privatisation and globalisation, paradigm shift is taking place in terms of technological changes and greater expectation of citizens from the government. The Weberian principles of bureaucratic governance are being replaced with the trends of horizontal, linear, dynamic and networked governance. Competition is the name of the game and the role of the State is being redefined in many sectors. In many manufacturing and service sectors, the Government is moving from being a owner-operator-producer to a facilitator-enabler-regulator and ensuring fair play and adherence to standards of integrity and efficiency. Increasingly, Government’s attention and indeed expenditure pattern is shifting towards the provision of physical and human infrastructure to enable individual players to compete in the evolving enlarged and at times global markets. The Government also has the obligation to ensure that the benefits of growth trickle down to all sections of the society, to ensure that they become equal participants in growth processes. At the same time, the Government has to ensure that those who are adversely affected by the winds of globalisation are able to adjust to new realities and economic opportunities.

Changes in governments are inevitable, therefore governments have to change and adapt themselves to this new ecology of good-governance, if at all they have to survive as governments. As aptly said by Charles Darwin (1809-1889) that it is not the strongest species that survive nor the most intelligent but the ones most adaptable to change.

But this changed environment necessitates governments to switch from task-orientation to a performance and result-orientation and complete revamping. Governance is the manner or the process to guide a society to best achieve its goals and interests, while government is the institution or the apparatus to perform that job in the process of governance and decision-making, therefore Good-Governance has to be driving-force instead of Government. In order to become caring and SMART (Simple, Moral, Accountable, Responsible and Transparent) government it has to re-engineer its structures, processes, rules and regulations and transformation of behavioural attitude of government officials. It has to eliminate redundant hierarchical levels, over-heads, obsolete rules and practices and significant reductions in cost and response-time. Re-engineering of government has potential to facilitate other stakeholder to participate meaningfully in the process of transforming a government into a good –government and then to an all inclusive Good –Governance as presented in Figure1.

3. How to Reengineer Governments

3.1. Redefining Structure and Functioning of Government at all levels

In due course of time governments have expanded domain of their activities, which in turn led to the proliferation of a large number of mammoth organisations, meant to serve citizens but have become instrument of self-serving and self-aggrandisement and have forgotten basic purpose behind their creation.

To make governments simpler, responsive and citizen-friendly the structure and soul of existing system has to change. Right- sizing, de-layering, horizontal structure, multilateral communication, participatory decision-making style should be the key guiding principles of the modern governments.

Decentralisation: Devolution of Legislative, Financial and Administrative Powers at all levels. We should take the decision-making points closer to the people who are most affected by these decisions through their participation in the process of decision-making. There should be greater autonomy to local people to manage the areas, which are of local importance. Assign the resources and funds to local institutions
E-government: Macro Issues

Our administration should be in the hands of men and women of character, of integrity, of ability who remain steadfast in their commitment to the ideas and ideals enshrined in our Constitution. Politics in a democracy has to be a purposeful instrument of social change. We need more men and women of probity and integrity in our legislatures. Persons of character like Dr. Manmohan Singh should replace illiterate and unsocial elements of criminal background, who have made inroads in the corridors of power. We should elect those who truly can represent our aspirations and lead us by setting personal examples of public service. More and more professionals in our country must join the ranks of those who participate in the process of political management to steer our Republic’s ship in the desired direction as laid out in the Directive Principles of State Policy of our constitution.
We need a governance structure, which can ensure social equity and inclusive growth especially for the under-privileged sections of society and make them genuine partners in process of social and economic change.

3.2. Process/Procedure Reengineering: Simplification

The rule of law is the bedrock of a modern economy. The goal of a mature and democratic government is to provide the common man a framework where the rule of law prevails and justice is dispensed without fear or favour. But if we become prisoner of complex rules rather than providing an efficient, effective and accountable administration, the very purpose of having them is defeated. Rules should not become more important than the game itself. If we want that rules do not become hindrance then they have to be simple and unambiguous. Even innovative use of technology such as Information Technology (IT) in automating complex rules will fail to achieve the desired results. As rightly said “Automating an already bad process just makes it easy to do the wrong thing faster.” Therefore, the first and foremost thing that needs re-engineering is archaic, outdated and incomprehensible rules and processes. These irrelevant rules should be removed and replaced with simplified rules which can easily and comprehensible to a common man.
The governments have constantly engaged in soul searching to improve and strengthen the process and service delivery systems to make it more accessible, cost effective and quick. A system which is simple, easy to understand, easy to access and inexpensive will go a long way in ensuring that the noble intentions behind many of our laws, which were designed to address the needs of large sections of our population, are genuinely fulfilled.

3.3. Use of ICT: E-governance and Workflow based Processing-

Effective use of Information and Communication Technologies (ICT) facilitates standardisation of rules and processes, enthuse uniformity and inter-operability through open and shareable scaleable, secure and reliable softwares across all governmental entities. E-governance is a facilitating tool, which enables transformation of structure and style government to good governance. By opening Cyber-Kiosks in village – Information Facilitation Centres, maintaining centralized database and implementing workflow type of transaction system ICT enables government to put a hassle free single window interface with the citizens and delivery of all government services. It will not only speed-up the process but also reduces the redundant and inconsistent information, which is maintained at multiple locations in various departments. It will also enhance the inter-ministerial coordination – Integration of the schemes being run by various ministries and elimination of middle man/agents/touts.

IT is essentially an “enabler” in re-engineering government. Many processes can only be reengineered by the application of IT to the process of government functioning such as Workflow based Transaction Systems. By converting paper documents to electronic objects, workflow can efficiently store, route, display, print, control, and monitor documents as they travel through the business process. By developing an integrated e-Records system we can manage seamlessly all the phases of electronic record management- creation, declaration, classification, and disposal.

If implemented in true spirit, e-Governance has the potential to change the whole façade of governmental organisation. It equips people for genuine participation in an inclusive process that can produce well-informed public consent. It enables seamless flow of information and co-ordination among government agencies, between government and business and provides efficient services to the citizens.

3.4. Capacity Building of Government Organizations

Synchronising skills of the employees with the changing technology and the changing needs of working environment is essential for greater manpower productivity. For example, when an employee was recruited 40 years back, he did not heard the name of computer but now he/she has to work on it. Periodic review of work requirement and skills required to perform that work efficiently should be done. The gape between the job requirement and employees’ skill should be bridged periodically by imparting training to them. Once the employees are trained they will not resist changes that arise due to process reengineering and adoption of new technology.

What really can make a difference to the functioning of any system is the mindset of those who take the critical decisions of a nation’s political, social and economic life.

-Dr. Manmohan Singh (Collectors’ Conference, May 20, 2005)

The system depends on the attitudes and the mindset of individual officers. One negative officer can cause more damage in terms of delays and slippages in achieving targets than any other factor.

There is an urgent need to invest in the creation of a moral and competent leadership and renewed commitment, a professional work force and a humane law and order machinery that is sensitive to the needs and concerns of every citizen, howsoever meek and low he or she may be. There is urgent need of Mindset & Attitudinal Change of government employees, their working habits and imbibing service-orientation, greater professionalism, dedication for work and a passion for excellence. They should willingly take up
responsibility energetically and have to become agents of change, of good governance, development administration and improving the quality of our governance. It is, therefore, as much a battle for the mind, and a battle to change social attitudes.

3.5. Citizen–Empowerment and Participation

The structures of Panchayati Raj are in place in our country but they need to be infused with new vitality. These organisations enable us to mobilise collective action for development. Political, Social and Economic empowerment of Panchayati Raj Institutions by assigning a major role to them in managing local institutions and thereby ensuring their participation especially of women. After all, it is through social mobilisation and involvement of civil society, our system of governance can be truly and effectively reformed. Participation to be meaningful, first and foremost task should be literate the masses. Enable them to make well-informed choices. Access to information is tantamount to empowerment. Right to Information Act, 2005 is a vital tool, which has enabled Indian citizens to have access the public information and question the wrongdoing of the state or its officials. Officials have to provide the information in a time-bound manner under the act.

3.6. Continuous Review and Improvement

Continuous improvement involves examining processes and practices to proactively determine improvement opportunities. Incorporate TQM (Total Quality Management) concepts in the process of governance by reducing losses due to wasteful practices. TQM views an organization as a collection of processes. It maintains that organizations must strive to continuously improve these processes by incorporating the knowledge and experiences of workers. The simple objective of TQM is “Do the right things, right the first time, every time”. TQM is infinitely variable and adaptable. Although originally applied to manufacturing operations, and for a number of years only used in that area, TQM is now becoming recognized as a generic management tool, just as applicable in service and government organizations. Continuous improvement should be made an integral part of re-engineering governments. Quality-of-service delivery with the main focus on improving citizen satisfaction is not one time affair but it is a permanent feature.

There have been “island of success stories” in implementation of e-Governance projects in India such as Bhoomi Project (Land record system) of Karnataka, which won the international award but could not be emulated in other States. Instead of reusing the existing software other State governments are starting from the scratch, reinventing the wheel again and again even the basics of land record are same in all the States. There are many such projects implemented successfully in isolation in one part of the government or department but are not being scaled up in other departments. Re-engineering should focus on reuse of existing knowledge, value addition and reuse at larger scale at multiple locations. Benchmarking, continually striving to improve and sharing the best practices should be hallmark of re-engineering process.

4. Challenges

Reengineering involves looking at how things are currently done, what changes are occurring, and what are the new contingencies exist in the current environment of governance. It requires determining where the process begins and where it ends—the boundaries of the process—and understanding the underlying reasons why a process is performed a certain way. After a thorough analysis of the existing system, implement the reforms and continually strive to improve and adapt system according the changing scenario. Make TQM (Total Quality Management) as an integral part of governance as depicted in Figure 3.

Some of the Challenger come in way are:

- Government agencies are subject to greater political executive management and oversight. Election cycles and administration changes periodically impact reengineering efforts because political executives are interested in short-term gains. Therefore, reengineering a government requires considerable political...
will power especially when it goes through a phase of political rejection by the voters.

- Lack of skills to re-engineer the well-entrenched age-old procedures, structures and mindsets in the bureaucracy-ridden governments.
- Resistance to change by employees and vested interest that flourish under the existing system.
- Re-engineering governments entails huge financial cost for adoption of new technology, imparting training to employees.

6. Concluding Remarks

We are living in a world where human knowledge is increasing at an unprecedented pace. Our governments also have to be sensitive enough to the fact that we are living in an innovation driven world, in a demanding polity and a plural society where old structures and solutions may not work. Our Governments have to realign, reorient and revamp structures and processes in order to provide good governance to citizens. Not only just structure but the soul of government i.e. employees have to imbibe service-orientation and a commitment to quality and excellence in the work they do. Quality is the outcome of all activities that take place within government’s all departments and the employees who man the government.

All the stakeholders’ viz. political executive, administrators, employees and citizens have to participate in the improvement process, in the reengineering process.

“Governments need quality systems namely Structures, Processes and a Quality Work Culture”

Acknowledgement

I am grateful to G. S. Malik, Director, Directorate of Electronics & Computer Sciences and K. U. Limaye, Chief Controller, Electronics & Computer Sciences for granting me permission to send to this paper for the conference. I am also thankful to Jitender Chugh, Sc “E” and Pankaj Kumar, Sc “B” for their invaluable guidance in the process of writing the article.
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Reengineering Government: A Conceptual Framework

Vasant Godse¹

ABSTRACT

Reengineering government has become a global phenomenon irrespective of the development status of the states, level of technology and the variety of felt needs. The paper provides a conceptual framework for the reengineering process. After describing the relevant terms, it goes on to discuss the approaches for the exercise and methodology. Proactive measures for success in the exercise, possible failure reasons and monitoring mechanism have been elaborated. Learnings from a study on the topic have been detailed. The critical issues for making reengineering work have been provided. A look at the future affords a glimpse of environment to obtain. In a nutshell, the paper lends a pure theoretical outline on the subject of implementing reengineering government effort

Keywords: Reengineering, government, implementation and methodology

1. Introduction

The issue of reengineering government is not a question of why but how fast. Efforts and achievements on international front have provided impetus to similar initiatives in India as well. This paper provides the conceptual framework for such an endeavor. The process, the enabling measures, and the like have been discussed after defining the relevant terms. The contents of an IIM study have been discussed so as to come out with critical issues. Commandments for successful implementation of a reengineering project have been provided in the penultimate section while the last section takes a look at the future.

Reengineering is the examination and alteration of a subject system to reconstitute it in a new form and the subsequent implementation of the new form. Reengineering (or re-engineering) is the radical redesign of an organization’s processes, especially its business processes. It is an engineering process to transform an existing system into a new form through a combination of reverse engineering, restructuring, and forward engineering. Currently, it is a popular term used to describe the act of rethinking and restructuring processes before overhauling the computer systems. Once known as Methods and Procedure Analysis, it essentially means doing things differently. The goal is to apply people, technology and processes in a more rational way in order to better support the business strategies and business objectives responsive to environment.

The radical redesign of all aspects of a business to achieve major gains in cost, service, or time is another description of reengineering. Reengineering is driven by open markets and competition. Using information technology has focus on improving performance and cutting costs.

Government is the organizational authority of a political unit. It is the system or form by which a community
or a political unit is governed. A government is an organization that has the power to make and enforce laws for a certain territory. In its broadest sense, “govern” means the power to administrate, whether over an area of land, a set group of people, or an association. Government means and includes institutions and officials, which enact laws and execute and enforce public programs. Government is generally made up of executive, legislative and judicial branches. In American usage government always takes a singular verb. In British usage government, in the sense of a governing group of officials, takes a plural verb. The term government has a variety of connotations as given below,

- The act or process of governing, especially the control and administration of public policy in a political unit.
- The office, function, or authority of a governing individual or body.
- Exercise of authority in a political unit; rule.
- The agency or apparatus through which a governing individual or body functions and exercises authority.
- A governing body or organization, as
  - The ruling political party or coalition of political parties in a parliamentary system.
  - The cabinet in a parliamentary system.
  - The persons who make up a governing body.
- A system or policy by which a political unit is governed.
- Administration or management of an organization, business, or institution.

2. Approaches to Reengineering

There are three alternatives to take up re-engineering projects as under,

- Limited Automation using Technological Assistance – It is an exercise of limited application of IT only to the common processes of the Government functions mainly in the area of Accounts, Personnel & Establishment and Front Office. It will include applications like Payroll, PF Accounting, Loan Accounting, Personnel Information System, Inventory Control, and File Monitoring System etc.
- Selective Improvement with Technology Assistance–It includes a number of sub-processes, usually within a single area or function. Therefore, it can apply to certain Group Applications and Public Interface Applications to be taken up on selective basis from the gamut of departmental activities.
- Comprehensive Critical Cyber Re-engineering– It is a complete overhauling exercise of the organization. It will entail complete re-engineering of all functions, processes and systems of the organization using Cyber tools to change to a ‘Knowledge Based Organization’. It will also include a re-look at the Acts and procedures in the light of the recently enacted IT Act.

There is nothing like one particular right approach as the adoption of the approach would be determined by the context, the type of challenge, resources at command, priorities of the government, etc.

A standardized methodology for undertaking the reengineering projects in a government is depicted below,

While following the aforesaid path for implementation of the project on reengineering, proactively the following measures need to be taken,

2.1. Prior to implementation

- Checking with human resources and reading the labor awards, enterprise agreement and other documents for issues that may affect flexible work practices.
- Determining the key results and outputs that the work area must continue to achieve.
- Surveying staff to determine their needs with regard to flexible work practices.
- Determining, in consultation with staff, the possible effect on current work organization if the identified
E-government: Macro Issues

Fig. 1

- **Define Performance and Control Measures**
  - Quantitative: Financial Effectiveness and Productivity
    - Qualitative: Quality of Service, timeliness and accuracy
  - Strategic: Review Proposal Design to facilitate redefinition of priorities and areas including finalization of planning and strategies on implementation.
  - Design Optimization
  - Gap analysis: This identifies the gaps as per the desired level and existing current status.
  - Plan & Schedule: Project plan identifies the steps and activities needed to be accomplished for moving from the present status to the proposed status.

- **Innovation Analysis and Redesign**
  - This is based on the study of the existing processes and available technological options.
  - Key Principles—
    - Outcome driven: Organize around outcomes; not tasks i.e. have one person (or section) responsible for all the steps in the process (in case possible)
    - Empowerment: Re-engineer tasks so that individual who need the results of the tasks or processes can do it themselves.
    - Modularity: Separate tasks from the management of the workflow
    - Parallelism: Allow work to progress in parallel whenever possible and in the processes that can be in parallel.

- **Study existing Processes**
  - Cover issues like Input & Output, Activities, Workflow Data flow, Existing work practices, technology and procedures, Prevalent Guideline, Work volumes, Backlogs, Processing and cycle times, utilizing data flow diagrams so that details on requirements and deficiencies get identified.

- **Organize a multi-disciplinary study team**
  - It is necessary for team to have IT specialists, subject-based specialists and consultants on re-engineering.

- **Review Scope**
  - It will relate to micro level detailing at milestones level and as per management priorities and perception.

- **Determine Goal & Objectives**
  - The top management to provide in put on:
    - (i) Goals, Objectives & Vision
    - (ii) Scope of the study and
    - (iii) Priorities
flexible work options are implemented.

- Identifying the issues needing resolution.
- Conducting a session with staff to generate a range of strategies to address these issues.
- Considering ways that jobs could be organized and the work done to better meet the needs of staff and customers/beneficiaries. If necessary, examining the workflow designing to ensure that the work group will achieve required results.
- Considering issues of development (including access to training) and promotion opportunities
- Finding out what the potential occupational health and safety issues are likely to come up
- Establishing specific performance measures, including individual and team objectives. (Performance objectives need to be based on clearly defined outcomes e.g. projects completed, number of people benefited/serviced).
- Establishing appropriate communication processes for the work team by ensuring no one is left out
- Addressing technology or accommodation issues (e.g. equipment for people working from home or shared equipment for job shares).

2.2. During Implementation

- Implementing for a trial period of say three to six months.
- Consulting with staff on a regular basis to resolve issues as they arise.
- Negotiating and resolving any conflicts on the basis of mutual benefit and in terms of the guiding principles.
- Consulting with human resources staff and seeking their assistance to solve any problems by mediating conflicts.
- Scheduling monthly individual and team review sessions to assess how the project is working.
- Examining carefully the amount of work given to all team members and periodically discussing whether the workload is reasonable.
- Establishing a set of measures to form the basis for the evaluation of the effectiveness of implementation and individual and organizational outcomes. The evaluation measures may include,
  - Allocation of men and women at all levels and in all occupations;
  - Diversification of staff by age at all levels;
  - Management of turnover and reasons for turnover (e.g. do exit interviews reveal that fewer people are leaving because of work/life conflicts?);
  - Conducting employee satisfaction survey;
  - Taking up of flexible work practices by age, level and gender and studying the possibility of career paths of employees

2.3. Six months after implementation

- Using a confidential feedback process for team members to evaluate the implementation and their supervisor’s ability to manage flexibility.
- Assessing specific flexibility training needs for all members.
- Considering technology and accommodation issues.
- Surveying stakeholders (including customers) to determine their perception of the impact flexible work practices are having.
- Checking that individual performance measures and work area objectives have been achieved.

3. Preparing for Implementation

The Head of the government department should be the overall re-engineering leader, responsible for successful planning and execution of the project. The following mechanism needs to be used for the entire
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exercise and for execution of the plan:

- Appointment of Chief Resource Officer (CRO) – CRO will be reporting directly to the head of the department and shall be second in command. Ideally, he should have the requisite knowledge of IT processes as well as the in-depth knowledge of the Department’s working. The officer should be given due authority, infrastructure and autonomy to get an excellent plan prepared/implemented, which can take care of the entire re-engineering and automation needs of the Department.
- Assignment of Domain Knowledge Experts - A few experts having in-depth domain knowledge of the department may be kept on contract basis for a specified period. The Domain Knowledge Experts should work hand in hand with the CRO to come out with a time bound action plan with clearly spelt out milestones. These experts should be responsible for carrying out the re-engineering exercise and shall also ensure proper execution in consultation with the Chief Resource Officer.
- Formation of Core Group - A Core Group consisting of IT professionals and domain knowledge professionals from within the department should be constituted to prepare the re-engineering and Information Technology Plan. The group size shall vary depending upon the size and complexity of the functions of the Department.

3.1. The Failure Situations—Common Causes

Empirical researches have shown that around two-thirds to three-quarters of all reengineering projects change programs or fail to meet their objectives. Maintaining the status quo is undoubtedly the most comfortable approach in the short term, but it is the highest risk strategy of all. Avoiding change in today’s world is terminal. The causes of failure include,

- Management Misstarts- A misstart occurs when a change is ill advised or hastily implemented or attempted without sufficient commitment. This is a leadership credibility crisis.
- Making change an option— When leadership commits to a change, the message must be that the change is not an option. But the message that often comes across is “We’d like you to change, we’re asking you to change, we implore you to change, please change...” As such, whenever people have an option not to change, they will not.
- A focus only on process— Leaders can get so caught up on planning and managing the process that they do not notice that no tangible results are being achieved. The activity becomes more important than the results.
- A focus only on results—This stems from a belief that the end justifies any means. Organizations downplay or ignore the human pain of change. It is this insensitivity to people’s feelings that not only prevents the change but destroys morale and loyalty in the process.
- Not involving those expected to implement the change. A great deal of resentment is aroused when management announces a change and then mandates the specifics of implementation. Employees need to be involved in two ways. Firstly, their input and suggestions should be solicited at the stage of planning the change. And secondly, after a change has been committed to, they should be involved in determining the means. Leadership needs to communicate on a continuous basis.
- Delegated to “outsiders”— Change is an inside job. Although outsiders like consultants might provide valuable ideas and inputs, people inside the system must accept responsibility for the change. Scapegoating and passing the buck is not an option.
- No change in reward system— If the department keeps rewarding employees for what they have always done, it will keep getting what they have always gotten. It is necessary to make sure that rewards, recognition and compensation are adjusted for the desired change.
- Leadership does not walk the talk— For change to happen, everybody involved must buy-in. Change is aborted whenever leadership fails to demonstrate the same commitment they expect from others.
- Wrong size— The change is too massive to be achievable or too small to be significant. Like a good goal, a change program should be neither too easy nor too impossible.
• No follow-through— The best planning is worthless if not implemented, monitored and carried out. Responsibility must be clearly defined for making sure that follow-through is timely and intense.

4. The Monitoring Mechanism

For avoiding the unpleasant failure situations, there is obviously a need to have a monitoring mechanism in place. The cardinal principles of reengineering are,

• Organize around outcomes, not tasks.
• Identify all the processes in an organization and prioritize them in order of redesign urgency.
• Integrate information processing work into the real work that produces the information.
• Treat geographically dispersed resources as though they were centralized.
• Link parallel activities in the workflow instead of just integrating their results.
• Put the decision point where the work is performed, and build control into the process.
• Capture information once and at the source.

The Monitoring Mechanism during the life cycle of the re-engineering project should be as under:
• The Core Group to meet on daily basis to review progress of work. They will maintain a History Sheet or a Log Book of work carried in regard to re-engineering and IT Plan. The CRO will monitor the day-to-day progress of the entire Group and shall keep the Head of Department informed about the entire progress.
• The Head of Department should conduct weekly review meetings to monitor the progress during the preceding week. In the meeting, appropriate measures should be taken in consultation with the Domain Experts and the IT Co-coordinator.
• A monthly review meeting may be held at the level of the Departmental head to review the progress in regard to the time bound implementation of IT Policy.

5. IIM Ahmedabad Study

The Study conducted at Indian Institute of Management, Ahmedabad on ’Interstate Checkposts in Gujarat’, provides the following pointers,

• “Waiting times have reduced by 30 minutes. It was 1 hr 45 minutes. Except weighing no improvement perceived in cash collection and document checking.
• No impact on transparency-weight not displayed nor printed on receipt.
• Corruption continues: Rs 20-50 charged from every driver
• 33% overloaded trucks let go with no fines. Bribes average Rs 120 and are 10% of fines
• 77% report no change in overloading
• If corruption is plugged, revenue can be increased by 60%.”

The reasons given for poor sustainability were,
• “Cost-Benefit —whose point of view was to be recognized, was an issue.
• Changes in political (chief minister, minister transport) and administrative leadership (4 commissioners in 2yrs) were another reason.
• Lack of motivation to continue work of predecessor also played it role.
• Quick implementation had impact in terms of partial automation, not fully owned by department, and use of untested technologies
• Lack of comfort in contracting with private sector
• Focus on revenue increase and not on benefits to truckers, society, employees, transporters
• Technology was the only tool for reform. No other enabling reforms were in place.”

The same study provided a report card on Bhoomi, another such initiative, considering the same as good,

• “Ease of Use: 78% of users who had used both systems found Bhoomi simpler; 66% used Bhoomi without help Vs 28% in manual
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- Complexity of Procedures: 80% did not have to meet any one other than at kiosk: In manual system, 19% met one officer and 61% met 2-4 officials
- Level of errors in documents: Bhoomi 8% Vs manual 64%
- Rectification of errors: Sought correction 93 % Vs 49%, timely response 50% Vs 4%
- Cost of service: 84% recorded one visit to Bhoomi center at Taluka HQ
- Corruption: 66% paid bribes very often Vs 3% in Bhoomi
- Staff behavior: Bhoomi Good (84%) Vs manual Average (63%)

6. Learnings from Evaluation

The study describes the measure of success as the implementation and long-term sustainability as also the measurability of the accrued benefits. Success cannot be measured in first 1-2 years. Projects are still vulnerable during the initial period. Success needs to be measured through independent evaluation seeking formal feedback from all stakeholders. Awards instituted by multilateral agencies, Governments, professional bodies to rate egovernment have been dysfunctional. The study gives a cautionary note that premature stamp of success distracts from acknowledging shortcomings and correcting them. In the process of evaluation, the study notes certain sustainability risk factors. They are,

- Frequent changes in administrative leadership as the strongest risk factor
- Hurried implementation and/or lack of resources
- Project scale ambitious in scale and scope narrowly defined.
- Egovernment not implemented in the context of wider change/administrative reform
- Close identification of a project with a single champion
- Change based on tighter monitoring and supervision without systems being institutionalized
- Change affected by by-passing employees
- Partial automation (back-end not computerized) and automation without reengineering.

7. The Critical Issues

Typically, for the government’s reengineering projects, certain ground realities need to be acknowledged. The stakeholders, the types of activities, level of expectations, capability to meet with the expectations in an adequate and uniform manner are all the factors that need to be appreciated. For managing this heterogeneity, a commonality of approach is required. It should entail,

- Common interpretation of re-engineering is needed. Among the three sectors of government, manufacturing and services, initially, there is no single viewpoint on reengineering. Re-engineering should bring about a dramatic change in the work or business process with positive results in efficiency, cost reduction, and better quality services. In short, it is a concept or a mechanism to improve the total productivity of an enterprise by redesigning the business processes within the organization. This concept is especially useful in an industry where (1) competitive advantage is needed, and (2) people are constantly required to provide for customer satisfaction. Re-engineering could be commonly interpreted as being tantamount to undertaking a dramatic business process change for the stakeholder.
- Common triggers and drivers of reengineering are universal. The triggers and drivers like globalization and competition will continue to haunt organizations and business systems nationally and regionally for all countries. The need to reengineer can be attributed to reduced government funding for the state owned enterprises, rapid changes in information technology development that affect particularly the manufacturing industries, maintaining of profitability and response to crisis or change demanded by the customer, or the beneficiary in case of government.
- Top management commitment and sponsorship is critical to the success of re-engineering. While commitment and co-operation from all stakeholders, availability of domain expertise in re-engineering and productivity improvement, clear goals, visions and strategies, continuity of personnel, and a suitable
climate or environment are important to ensure the success of any re-engineering effort, top management must champion the re-engineering drive for greater productivity. The top management must be seen to visibly support, sponsor and provide leadership to the change in order to ensure the success rate of re-engineering.

- Organizational culture is perceived as the greatest hindrance to re-engineering. In trying to establish relevant constraints and barriers to implementation, organizational culture is reckoned to be the most important and pertinent roadblock. For the government sector, the culture and policies might not lend itself to be amenable to easy adoption and deployment. Government agencies are not either profit or competitor conscious as the private sector. Added to these may be some restrictive trade practices of employee unions. As such, for some industries, particularly services, the misalignment of government policy goals and culture can hinder the smooth progress of any reengineering program.

- A unique feature for implementing BPR for higher productivity is the total integration of the functional activities. In the manufacturing cluster, standardization of quality is seen as a must for driving productivity standards. In the public sector, the need to provide public enterprises with greater autonomy to undertake re-engineering efforts is the key issue. Despite the variations across the sectors, a common thread identified as a unique feature for implementing reengineering is the need to totally integrate all functional activities of the enterprise or government department. Other issues like the inherent desire of employees to improve their processes, empowerment of staff to re-engineer sub-processes, and the use of technology to help automate workflows are also valid features albeit unique to the particular cluster or sector.

- Technology is only an enabler in reengineering. However, it is recognized that technology without appropriate empowerment of the human effort and accurate communication of the reengineering vision statement to all cannot bring about the necessary change desired. The human aspect cannot be overlooked, as creative people are still required to enforce change.

8. Concluding Remarks

Successful change management through reengineering and the force that drives it require that the change is to be managed in order to derive maximum benefit from new opportunities and to avoid reactive situations. What is needed is a good management style with an atmosphere of: openness, good communication mechanism, clear vision, leadership, and adequate training. There may be suspicion about the project intent initially but minimizing the same is a great challenge. The important aspects to be addressed to are consultations and communication with the staff, having transparency and informality in decision making. Staff people resent that changes are imposed on them and that they are powerless - they need to be involved. Technology does not replace people - it enables people; it only replaces people when they do not know how to wield it. The success of any reengineering project eventually depends on strong and consistent involvement of the top management, alignment of government’s strategic issues with overall direction about the future, putting in place measurable objectives, using a well-tested methodology, team composition and effective change management. Addressing to these aspects can certainly ensure the success of reengineering effort at any organization including government.

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The views expressed herein are the personal views of the author and not of the company he is associated with.

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ABSTRACT
E-government implementation efforts in most Western nations and some developing nations have now evolved from basic information provisioning to more integrated service offerings. Having successfully implemented a number of transaction based e-services, the UK is now aiming to realize a more joined-up e-government. This paper seeks to explore the challenges that local government may face when implementing fully integrated public services in the UK. While process and information systems integration are identified in the literature as key challenges for this goal, using an empirical study this paper shows that issues of organisational origin such as inefficient business processes and irrational procedures are of equal importance but tend to be overlooked in practice. The findings and issues raised in this paper are of importance to the UK public sector and can aid to enable the identification of objectives, priorities and barriers to e-government, and options for successful implementation thereof.

Keywords: E-government, Citizens, Integration

1. Introduction
With the emergence of the Internet and a new array of associated ICT’s in the mid-late 1990’s, management focus has moved towards e-business as an effective form of trading. This progression in the business cycle has persuaded not only commercial enterprises, but also governments around the globe to invest significantly into e-services. The e-services offered by governments are aimed at relaying information and public services to citizens over the Internet and is referred to in general as ‘e-government’. Despite being poorly defined, “e government” is seen as an agent for change having become a political imperative at local, national and international level. Prins (2001) describes e-government as the delivery of online government services, which provides the opportunity to increase citizen access to government, reduce government bureaucracy, increase citizen participation in democracy and enhance agency responsiveness to citizens needs. Others in general define e-government as the use of the information and communication technologies (ICT) to procedures and outcomes of central and local government and their administrative structures (Chadwick and May, 2003; Wimmer, 2002).

While in the early stages e-government efforts in Europe were primarily focused on modernising the public sector European Union (EU)-wide (Cuddy, 2003), in the United Kingdom (UK) in particular more recent
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plans are focused towards exploiting the already implemented e-government processes and systems to realise fully integrated e-government services by 2008. In the wider global context, Canada has been ranked first for four consecutive years in developing e-government, Singapore and the United States sharing second place while the UK was places ninth (Accenture 2004; Accenture, 2005). According to Lee et al., (2005) e-government efforts are most significant in North America, selected EU members in Western Europe and several Asian ICT leading nations. What these findings all indicate is that governments of all levels are striving to achieve efficiency and better relationships with citizens via electronic means (Joia, 2004). Not surprising, as e-government is seen as a platform for making interactions between government and citizens’ smoother, easier and efficient, and cost effective (Du and Ye, 2005; Lee et al., 2005; Teicher et al., 2002). Conversely, citizens using e-government would expect the same e-business-like benefits such as 24/7 services delivered all year round in a one-stop-shop setting (Davison et al., 2005; Teicher et al., 2002).

E-government is also seen as a key component in the global push towards a digital society. Bakry, (2004) for instance argues that governments, organisations and citizens interacting electronically in an efficient manner would enhance the value system of the entire country moving it towards a digital economy. Therefore, e-government is about providing services to citizens efficiently and effectively, wherein a degree of horizontal integration is required, which ultimately creates a user friendly, one-stop government point of access for all public services (Jaeger, 2002). Given this context, many academics have commented on the stages of e-government development that would ultimately lead to a joined-up government (Siau and Long, 2005; Layne and Lee, 2001). However, progression towards a joined-up environment demands for collaboration and sharing of information between public agencies. The integration of disparate legacy systems and cross-agency business process therefore is of essential importance (Fustes, 2003; Champy, 2002).

Given the above context therefore, it is evident that a very important issue that needs to be addressed in the government on-line agenda is the debate as to how best to proceed with integration of processes and systems in the public sector (Janssen, 2005; Weerakkody et al., 2006). Existing systems are typically build using architectures that do not readily support enterprise-wide integration, thus requiring the development of the new architecture to link on-line government (Allen et al., 2001). This requires the integration and communication between business processes and underlying ICT in disparate organizations, a task which is performed by enterprise application integration (EAI) technologies. Enterprise application integration (EAI) has been an issue open to both positive and negative discussion for many commercial organizations since the advent of computers and has continued to cause even more problems in the e-business environment (Linthicum, 1999; Sutherland and Willem, 2002; Themistocleous and Irani, 2002;) where processes and ICT systems cross organisational boundaries (Champy, 2002). These problems are multiplied in the government sector, where often inefficient and typically bureaucratic business processes and disparate legacy ICT systems need to be integrated in an e-government setting.

The motivation for this paper therefore is to explore, empirically, the research question: what challenges do local government (LG) in the UK face when progressing from basic information provisioning to fully integrated e-government services.

In the national context of the UK, the direct.gov.uk web portal (and links to local.direct.gov.uk/mycouncil) provides a single point of contact for e-government. However, it is yet to function as a proper web portal (that offers a gateway to local and national government websites and provides a single point of contact for fully interactive and integrated online service delivery) [Weerakkody et al., 2006; Gant and Chen, 2001]. Furthermore, many local boroughs are lagging behind the national expectations for e-government implementation due to various political, organisational and technical challenges (Irani et al. 2002; Weerakkody et al., 2004). Given this context, this research intends to offer a realistic perspective of the e-government initiative undertaken within the UK.

To explore further the arguments set out above, this paper is divided as follows. A literature review identifies the challenges facing e-government in the global context and examines the organisational and
technical challenges that need to be addressed for realising fully integrated e-government services. This is followed in section 3 with a summary of the methods used to carry out the research discussed in this paper. Section 4 then presents the results of an exploratory study of local e-government implementation and the associated process and ICT integration challenges faced by local government. A discussion follows in section 5 and examines the empirical evidence in the light of the literature. Finally, the paper concludes by summarising the main research findings and suggesting potential solutions for improving integration in local e-government services in the UK.

2. Moving Towards Integrated E-government Services: A Theoretical Perspective

With its increasing popularity e-government has rapidly become a political imperative at local, national and international level (Irani et al., 2002). It is expected that as e-government matures, there will be a plethora of benefits for governments, business and citizens alike (Traunmuller and Wimmer, 2003; Chandler, 2002; Holden et al., 2002; Araujo and Grande, 2003). Yet, how these benefits will be reached is still a matter of controversy. Despite the feasibility and availability of technology, government agencies have confronted many challenges and problems in successfully developing and implementing e-government systems (West, 2002; Margetts and Dunleavy, 2002). Overcoming these challenges therefore is one of the biggest tests for the government of any country planning to implement e-government. Research on e-government has identified issues such as lack of awareness (Reffat, 2003), access to e-services (Fang, 2002; Darrell, 2002), usability of e-government websites (Porter, 2002; Sampson, 2002), lack of trust (Navarra and Cornford, 2003; Bhattacherjee, 2002), security concerns (Harris and Schwartz, 2000; Javenpaa and Tractinsky, 1999; resistance to change (Margetts and Dunleavy, 2002), lack of skills and funding (Federal Computer Weekly, 2001), data protection laws (Bonham et al., 2003; Harris and Schwartz, 2000), and lack of strategy and frameworks (Reffat, 2003) are hindering the adoption of e-government in many countries.

Similar to the private sector, support for governmental applications of ICT, such as e-government, is driven by pressures to reduce spending whereby, in theory, exploiting the continuing fall in costs and increase in capabilities of ICT. Despite the visionary thinking, successive governments have increasingly recognised the problems of successfully developing ICT systems (Computing, 2003). With the governments’ target for modernising and digitising all its services by 2008, pressure is now increasing to address the causes of ICT development failure in the public sector. The current program of e-government in the UK focuses on e-enabling local authorities in different regions in the UK with plans to implement a fully integrated service by 2008. As said before, in the national context of the UK, the direct.gov.uk web portal provides a single point of contact for e-government, but is yet to function as a proper web portal. Given this overall context, Layne and Lee’s (2001) representation of the different stages and dimensions of e-government development is significant: cataloguing, transaction, vertical integration and horizontal integration (figure 1).

In the cataloguing stage in figure 1, governments focus on establishing an online presence by publishing index pages or a localised site where electronic documents offer the public information relating to government services (Layne and Lee, 2001). This is the simplest and least expensive form of web presence and from the government’s perspective it helps to save staff time spent on answering basic questions (Bonham et al., 2003). In the transaction stage the focus is on connecting the internal government systems to online interfaces thus allowing citizens to electronically transact with government institutions. While the speed of which this sector has progressed is disappointing, the process of developing and maintaining services in this stage are more complex than the first stage (Vassilakis et al., 2003). In the third stage, vertical integration, federal, state and local governments are expected to connect to each other to offer a higher level of integrated service. The main challenge is to ensure compatibility and interoperability between various government databases (Layne and Lee, 2001). The most complex stage is horizontal integration where different services and functions within the same level of government are integrated to provide a one-stop-shop for all major services (Reffat, 2003). This according to Bonham et al., (2003) requires a transformation of how government
functions are conceived, organised and executed and is more difficult to realise than the first three stage.

Gant and Chen (2001) state that, different countries around the world have strived at different speeds to move from the cataloguing to transaction stage. The UK is no exception where the country has managed to realise transaction level services in key public service processes such e-billing, e-payments, e-voting and e-forms (Weerakkody et al., 2004; Weerakkody et al., 2006). Also, some UK local authorities and public sector institutions have already reengineered and integrated disparate business processes and IT systems to offer the public a more integrated service across different disciplines by collaborating with leading software and technology providers in the country (Infoconomy, 2004).

Although the above mentioned cases are encouraging, it can be argued that the transfer of public administrative processes from a largely inefficient and bureaucratic manual state to an e-enabled real-time automated state would involve, in some countries fundamental changes to processes at both local and national government levels. In this regards a range of typical public administrative processes such as accountability arrangements, budgeting, monitoring and reporting, decision-making and performance management can be reengineered with the influence of ICT (Navarra and Cornford, 2003). However, the level of ICT enabled change to state services will depend to a large extent on the ICT resources available to the different governments (Gant and Gant 2001) and their attitude to IT enabled change (Heeks, 2000).

There are also many instances where information is clearly not available locally (within the organisation) to execute processes and service specific customer demands. As said before, this adds a further complexity to the process, as information now may need to be obtained from an external source outside the organisational boundaries of local government/councils. Like in e-business, access to this information is needed at electronic speed in e-government, and thus demands instant communication and integration between processes and
information systems in different agencies. This information communication and access process is further illustrated in figure 2 (which is a modification of the work by Saxena and Wadhwa 2003, p130).

As indicted in figure 2, when a citizen requests information from central government or local authority (council) web portal, this information may always not be available within their respective internal systems. In
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this case, the internal systems of the respective government agency will need to request and interact with other organizations’ (i.e. local government agencies, central government, local businesses etc.) information systems to extract the required information to service the citizen’s need. As said before this demands the interaction between processes and IS/IT systems at both internal and external levels and thus needs an environment where integration and interoperability between disparate ICT systems is seamless. It is fair to suggest that realising this type of environment using traditional modes of EAI is inconceivable given the nature of the diverse hardware and software systems that span government IT infrastructures (as in figure 2). Given this context, the emerging concept of web services cannot be ignored.

Web services breakdown applications into reusable components or services and enable the linking of these services within and across the enterprise using standards based on extensible mark up language (XML) (Fustes, 2003). It uses three XML based standards: SOAP (simple object access protocol) for transmitting XML-encoded data and remotely accessing services in a platform independent way; UDDI (universal description and discovery language) for registering and discovering services; and WSDL (web services description language) to provide an XML grammar for describing available web services (Monson-Haefel, 2004; Masood, 2002). In comparison to the most common traditional EAI method, electronic data interchange (EDI), XML is specifically designed to use the Internet as the data transfer mechanism whereby business documents and services can be freely exchanged electronically, whereas the latter needs point-to-point connection between each participating system (Thompson, 2002). When using web service, the existing application in the enterprise remain, but instead of staying in relative isolation from each other, they are seamlessly joined to create new services that are more attuned to the needs of the business (Fustes, 2003). Already organisations in the US such as DaimlerChrysler (Information Age 2004b) and Jersey Post (Information Age, 2004b) and UK supermarket chains Sainsbury’s (Information Age, 2004) and Tesco’s (Mclever, 2002) have used the web services-SOA model to integrate their supply chains. Given this context, it is fair to suggest that government can draw from these successful cases of supply chain integration in their efforts to implement e-government. As shown in figure 2, an SOA/web services environment could potentially replace EDI, Intranets, emails and other forms of communication used to exchange information between government agencies. Also, XML can provide the common bridge between the various backend MIS, DSS, KM, DP, OA as well as front end CRM, ERP and e-business type systems. In relation to figure 1 (Layne and Lee’s 2001 e-government development model), figure 2 then illustrates some of the essential ICT concepts that need to work in synchrony to move from basic information delivery to vertical and horizontally integrated e-government services.

3. Research Design

To explore the arguments set out above in a deep and meaningful manner, a case study approach was considered to be suitable (Yin, 1994; Walsham, 1993; Pettigrew, 1990) and was conducted in the largest local authority/council in London (referred to in this paper as Council X) from November 2004 to March 2005. Semi-structured interviews (Yin, 1994) lasting between one to two hours were initially conducted with ten local government/council staff. These staffs were made up of the head of e-government, the IT manager, two systems analyst/programmers, two e-government project members, and four operational / clerical level staff. These employees represented cross sections of the organisation as well as the e-government initiative in council X and were selected after initial discussions with the head of e-government. This process helped to eliminate any bias from forming in the data collected (Saunders et al., 2000; Yin, 1994; Denzin, 1978). Follow-up structured interviews were thereafter arranged with the same staff in order to confirm the results and clarify any unclear information (Yin, 1994). The follow up interviews were brief (between 20 and 40 minutes) and started with the interviewer summarising the key findings from the main interview which was followed by a questioning phase to address any unclear information or themes that may have been overlooked during the first interview. This offered the opportunity for both the interviewer and interviewee to verify the information disclosed during the interviews (Yin, 1994; Creswell, 1994, Denzin 1978; Tesch, 1990).
The above process was complemented with further interviews with 20 local citizens between the ages of 16 to 84 who came into council X’s offices. The citizens consisted of both males and females and represented different ethnic (English, Asian, Afro Caribbean) as well professional (private and public sector workers; self employed; citizens who were unemployed, retired, on income support or job seekers allowance; and students) backgrounds. The interviews with citizens were focused and brief in contrast to staff interviews, and lasted between 5 to 10 minutes; this allowed the researchers to understand the e-government challenges from a citizens’ perspective. During both sets of interviews (with council staff and citizens) notes were taken in a logbook (interviews were not tape-recorded as requested by the interviewees) and later transcribed into the computer.

The interviews were combined with observation and a review of council documentation, which allowed the researches to verify and validate the empirical finding through triangulation (Yin, 1994; Denzin, 1978; Mason 2002; Saunders et al., 2000; Ragin, 1987). Finally, the data analysis was done by comparing the different findings against each other and initially forming themes, which were later merged/divided and categorised into appropriate headings. The research approach taken is outlined below.


Council X was formed in 1977 and is London’s largest borough with a population of 331,370 citizens from diverse ethnic groups. In support of the UK e-government initiative, the council has initiated a number of projects aimed at improving their ICT infrastructure and delivering public services electronically. However, council X has duly recognized that much more needs to be done before the council could realistically support the central governments plans to offer fully integrated e-government services by 2008 in the UK. Accordingly, a senior councillor has been appointed as Head of E-government to lead the initiative forward in council X and a business unit has been formed involving a team of experienced council staff. This unit has outlined the implementation of the following services as imperative for the success of e-government at council X: an ICT infrastructure that will meet the future needs of modern service delivery; a single set of customer records; a telephone contact centre; free Internet access to citizens in public places such as libraries; one-stop-shops for local council services; public access kiosks; business transformation to improve local services.

In relation to the research question set out in section one of the paper, some of the above services (such as access to a single set of customer records, one stop shop, public access kiosk) requires the integration, harmonization and free exchange of information between different business processes and underlying ICT systems for them to succeed. Our interviews with the e-government project team and staff identified a number of challenges that council X needs to overcome if they were to successfully implement the above-mentioned projects. These challenges are presented below in the context of the progress made thus far by council X and what needs to be achieved still particularly in relation to Layne and Lee’s (2001) framework for e-government service delivery/integration outlined in figure 1.

4.1. Cataloguing Information  (Figure 1, Stage 1)

Like many other local councils in the UK, council X has implemented an e-government website with information about local services. Also, under the e-government initiative, council X offers free internet access to citizens in local libraries; provides e-mail addresses to all council staff (so that citizens can communicate with staff electronically); offers access to relevant council papers and information about council tax referendums etc. online; provides IT training to council staff and local citizens; and facilitates internet access to all local schools.
E-government: Macro Issues

4.2. Enabling on-line Transactions (Figure 1, Stage 2)

The current ICT infrastructure in place at council X does not provide an adequate platform for process and ICT integration and thus restricts the sharing of resources and information. As outlined by a number of IT staff, council X has internal databases with citizens’ records showing information such as council tax, social services benefits, parking permits and library cards. However, these databases and systems processing the information are all dispersed within different departments and citizens have to contact these departments to access different services. Furthermore, the ICT infrastructure in council X is made up of ailing legacy systems which are unable to support many of the citizens’ queries online; contact has to be made in person at the council’s offices which was seen by IT staff as ‘failing to fulfil the e-government promise’. Also, it was clear that IT staff were struggling to cope with their increasing workload and the demands made on the existing legacy systems as a result of e-government. On the positive side however, the council has implemented a secure server with firewall protection, virus checker and password authentication. Although these improvements are beginning to encourage a digital medium, it is clear that much more is required to compliment these facilities.

4.3. Vertical Process and Systems Integration (Figure 1, Stage 3)

Interviews with council staff identified a highly ineffective vertical communication and information exchange mechanism between local and central government. For instance, currently, when a citizen has a specific query, the council employee dealing with the query has to telephone or fax central government (CG) for information. One interviewee highlighted that, “Calling central government is a pain, they put us on hold for a long time and even when they answer the phone the call gets transferred from one place to another. Writing letters is much easier to do, but even then it takes them at least two weeks to get back to us.” When information has to be communicated in the opposite direction (i.e. CG to LG), the situation is no better. The council currently receives all new information regarding policy changes, benefits and services etc., in hard copy format by post. This information is then passed on to the relevant departments. In this respect, one interviewee highlighted the concerns of many staff by stating, “often information is lost or misplaced and we don’t have important information available to us.” Unfortunately, this scenario indicates that the exchange of information at vertical level is ineffective and thus posses a challenge not only to council X, but central government as well.

4.4. Horizontal Process and Systems Integration (Figure 1, Stage 4)

Horizontal communication and information exchange at council X is no better than the vertical scenario described above. Considering that council X has identified the need for a single set of customer records as a key requirement for their e-government efforts, currently staff have to phone or fax other departments to obtain different customer records. For instance, entitlement for certain state benefits and services often require information and verification by a number of different departments both at local and central government level. In such cases, staff have to wait for replies from various entities before they could discharge the citizen’s benefit or service entitlement. It was revealed that this could take days, and sometimes even weeks or months leaving the citizens helpless. From the citizens’ perspective, the most influential factor for all the citizens interviewed was the long times spent in council X’s offices waiting to be served. Although citizens collect a numbered-ticket upon entering the council, a citizen voiced her concern by stating, “I only need to talk to the education department but I have to wait until my number comes”. It was also observed that although staff in certain departments were free, yet citizens requiring the service of these departments had to wait with everyone else until their number was called in the common ticketing system. Also, council X had a policy of different queues for different departments (meaning that if a citizen has two queries such as on education and housing, he/she has to queue up twice). Therefore, having a common ticketing system did not make any sense and contributed to further confusion and added waiting time for citizens.

While addressing the above challenges require commitment and resources, the e-government effort at council X is further compounded by funding issues. Interviews with the IT manager found that council X is
finding it difficult to obtain funding from central government for their e-government efforts. Each year, funding is given in packages and the IT managers are under increasing pressure to deliver e-services with the limited financial resources. It was revealed that council X is currently in debt to the central government and any increases to the IT budget is unlikely in the near future. One manager highlighted the financial constraints faced by the council by stating, “Citizens are always demanding less council tax and better services, but, without investment for E-government it is not possible to deliver the services they require”.

5. Discussion

The case study conducted at Council X identified a number of key issues that needed to be considered if the council was to realise integrated e-government services. It is imperative however, that proposed services ensure increased efficiency and reduced cycle time which was the primary concern where citizens were concerned and as argued before this can only be achieved through the integration and harmonisation of processes and IT systems within LG and between LG and CG. Some key issues that need to be considered include: the need for databases from different department to be integrated at LG level so that there is a single set of citizens records; the ability for LG employees to access the latest information from central government on their screens; data sharing should be possible between LG departments and central government; and online access for citizens to apply for e-services such as social care, disability allowances and facilities, education, health etc.

As said before, from the central government’s perspective, progress has been made in the context of offering a one-stop-shop for key public service such as health, education, employment etc., by publishing the ‘direct.gov.uk’ web portal and a link to local councils through the ‘local.direct.gov.uk/mycouncil’ web portal. However, it is fair to suggest that judging by the challenges faced by local government (such as council X), moving beyond the cataloguing stage to vertical and horizontal integration (as in figure 1) in the UK will require a great deal of process and information systems redesign work that will need to be supported by new integration technologies such as web services. As seen in council X, inefficient processes were further thwarted by fragmented information systems making the exchange of information between processes and systems impossible. Besides, empirical research in the UK strongly suggests that succeeding at the local level is imperative for national level e-government success (Hackney and Jones 2002).

Given the communication and information exchange problems seen at council X, the primary focus therefore needs to be the integration and improved communication between internal as well as external processes and IT systems. From an organisational perspective, the paradigm shift and change of culture that this may introduce to government institutions would certainly face resistance as seen in other forms of organisational change such as business process reengineering (Sahay and Walsham, 1997; Avgerou, 1993; Weerakkody and Hinton 1999). Moreover, it is imperative that the project planners and implementers understand how the various business processes, software systems and stakeholders that make up the e-government structure will interact with each other to provide integrated services. Figure 4 maps the various problems encountered at council X against Layne and Lee’s (2001) framework for e-government development (see figure 1) and the information processing and communication infrastructure model of (Saxena and Wadhwa, 2003) (see figure 2). It is fair to suggest that this diagram outlines the kind of challenges that not only council X, but many other local government agencies will face when implementing e-government services. Figure 4 also illustrates the link between the various information systems and the level of integration required between these systems to overcome the challenges faced by local councils in general in the context of delivering efficient and effective local government services to citizens. As revealed before in the previous section and outlined in figure 4 below, the main challenges that council X face revolve around integration and communication problems between various systems (such as internal data bases, ERP/CRM systems, web based systems etc.) at both vertical and horizontal levels. Therefore, initially the harmonisation of at least the internal systems (data bases) is paramount if councils are to efficiently enable interactive and transaction
Horizontal Systems Integration
LG-LG-CG

Vertical Systems Integration
LG - CG

Transaction Services
(Internal Systems Integration)

Cataloguing Information
(Web Presence)

One Stop Shop: Single Point of Access to all LG needs of a Citizen – the need for LG systems to communicate with CG and systems of other local businesses

Avoid re-entering hardcopy based CG Information into LG systems
The need for data sharing between LG and CG to answer customer queries
Difficult to maintain legacy systems
Need to Integrate Internal data bases
Citizens need to make online applications for LG services

Provide free Internet access to citizens in public places (library; kiosk)

INFORMATION TRANSMISSION MEDIUM (Internet, Kiosk)
INFORMATION COMMUNICATION MEDIUM (CRM, e-Business Systems)
INFORMATION PROCESSING APPLICATIONS (Backend Systems)
INFORMATION ACCESS MEDIUM (EDI, Web Services)

Fig 4: Facilitating better LG services: Levels of Integration Vs Key Challenges

level local government services to citizens.

Furthermore, for higher levels of electronic service delivery the harmonisation and integration of business processes and supporting ICT systems between the main stakeholders (citizens, government agencies, employees, and business partners) are imperative (Champy, 2002). While the integration between two or more of these entities may allow governments to deliver e-services at the cataloguing stage, in order to offer fully integrated e-services, the overall integration and harmonisation of all the above elements will be imperative. However, when even successful commercial enterprises are suffering with process and enterprise application integration (EAI) in the context of e-business and supply chain management (Linthicum, 1999; Sutherland and Willem, 2002), government institutions with bureaucratic processes and outdated legacy systems will find this an even more Herculean task. Yet, the reality of having to reengineer these often inefficient and ineffective business processes and ICT systems before e-enabling them for e-government remains encouraging though, as this can promote a degree of standardisation across government institutions which may help ease the above problem. Moreover, we believe that this is where emerging technologies such as web service can offer a fast and effective solution to councils (like X) by helping to retain many existing (functional) applications in the council, but instead of staying in relative isolation from each other, they can be integrated to create new services that are more attuned to the needs of the citizens.

As discussed before, in the above context we can not ignore the progress made towards integrated service delivery by the UK government where links to all 388 English local councils have now been implemented through the ‘direct.gov’ web portal (Government Computing, 2006). Using the address http://local.direct.gov.uk/mycouncil/citizens can now link to access their respective local council services. However, we argue that this is merely a web link and therefore only provides access to the same cataloguing and basic transaction level services that are already available through the local council web sites. On the contrary, the evidence in council X suggests that there are still a number of deeper process and systems integration issues
that need to be addressed at both local and central government levels before fully integrated services are offered to citizens through a single point of access.

6. Concluding Remarks

This paper has reported upon the progress made by one large local authority in their efforts to implement e-government in the UK. The research highlighted a number technical, financial and organisational challenges faced at local government level, and indicated that the actual implementation of e-government is a complex and lengthy task that may proceed beyond the government’s target of 2008.

From a literature perspective previous research on e-government has identified a number of social-cultural issues such as access to e-services (Fang, 2002; Darrell, 2002), usability of e-government websites (Porter, 2002; Sampson, 2002), lack of trust (Navarra and Cornford, 2003; Bhattacherjee, 2002), security concerns (Harris and Schwartz, 2000; Javenpaa and Tractinsky, 1999) and resistance to change (Margetts and Dunleavy, 2002) are hindering the adoption of e-government in many countries. While most governments have now addressed these issues which are usually associated with the early stages of e-government implementation, from a more technical and organisational standpoint the debate as to how best to proceed with integration of processes and systems in the public sector (Janssen, 2005; Weerakkody et al., 2006; Allen et al., 2001) is a challenge that still continues to linger.

Certainly, the empirical findings in this research coincide with the above suggestions. As seen at council X it is common for government agencies to have a plethora of information systems based on different hardware platforms. While it is fair to state that many of these systems offer valuable operational and strategic support to these agencies, the challenge therefore is not to replace these systems, but to utilize them efficiently by enabling the communication and exchange of information between these systems using available-cost-effective technologies. Besides, with looming deadlines and limited resources the UK government cannot afford a large-scale radical reengineering (for instance as suggested by Hammer and Champy, 1993) of business processes and IT systems in local councils. Therefore, an incrementally-led process improvement effort (as suggested by Davenport 1993; Harrington 1991) supported by cost effective ICT’s will no doubt offer a relatively risk-free transition from the currently cataloguing (information provisioning) and transaction level websites (Layne and Lee, 2001) to a full e-service oriented integrated local government in the UK.

Furthermore, while local councils need to formulate their own e-government plans in line with CG strategy, it is imperative that these plans are focused towards satisfying local citizens’ needs and expectations rather than solely those of central government. In this context, this research has shown the need to organise work flow and integrate various legacy systems within local councils as a key imperative for local e-government success. It is therefore fair to argue that the main e-government implementation focus should now move from front end interface design and linking websites (i.e. local.direct.gov.uk/mycouncil) to internal business process and information systems reengineering.

In summing up, this research has attempted to offer a better understanding of the technological and wider organisational issues that may influence the realisation of a fully integrated e-government service through literature and empirical research. It has also examined the relevance of web services as an EAI platform for process and application integration in e-government. Although the empirical research was undertaken upon one local council, from the secondary data that is available it is fair to state that the above discussed factors are also faced at the national level of e-government implementation in the UK. However, more research is needed to explore these issues and to this effect the authors have already planned more surveys and interviews with a number of local councils in the UK.
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Business Process Reengineering and Change Management: Learning from E-governance Projects

D. N. Gupta

ABSTRACT

With an objective to improving public service delivery, e-governance is getting focused attention across the country. The launch of NeGP has further provided a fillip. Notwithstanding high potential offered by e-governance, except for some successes for providing land related certificates and collection of utility bills, the success is still alluding. Vital factors such as BPR, citizen-centric approach, and the ability to make smooth changeover from manual to IT system, are yet to be addressed. Based on research, this paper attempts to clearly define the roadmap for BPR and change management, which, among others, includes process re-design and strategy for alignment of processes and people with IT.

Keywords: BPR, change management, citizen database

1. Introduction

“Potential of IT to transform business is not in question, it is how to unlock that potential that is the question and BPR seems to be providing one answer.”

In the last one decade, e-governance has heralded a new chapter in the public service delivery. Several e-governance projects have been initiated by the state governments across the country. The launch of National e-governance Programme (NeGP), with a specific objective to add one lakh common service centres (CSCs) in rural areas has provided a fillip to the efforts under e-governance (http://www.mit.gov.in).

IT has been immensely helpful in accessing those services that are information based or that do not involve much processing, e.g. getting copy of records of rights for land, or for payment of utility bills. But it is not so for the services like caste and income certificates, mutation of land, bank credit, etc., that requires elaborate processing at multiple levels. The long and cumbersome processes, lack of citizen-centric approach, inadequate capacity of delivery system to deliver, and lack of responsive work culture, are not helping the cause of e-governance. What is observed is that the focus in most of the projects is on computerisation and automation using IT (Gupta, 2004). As a result, such projects are successful at the pilot stage but do not sustain after the roll-out.

Also, noticed is the inability to make smooth changeover from manual to IT system. What is lacking is the clearly defined roadmap for change management. The required leadership is not evolved and capabilities required for new challenges have not been upgraded. Likewise process redesign has not been attempted to make them IT compatible, leave alone the alignment of process, people and IT (ISS, 2006).
2. Business Process Reengineering (BPR) and System Redesign

The governments in developing countries like India face a difficult task of dealing with numerous functions that are required to provide needed services to citizens. They also have to find ways to interact with citizens to provide these services in a manner that is responsive and accountable to the satisfaction of the citizens. Traditionally governments are divided into numerous departments and sections, each of which develop, administer and deliver some services. The citizen needs to know which department or office is responsible for delivering, which service, and even then one often realises that his actual needs are basically divided among functions of a few different offices, and that these offices are just not structured to take a unified view of meeting his specific need. Under the circumstances, even if one is able to spend all the time running around these different offices, one just may still be left unsatisfied.

The basis of e-governance is not a simple online interaction with the citizen; it implies these complex organisational restructurings. E-governance has to make the citizen’s life easier, and not more difficult. So, when the citizen doesn’t find internet as his preferred way of interaction (which is obviously so, for an overwhelming majority of citizens in rural areas), the convenience of a personal interaction needs to be at hand. This is why many state governments in India have come up with ‘citizen service centres’ where front-end staff, equipped with networked access to various backend offices of the government, interacts with and provides services to the citizens. But, the field study (ISS, 2006) reflects that the presently laid out front-end, without doing even a basic organisational structural redesigning, has resulted in service delivery initiatives getting stuck at a level that includes only a few services, which are as follows:

- Collection of payment for different departments
- Providing basic information pertaining to various departments
- Providing application form etc, and accepting them on behalf of various departments
- Providing record authentication services like land records, identity records and entering records like birth / death registration, vehicle registration, etc.,

but services that require detailed processing are not made available by e-governance projects. It is mainly due to the fact that the process reengineering and backend computerisation have not been attempted successfully.

3. Case Study: Redesigning Carried Out

Business process reengineering (BPR) is defined as ‘the fundamental re-thinking and radical redesign of business processes to achieve dramatic improvements in critical contemporary measures of performance such as cost, quality, service, and speed’ (Hammer and Champy, 1993). The old way of thinking about IT was to use computers to automate existing processes; while the new way of thinking about IT: use computers to create new ways of accomplishing work that were not feasible before. Current competitive environment demands ‘break-thru’ changes in: cycle-time, service-levels, costs, quality and other competitive performance measures. To achieve ‘break-thru’ levels of improvement, one must re-examine cross-functional flows of information and materials, activities and decisions, and existing hierarchies of measurement and control. One must employ modern information technologies to rethink and redefine ‘core business processes’. One must re-engineer the way the business operates to achieve specific objectives for competitive success.

A study of e-governance projects viz., Gramdoot and Janmitra (in Rajasthan) was carried out by Institute of Social Sciences (ISS, 2006) for evolving a programme for BPR and change management. The research focused on Tehsil services. It was found that some of the services were used very frequently by most of the citizens, while some other services were rarely used. It was decided to concentrate on only those processes, which consumed the maximum resources and were touching the lives of maximum number of citizens. These are reflected in Box 1.


The structure of modern business organisations was based on the principles of scientific management and Adam Smith’s idea of the division of labor. Such an approach argued that success was based on breaking complex processes into simple tasks and then optimising the performance of the individual tasks and their processes. Under the research, the process mapping of key processes was undertaken. The mapping reflected detailed sequence of activities (or simple tasks). Based on this, time analysis was carried out. For instance, a caste certificate from the Tehsil typically takes around 10-15 days (12 days average) (see Table 1) to complete from the time the villager starts to understand the procedure till the time he actually gets the certificate (ISS, 2006). Yet, only 134 minutes is the actual time (see Table 1) taken to complete the process and 30 minutes in Tehsil processing. But, in Gramdoot project, the total number of days in getting caste certificate was 20-25 days (23 days average) and actual processing time was 192 minutes. Due to large non-processing time, the process efficiency got reduced in Gramdoot project. Likewise, the performance in Janmitra has not been satisfactory.

<table>
<thead>
<tr>
<th>S.N.</th>
<th>Systems</th>
<th>Total number of days in getting certificate</th>
<th>Average time in getting certificate (in days)</th>
<th>Actual time of processing (in minutes)</th>
<th>Process efficiency</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Manual</td>
<td>10-15</td>
<td>12</td>
<td>134</td>
<td>2.51 %</td>
</tr>
<tr>
<td>2</td>
<td>Gramdoot</td>
<td>20-25</td>
<td>23</td>
<td>192</td>
<td>1.88 %</td>
</tr>
<tr>
<td>3</td>
<td>Janmitra</td>
<td>6-18</td>
<td>12</td>
<td>151</td>
<td>1.97%</td>
</tr>
</tbody>
</table>

3.1. Paradigm Shift

The study of these contemporary projects (Gramdoot and Janmitra) also revealed that most of the projects were partially successful on the technology front; they failed because adequate attention was not given to the people or process aspect of the system. The systems in the Tehsil and elsewhere are in place for the last more than a few decades. The processes keep on getting changed and altered through various government orders as and when they come. The government officials, on their part issue guidelines to be followed while providing these services. Due to a large number of guidelines issued, that attempted to incrementally improve the processes, what has happened is that the processes themselves have become discontinuous and patchy. Even the officials do not have a complete list of the exact procedure to be followed. Moreover, all the records are maintained in a manual register system. Due to this, the measurement becomes difficult. As the measurements are not done properly, forecasting and the future direction cannot be assessed properly. A need was felt to map the processes and analyse them based on proper quality parameters and attempt process redesign.

In order to enable system to deliver productively, there is a need of performance-driven approach as indicated by Figure 1.

3.2 Four Scenarios

Based on CTQs and other system inputs, consultations with local officials and functionaries of Tehsil and keeping in view change management issues in mind, based on process redesign, the new system should
be evolved in a phased manner. Following are the incremental phases (see Table 2) for the implementation of the new system, which will take new system from ad hoc to sophisticated state:

**Table 2: Processing in different Scenarios (Based on BPR)**

<table>
<thead>
<tr>
<th>S. N.</th>
<th>Scenarios</th>
<th>Broad items</th>
<th>Processing</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>- Attachments</td>
<td>- Manual</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Internal processing of Tehsil</td>
<td>- Manual</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Delivery form</td>
<td>- Manual</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Attachments</td>
<td>- Manual</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Internal processing of Tehsil</td>
<td>- Manual</td>
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<tr>
<td></td>
<td></td>
<td>- Delivery form</td>
<td>- Manual</td>
</tr>
<tr>
<td>3.</td>
<td>Scenario A</td>
<td>- Application form</td>
<td>- Online</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Attachments</td>
<td>- Manual</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Internal processing of Tehsil</td>
<td>- Online</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Delivery form</td>
<td>- Manual</td>
</tr>
<tr>
<td>4.</td>
<td>Scenario B</td>
<td>- Application form</td>
<td>- Online</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Attachments</td>
<td>- Online (scanned) + Manual</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Internal processing of Tehsil</td>
<td>- Online</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Delivery form</td>
<td>- Manual</td>
</tr>
<tr>
<td>5.</td>
<td>Scenario C</td>
<td>- Application form</td>
<td>- Online</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Attachments</td>
<td>- Required only in case of dynamic data*</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Internal processing of Tehsil</td>
<td>- Online</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Delivery form</td>
<td>- Manual</td>
</tr>
<tr>
<td>6.</td>
<td>Scenario D</td>
<td>- Application form</td>
<td>- Online</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Attachments</td>
<td>- Required only in case of dynamic data*</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Internal processing of Tehsil</td>
<td>- Online</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Delivery form</td>
<td>- Online</td>
</tr>
</tbody>
</table>

Note: The common thing in all the scenarios is online internal processing of Tehsil.
* In case of change of place or caste or income.
income certificate will have such requirements. Despite having everything online, the final delivery certificate will still be delivered manually from Tehsil to kiosk, again to gain the confidence of functionaries in the new system.

Scenarios C & D are more or less same except, in scenario D, the final delivery certificate can now be printed at e-kiosk, on which there should be the signature of some authorised staff from Tehsil, together with Tehsil seal. Necessary security features need to be provided as indicated in Table 5.

The process efficiency of these four scenarios has been calculated and compared with manual and Gramdoot systems. It shows that in each scenario there is increase in efficiency, and in scenario D the efficiency is 73.64%, which is significantly higher than the present manual and e-governance system (see Figure 2). This has been mainly due to BPR and followed by suggested backend computerisation (BC). It is suggested that ‘citizen database’ should be developed as a part of BC.

After BPR, CTQs are reflected in Table 3, which reflects gradual improvement from Manual to scenario D. It shows that number of attachments would come down substantially. Similarly touch points and number of visits have come down drastically under scenario D.

It is expected that, based on calculations, the cost of preparation of citizen database can be recovered in six years (see Table 4), keeping in view the cost of development of database and its maintenance and savings to Tehsils, which appears to be a viable proposition. With backend computerisation, there would be enormous gains to citizens due to lesser time in availing services, thereby lesser cost.

3.4. Changes required for new system

While evolving new system from manual system to scenario A to scenario D, certain changes are required in the following (see Table 5):

i. Application form
ii. Attachments
iii. Submission at e-kiosk
iv. Verification
v. Internal processing at Tehsil level
vi. Delivery form
vii. Delivery of certificate to citizens
viii. Security
  The prominent changes that are to be brought by the government are listed below:
  - Application form to be redesigned
  - Stamp duty to be done away & replaced by single user charges
  - Scanned documents should be legally accepted as an attachment
  - Deputation of Patwari or authorised staff between 10 AM to 12 noon at e-kiosk for verification of attachments at the time of submission of AF
  - Report of Patwari to be typed on the computer and signed digitally using digital signature as well as light pen
  - Citizen database to be recognised as legal records throughout the district
  - Digital signature should be acceptable for verification
  - Internal processing of Tehsil to be fully computerised
  - Delivery format needs to be redesigned (which may contain the automatically generated certificate number or some barcode number)
  - Printed form should be legally accepted
  - Guidelines for security [like user-ID & password, digital signature, light pen for signature, biometrics (like thumb impression, IRIS), barcode number]
Table 3: Critical Indicators for Caste Certificate by Manual Processing, Gramdoot Project and under Scenario D after Computerisation (based on BPR) in Tehsil

<table>
<thead>
<tr>
<th>S. No.</th>
<th>CTQs</th>
<th>Gramdoot Project</th>
<th>Manual</th>
<th>Scenario D</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Number of activities</td>
<td>26</td>
<td>19</td>
<td>11</td>
</tr>
<tr>
<td>2.</td>
<td>Activities on line (through computer)</td>
<td>Number</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>%age</td>
<td>15.38</td>
<td>0</td>
<td>90.9</td>
</tr>
<tr>
<td>3.</td>
<td>Touch points</td>
<td>For citizen</td>
<td>Min</td>
<td>Max</td>
</tr>
<tr>
<td></td>
<td></td>
<td>6</td>
<td>12</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td></td>
<td>For application</td>
<td>13</td>
<td>7</td>
</tr>
<tr>
<td>4.</td>
<td>Number of decision-making levels</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>5.</td>
<td>Number of visits by citizens</td>
<td>Min</td>
<td>6</td>
<td>14</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Max</td>
<td>15</td>
<td>2</td>
</tr>
<tr>
<td>6.</td>
<td>Number of attachments</td>
<td>9</td>
<td>9</td>
<td>0</td>
</tr>
<tr>
<td>7.</td>
<td>Total time spent by citizens to avail service *</td>
<td>20-25 days</td>
<td>10-15 days</td>
<td>1-2 days</td>
</tr>
<tr>
<td>8.</td>
<td>Total expenditure by citizens in availing the service **</td>
<td>Rs. 200-250</td>
<td>Rs. 200-300</td>
<td>Rs.20-30</td>
</tr>
<tr>
<td>9.</td>
<td>Process (Throughput) efficiency (%) ***</td>
<td>1.88</td>
<td>2.51</td>
<td>73.64</td>
</tr>
</tbody>
</table>

Note 1: Touch points: It refer to the points where either ‘citizen’ or ‘application form’ has to touch during the entire process of delivery of service.

Note 2: Touch points for visits, time and cost for availing the certificates by citizens, vary depending upon the availability of attachments with citizens and follow-up to be done

* It includes time of collection of AF, visits to Patwari, travel to e-kiosk, Tehsil, etc.

** It includes cost of collection of AF, traveling cost, wages lost and other miscellaneous expenses.

*** Peppard and Rowland (2002)
(Flow Diagram under Scenario D, after BPR and Backend Computerisation)

**Note:** Bold activities are electronic activities

*If citizen has come from other village in the recent past and his name has not been entered in citizen database*

**Either by Patwari or authorised staff of Tehsil**

**Table 4: Cost of Citizen Database and saving to Tehsil and Citizens**

<table>
<thead>
<tr>
<th>S.N.</th>
<th>Items</th>
<th>Value</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Cost of citizen database</td>
<td>16.71 Lakhs</td>
<td>10% maintenance cost</td>
</tr>
<tr>
<td>2</td>
<td>Savings to Tehsil (yearly)</td>
<td>4.56 Lakhs</td>
<td>-</td>
</tr>
<tr>
<td>3</td>
<td>Savings to citizens* (yearly)</td>
<td>4.57 Lakhs</td>
<td>-</td>
</tr>
</tbody>
</table>

*Savings due to lesser travel cost and wages lost*
Sub-processes

i. Report of Patwari (if citizen has come from other village in the recent past and his name has not been entered in citizen database)

![Diagram of Sub-processes]

ii. Collection of Attachment (if citizen has come from other village in the recent past and his name has not been entered in citizen database)

Cost for Development of Citizen Database

The attempt is also made to assess the cost of preparation of citizen database (see Table 4), and savings to Tehsil and citizens.
4. Change Management

“People oppose not so much the change, but the strategy or the methods of change. What is crucial is how the change is brought about.”

4.1. Why Change Management Required

The important thing about change is that it is one of the few work-related issues that are hardly discussed productively in most of the organisations (Firth, 1999), while it is vital to do so. In the specific context of governance, with the passage of time, people’s expectations change. New things are required to be introduced. We know that the work done by us is not perfect. We know that our work does not satisfy our customer/citizen. Still we avoid change.

Whereas the available literature (Gupta, 2004 and Pareek, 2004) suggests, though change is difficult, still it is crucial at personal level for increased job satisfaction, enhanced employability/marketability, openness to learning, risk management, entrepreneurial ideas (confidence building), and understanding of the basic principles of life in organisations. The benefits for a good organisation could be refocusing of vision and mission, identity and energy on achieving new goals (enhanced confidence), shedding old, redundant ways of doing things (increased agility), attracting new customers, attracting and retaining talent, learning and faster survival. And, finally, change is alien to an organisation yet needs to be accepted. Unless a change is internalised and integrated, it remains ‘alien’ (Firth, 1999).

BPR requires that old practices must be changed and new processes be designed to fully leverage new technology, management practices and ground realities. While redesigning the processes or organisations the existing manpower (functionaries), logistics and organisational knowledge need to be utilised to the fullest extent. Here, the involvement of people is critical, as the change management needs to be a ‘people-centric’ intervention.

5. E-governance and Change Management – Holistic Perspective

The difficulties many e-governance projects have had with the change management (Hammer and Champy, 1993) depend in large part on an inadequate recognition of interdependencies among technology, practices, and people. However beneficial a new technology (in this case IT), interface, online processing, decision-making structure, or MIS may appear in isolation, the acid test is how it interacts – as it must – with numerous other aspects of the organisation. There is a need to recognise the critical role that interdependencies (of peoples’ behaviour, work culture, citizen’s requirement, processes, delivery mechanism, and technology) play in affecting outputs (Barua, Lee & Whinston, 1995). Because new technological and expectation paradigms eliminate time and space buffers as activities become more
tightly linked, ignoring such interdependencies may be counterproductive.

As success often depends on coordinating the right technology, the right process and service-mix, and several right strategic and structural issues all at the same time, and a small slip-off can leave an e-governance project worse off than if the change had never been attempted. For example, in the case study, due to inefficient personnel management, the time of delivery of services (through e-kiosk) has been much more than in case of manual system. It was one of the major causes for not using services from e-kiosk.

While several studies have highlighted the importance of coordination, administrators / managers continue to have difficulty in achieving it. For instance, in the Gramdoot and Janmitra projects, there was a lack of coordination between different stakeholders viz., kiosk owner, officials of Tehsil, kiosk owner and field functionaries of Tehsil. Due to this, many people-related problems persisted (like delay in Patwari report, signature of Patwari on computer copy of Jamabandi, etc.), and both citizens and service provider had to suffer. Often, the problem is not that the proposed system is unworkable but that the transition proves more difficult than people had anticipated (Champy, 1995). In this context, it was quite obvious that

Table 5: Changes required for New System in Scenario D

<table>
<thead>
<tr>
<th>S.N.</th>
<th>Description</th>
<th>What changes required</th>
<th>Type</th>
<th>Level &amp; support</th>
<th>Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Application form</td>
<td>Application form needs to be redesigned</td>
<td>AF, Rules</td>
<td>Govt. order required</td>
<td>Simplified AF</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Stamp duty to be done away &amp; is replaced by single user charges</td>
<td>Rules</td>
<td>-do-</td>
<td>No need to purchase stamps or stamp paper</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Filling up the AF online at e-kiosk, which requires only the filling of citizen id, and one or two necessary fields</td>
<td>DB</td>
<td>-do-</td>
<td>Time saving</td>
</tr>
<tr>
<td>2.</td>
<td>Attachments</td>
<td>Because of centralised database, many of the attachments will not be required</td>
<td>DB</td>
<td>-do-</td>
<td>Attachments not required</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Scanned documents should be legally accepted as an attachment (in case of dynamic data such as income certificate)</td>
<td>Rules</td>
<td>-do-</td>
<td>Time saving due to electronic medium</td>
</tr>
<tr>
<td>3.</td>
<td>Submission at kiosk level</td>
<td>Deposition of Patwari or authorised staff from Tehsil at e-kiosk</td>
<td>Rules</td>
<td>Collectorate order required</td>
<td>Citizen need not to go to Patwari ghar</td>
</tr>
<tr>
<td>4.</td>
<td>Verification</td>
<td>Verification of AF will be done online</td>
<td>DB, Rules</td>
<td>Court order required</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Citizen database to be recognised as legal record throughout the district</td>
<td>Rules</td>
<td>-do-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Digital signature should be acceptable for verification</td>
<td>Rules</td>
<td>-do-</td>
<td>-</td>
</tr>
<tr>
<td>5.</td>
<td>Internal processing at Tehsil level</td>
<td>Internal processing of Tehsil will be fully computerized</td>
<td>Infrastructure, Rules</td>
<td>Govt. to provide financial support, and Govt. order</td>
<td>MIS about the service delivery can be easily maintained</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Connected to all the kiosks</td>
<td>Network</td>
<td>-do-</td>
<td>-</td>
</tr>
<tr>
<td>6.</td>
<td>Delivery form at e-kiosk</td>
<td>Delivery format needs to be redesigned (which may contain the automatically generated certificate number or some barcode number)</td>
<td>DF, Rules</td>
<td>Govt. order required</td>
<td>Simplified delivery form</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Printed form should be legally accepted</td>
<td>Rules</td>
<td>-do-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Certificate / document is printed at kiosk, and signed and stamped by local Tehsil authority (Patwari or Girdawar) and handing over to citizen</td>
<td>Rules</td>
<td>-do-</td>
<td>Time saving in sending certificate from Tehsil to e-kiosk</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- While handing over certificate / document to citizen at e-kiosk, signature of citizen with light pen or thumb impression</td>
<td>Rules</td>
<td>-do-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Informing the Tehsil office electronically by Patwari about the issue of certificate</td>
<td>Rules</td>
<td>-do-</td>
<td>-</td>
</tr>
<tr>
<td>7.</td>
<td>Security</td>
<td>Listing the information on web-site about the issue of certificate</td>
<td>Rules</td>
<td>Change in relevant Act required</td>
<td>Preventions of unauthorised access</td>
</tr>
</tbody>
</table>

Stakeholders | Security measures
At kiosk (kiosk owner & Patwari) | - User: ID & password
- Biometrics (IRIS)
- Digital signature
- Light pen for signature
- Barcode for final delivery form
officials / managers proceeded in an ad hoc manner (manual processing without having connectivity of e-kiosk with Tehsil), implementing the most visible bits and pieces (sending application form online, scanning the attachments, which do not add much value) of a complex new system, and were unaware of hidden but critical interconnections (for example in case of certificates, role of field functionary like Patwari in giving report, or backend computerisation).

5.1 Alignment of People, Process and IT: A challenge

According to Peppard and Rowland Philip (2002), the organisations are required to be built on three main pillars viz., processes (systems), people and technology (see Box 2). In designing a set of processes these three elements must be aligned to the needs of the market (society) and the customers (citizens) within it, and with each other. It is imperative that each of these three pillars is considered in turn. To begin, we should start with the processes of the organisation (system), which must be identified and designed. We should then consider the people who will operate the processes. This stage is iterative: having considered the people it will be necessary to go back and review the processes and then return to the people. People can only perform, if they have desired level of skills, knowledge, attitude and motivation, and these are to be rightly placed. In considering technology it will also be important to revisit the process designs and people as technological opportunities or constraints become apparent.

6. Matrix of Change

Business process reengineering efforts suffer from low success rates, due in part to a lack of tools for managing the change process. The matrix of change (http://ccs.mit.edu/papers) can help managers identify critical interactions among processes. In particular, this tool helps managers deal with issues such as how quickly change should proceed, the order in which changes should take place, whether to start at a new site, and whether the proposed systems are stable and coherent. The matrix highlights interactions and complementary practices. It can help managers anticipate the complex inter-relationships surrounding change. Specifically, the tool contributes to understanding issues of feasibility (stability of new changes), sequence (which practices to change first), location, pace (fast or slow), and stakeholder interests.

6.1 Steps in preparing Matrix

- **Step 1 - Identify Critical Processes:** The project team should first list their existing practices, and the suggested practices that create value for customers / citizens. These practices are grouped in 3 categories, viz., process, people and technology.
- **Step 2 - Identify System Interactions:** After describing existing practices, the team should create the horizontal triangular matrix to identify complementary and competing practices / processes. Complementary processes reinforce one another whereas competing practices / processes work at cross-purposes. A grid connects each process in an interference matrix, and at the junction of each grid plus signs (+) designate complementary and minus signs (-) competing practices / processes.
- **Step 3 - Identify Transition Interactions:** Next, the team should construct the Transition Matrix – a square matrix combining the horizontal and vertical matrices which helps determine the degree of difficulty in shifting from existing to target practices. The advantage of the transition matrix is that it shows the interactions involved in moving from existing practices to a new slate. The plus signs (+) designates reinforcement and minus signs (-) conflict during change.
- **Step 4 - Survey Stakeholders:** Finally, the team should determine where various stakeholders (like citizens, functionaries) stand with respect to retaining current practices and implementing target practices. The values are as follows: ‘+2’ means most important, and ‘+1’ indicates less important, ‘0’ represents not important, ‘-1’ means less important but change is required, and ‘-2’ indicates most important and change is must.
Fig. 4: Intra-relationship and Transition Matrix from manual to IT System

Note: Figure in parentheses indicates serial number (S.N.) of suggested practices (see Figure 4)

Fig. 5: Phases for introducing Suggested Practices
Box. 3: Rationale for Selecting Practices

Group 1: Practices (existing) those are not preferred by citizens
1. Inquiry by Patwari (process)
2. Citizen gets AF from Tehsil (process)
3. Citizen pays the deed writer to fill the AF (process)
4. Citizen moves with the application (process)
5. Collection of the report from Patwari (process)
6. Collection of attachments by citizen (process)
7. Inadequate feedback system (technology)
8. Citizen has to visit Tehsil 2-3 times in some cases (process)
9. Inadequate quality standards (process)
10. Availability of forms & guidelines not at one place (process)
11. Different departments for different services (people)
12. Lack of citizen focus (process)
13. Lack of monitoring (technology)

Group 2: Practices, those are preferred by citizens
1. Quality standards (process)
2. Single window (process)
3. Feedback system (technology)
4. Availability of form & guidelines at one place (process)
5. Citizen focus (process)
6. Monitoring (technology)

Group 3: Practices (suggested) those are vital for new system (for e-governance)
1. Citizen database
2. Interface at village level
3. Network
4. Feedback system
5. MIS
6. Quality standards
7. CRM
8. Trained people
9. Online processing
10. Integration of services
11. User/citizen identification
12. Patwari’s availability at e-kiosk

6.2 Interpretations of Matrix of change

The Matrix of change is a useful tool for addressing the following types of questions under different factors:

- Feasibility: Do the set of practices representing the stated goal constitute a coherent and stable system? Is our current set of practices coherent and stable? Is the transition likely to be difficult?
- Sequence of execution: Where should change begin? How does the sequence of change affect success?
- Location: Are we better off instituting the new system in a separate location or at the existing place?
- Pace and nature of change: Should the change be slow or fast? Incremental or radical? Which groups of practices, if any, must be changed at the same time?
- Stakeholder evaluations: Have we considered the insights from all stakeholders? Have we overlooked any important practices or interactions?
Box 3 reflects practices (existing) those are not preferred by citizens, practices those are preferred by citizens, and suggested practices those are vital for new system (of e-governance). Finally based on weighted values assigned to different factors (ISS, 2006) for various suggested practices, phase-wise programme is given Figure 4. It is suggested that practices like ‘interface’, ‘network’, ‘MIS’ should get top priority while ‘online’ delivery of certificate at e-kiosk should be attended in the last keeping in view the factors of change.

7. Concluding Remarks

In the backdrop of discussions presented above, it is amply clear that the success of e-governance initiatives hinges more on institutional changes than only on introduction of IT. The present efforts under e-governance though positive and encouraging are yet mainly in the area of: first, information exchange, and second, interface of citizen with government departments (to represent to departments either for services or grievances). The scope of services is limited to land related certificates and payment of utility bills. E-governance should be taken as nothing but good governance. The ‘e’ is only a tool. E-governance offers opportunities to change mode of government functioning, making it more efficient. It affects all government functions and agencies, the private sector, and the society in general. The focus should shift on process improvements and change management strategies for the right alignment of people, process and IT. What is required is that the government processes need to be redesigned and be IT compatible alongside technology implementation, otherwise the result would be working with inefficient processes. They need simplification, standardisation and to be user-friendly, before they can be adopted and adapted by people. Backend computerisation is crucial. Institutional capacity needs to be improved. The work culture needs to be changed from a traditional department-centric thinking to a citizen-centric and user-friendly approach.

Also, a good programme for change management is called for the alignment of people, process and IT. With the improvements that would follow, it would generate a great deal of interest in people to access more and more services from government. Making such interventions has potential to create significant multiplier and network effects. This can trigger a virtuous cycle of socio-economic development – leading to good governance. To sum up for the e-governance initiatives to be successful it requires coherent integration of IT network, government institutions, and processes – the scale of success is immense.

Note: The author is thankful to Manish Kaduskar, Subash Nagi, Aloke Deb, Rajesh Kumar and Vimal Kumar for their contribution.

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E-government: Macro Issues


**Abbreviations**

AF: Application Form  
BC: Backend Computerisation  
BPR: Business Process Reengineering  
CM: Change Management  
CRM: Customer Relationship Management  
CSCs: Common Service Centres  
CTQs: Critical to Quality Characteristics  
DB: Database  
DF: Delivery Form  
ISS: Institute of Social Sciences  
IT: Information Technology  
MIS: Management Information System  
NeGP: National e-governance Programme  
RoR: Records of Right

**About the Author**

*D.N. Gupta* joined Indian Administrative Service (IAS) in 1989. For the last one and a half decades he has been closely associated with development planning, and management of implementation of various social and rural development programmes. He has worked in various capacities in the state of Orissa. He was Deputy Secretary, Ministry of Rural Development, Govt. of India. His specialisation is in the field of development administration, e-governance and GIS. He has written several articles on development issues, and books on Rural Development System, Integrated Development Planning, and Decentralisation. Presently, he is working on e-governance and GIS, as Fellow, Institute of Social Sciences (ISS), New Delhi.
Measurement of Business Process Re-Design: A Framework for Continuous Improvement

Anil P. Panikar1*, Vishnu K. Kanhere2 and Jacob G. Victor3

ABSTRACT

E-government implementation success is influenced by a large number of factors, which most of the times are difficult to measure objectively. Business Process Redesign (BPR) is often quoted as one of the most critical success factors (CSF) in e-government implementation projects, for their satisfactory outcome. The results of this work are threefold. Literature review of BPR, the CSF defined to measure the impact, and a Goals / Question Metrics (GQM) to monitor and control BPR within e-government implementation projects is presented. The authors have applied them to examine the impact of BPR in three e-government projects Bangalore-One in Karnataka, e-Seva and On-Line Transaction Processing (OLTP) in Andhra Pradesh focusing on the primary stakeholders - the citizen and the government.

Keywords: Business process redesign (BPR), critical success factors (CSF), Goals / Question/ Metrics (GQM), Information and Communication Technology (ICT), e-Seva.

1. Introduction

The global report on e-government readiness published by The United Nations[1] forms the basis for the authors to examine the fundamentals of E-government initiatives in India. E-government includes electronic interactions of three types: Government-to-Government (G2G); Government-to-Business (G2B) and its reverse; and Government-to-Consumer/Citizen (G2C), and its reverse. The year 2005 report on e-Government Readiness finds India slipping its ranking by one place (current ranking 87, earlier ranking 86). The tenth five year plan[2] of India outlined “Re-engineering of existing government process and procedures as essential to bring about transparency in working, reducing bureaucratic control, increasing efficiency and productivity, reducing cost of service delivery etc. Integration of Projects across various departments to provide a single point of contact for citizens for delivery of services electronically is essential”.

Hans J Scholl[3] through the 18 propositions outlined how e-government is a special case for ICT enabled BPR. By implementing Integrated (i.e. G2G, G2E, G2C and G2B) strategies, government has started bridging the siloed environment and establishes the foundation for continuous collaboration.

In order to study impact on the stakeholders of BPR, some researchers use the CSFs. However, little has been done in relation to the management and the operationalization of these CSFs. Project evaluation is

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3 Andhra Pradesh Technology Services Limited, Tank Bund Road, Hyderabad, Andhra Pradesh – 500 063, India
E-government: Macro Issues

critical for the understanding, control and monitoring of the CSFs of any BPR implementation project. BPR success rates of ICT centric projects are influenced by a large number of factors, and most of the times it is difficult to measure them objectively. Usually, the metrics proposed in the BPR implementation methodologies are related with time milestones and costs aspects. This is due to the fact that these methodologies follow the common definition of project success: on time and on budget. We used the Goals/Question/Metric (GQM) method to develop our set of metrics. The result of the application of this method is a GQM plan framework. According to Solingen et al [4], the GQM plan is a document that contains the goals, questions, and metrics for a measurement program.

The paper comprises of a brief review on BPR and its role in e-government projects implemented after understanding the BPR methodology. The CSF, GQM plan, defining of goals, defining of questions associated for each goal, defining of metrics associated to each question, metrics interpretation are discussed. The Authors also examined the CSF that forms an important part of an ICT enabled BPR in the e-government projects followed in the case of e-Seva, Bangalore-One and OLTP. The impact created on the stakeholders by the above-mentioned case studies is also presented.

2. Business Process Redesign - Overview

BPR was popularized in recent years as the most important technique for restructuring business operations to achieve efficiency and improvement in delivery of services. BPR originated in the 1950s as large organizations began to explore the potential impact of computers on the efficiency and effectiveness of their business processes. In the early 1990s, BPR had an explosive dissemination, especially after the publication of the book by Hammer and Chen [5]. BPR is “the fundamental rethinking and radical redesign of business processes to achieve dramatic improvements in critical, contemporary measures of performance, such as cost, quality, service and speed”.

Whitman et al [6] developed a study for discovering why enterprises use BPR. In order of importance, the reasons are:

- To improve and rectify inefficient business processes,
- To reorganize business functions,
- To improve current industry position.

Jih et al [7] suggested that management must take a more holistic approach to the redesign of business processes and their relationship with information technology. Therefore, there is a strong relationship between BPR and organizational change management procedures during a BPR project, which must have a high degree of top management support (In the case of e-government it must come from both the bureaucratic and the political leadership). This evidences, the need to integrate techniques for organizational design and incorporate the same during the BPR exercise.

Valiris et al [8] in their literature mentions that there has been some confusion regarding the use of terms like reengineering, process improvement and redesign. They suggest that reengineering is synonymous to radical change and process improvement to incremental change and that both, reengineering and process improvement are included in the definition of redesign. In this paper we adopt the same view. Therefore, synonymously and interchangeably we refer the topic ‘business process redesign’ since it is the term that has the broadest acceptance in the industry.

ICT enabled e-government projects are treated on par with ERP implementation as it is immaterial whether it is an off-the shelf software or custom built software application. Adequate Business Process Redesign (BPR) is one of the most cited CSFs even in the case of ERP implementation, (e.g. Bancroft et al. 1998[9], Sharma et al. 1999 [10], Holland et al. 1999[11]) thereby getting the best of global practice adapted.

Jarrar et al [12] in their study defined a set of CSFs for a successful BPR project categorised in four main
aspects: structure, process, IT and culture. Some of those CSFs in BPR projects (such as Top Management commitment, training, employee involvement, assigning the ‘best’ people, involving outside consultants) are very similar to some of the CSFs in BPR projects suggested by Esteves et al. The most important outcome of BPR has been viewing business activities as more than a collection of individual or even functional tasks; it has engendered the “process - oriented view of business”. The BPR intervention may have deep effects not only on the short term for organizational strategy, but also on its long-term strategy. Two main reasons arise in order to develop this strategic view: current changes in the business world and the other being the knowledge organizations.

These changes should support the business strategy. Project team members and managers must identify the core business processes in order to prioritize the BPR approach. Figure 1 represent a summary of the main issues that arise in a BPR implementation project.

Summarizing the Literature review we observe that usually authors identify two dimensions in a BPR

<table>
<thead>
<tr>
<th>Change Management Dimension</th>
<th>Process Dimension</th>
</tr>
</thead>
<tbody>
<tr>
<td>o BPR prior to New applications</td>
<td>o Identification of processes to re-engineer</td>
</tr>
<tr>
<td>o Emphasis on soft skills</td>
<td>o Involvement of external consultants</td>
</tr>
<tr>
<td>o Rewards and recognition plan</td>
<td>o Customer focus</td>
</tr>
<tr>
<td>o Customer / Citizen focus</td>
<td>o Top-down approach</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>People Dimension</th>
<th>Technology / Product Dimension</th>
</tr>
</thead>
<tbody>
<tr>
<td>o Employee Involvement</td>
<td>Involvement of IT/ Domain Experts</td>
</tr>
<tr>
<td>o Assign best people for BPR</td>
<td>o Infrastructure Planning</td>
</tr>
<tr>
<td>o Training plan</td>
<td>Technology Road Map Evaluation</td>
</tr>
<tr>
<td>o Cross functional team</td>
<td>o Standards</td>
</tr>
<tr>
<td>o Continuous and Comprehensive Communication</td>
<td></td>
</tr>
</tbody>
</table>

Fig. 1: BPR Implementation Concerns

initiative, magnitude of change and scale of effort involved for the change:

- **Magnitude of change** - although the initial concept of BPR was associated with a radical change, nowadays these changes are on a continuum from streamlining to reinvention “Streamlining a business process implies making incremental changes to the current process to increase quality, decrease cycle time, or reduce cost. Reinventing a business process means scrapping the current one and creating a process that truly meets the needs of the stakeholders”

- **Scale of effort involved for the change** - this dimension refers to the portion of business involved in the BPR project. The more departments and people involved in the change, the greater the scale and therefore the higher complexity of effort. Some organizations adopt the approach of starting with a small portion in a pilot project and then extend the experience to the whole organization.

### 3. Critical Success Factor (CSF) Metrics Models for BPR

A set of metrics to control and monitor BPR for e-government implementation projects is required in order to help Project managers / Project Directors to achieve success in their projects. According to Jurison the purpose of project control is: “to keep the project on course and as close to the plan as possible in terms of time and budget, identify problems before they happen and to implement recovery plans before unrecoverable damage is done”. According to Guha et al. "Although there is the recognition of the needs to control and monitor a redesigned process and link it to continuous improvement programs, many methods studied did not reflect the recognition of these needs”. The use of BPR the suitability of processes to undergo re-
e-government: Macro Issues

Engineering and the level of dependence on ICT has been discussed by Pratchett[16].

CSF based Models adapted for BPR at e- Seva and Bangalore-On Starting off with brainstorming session the participants identified for the Business Processes and mapped it against the CSF’s and evaluated it against current health of systems. Table 1 provides a generic grid

- Agreeing on key business process
- Map Key Business Process on to CSF
- Prioritize process
- Select Process for prioritization

Table 2 provides a generic grid of the Processes that are prioritized vis-à-vis CSF making impact to organization

Zone 1: These are the processes most strategically important for the government yet their performance is relatively poor. These process and their constituent activities should be chosen for re-engineering if the aim is to achieve high, quick and positive impact on the participating department /government’s performance.

Zone 2: These important contain less opportunity for the impact on the government’s performance, but once resources are freed from improving or re-engineering Zone 1 process their improvement will add significantly to the achievement of the mission.

Zone 3: These processes have minimum impact on the organization’s performance, or are currently performing highly and leave less room for improvement. These will be monitored to ensure that they will

Table 1: A List of Processes with CSF identified

<table>
<thead>
<tr>
<th>Business Process</th>
<th>Critical Success Factor</th>
<th>CSF1</th>
<th>CSF2</th>
<th>CSF3</th>
<th>CSF4</th>
<th>CSF5</th>
<th>No. CSF</th>
</tr>
</thead>
<tbody>
<tr>
<td>P1</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>P2</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>P3</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>P4</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>P5</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>P6</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>P7</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4</td>
</tr>
</tbody>
</table>

(A=Excellent B=Good C=Fair D=Inadequate E=Poor)

Table 2: Prioritizing Processes

<table>
<thead>
<tr>
<th>Number of CSF Impacts</th>
<th>Establishing Priorities</th>
<th>Zone</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>P8</td>
<td>3</td>
</tr>
<tr>
<td>7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>P7</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>P4</td>
<td>2</td>
</tr>
<tr>
<td>4</td>
<td>P6</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>P1</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>P2</td>
<td>1</td>
</tr>
<tr>
<td>1</td>
<td>P3</td>
<td></td>
</tr>
</tbody>
</table>

CSF A B C D E Zone
continue to perform after Zone 1 and Zone 2 process are given full attention.

4. A GQM Preliminary Plan for BPR Project

We present below an overview of the GQM approach and then describe each of the components of the GQM preliminary plan: measurement goals, questions and metrics. For the measurement goal defined, the following aspects are described: first the description of goal measurement, refinement of goals into questions, and finally, refinement from questions to metrics.

The GQM approach is a mechanism that provides a framework for developing a metrics program. It was developed at the University of Maryland as a mechanism for formalizing the tasks of characterization, planning, construction, analysis, learning and feedback. GQM does not provide specific goals but rather a framework for stating the goals measurement and refining goals into questions to provide a specification for the data needed to help achieve the goals.

The GQM method was originally developed by V. Basili and D. Weiss, and expanded with many other concepts by D. Rombach. The GQM method contains four phases: planning phase, definition phase, data collection phase and interpretation phase. The GQM top-down approach assists Project Managers / Program Directors and application developers not only in knowing what data to collect but also in understanding the analysis method needed when the data is available.

The definition phase of the GQM process covers all activities that should be performed to formally define a measurement program. One of the most important outcomes of this phase is the GQM plan. In the GQM plan or GQM model documents the refinement of a precisely specified goal measurement via a set of questions into a set of metrics is undertaken. Thus, a GQM plan outlines how to

- **Define measurement goals** - Goal Measurement should be defined in an understandable way and have a clear structure. These measurement goals should be relevant to the business, represent strategic goals of the management, and support high priority processes of the organization.

- **Define questions** - Questions should be defined to support the interpretation of goals measurement. Questions are a refinement of measurement goals from an abstract level to an operational level, which is more suitable for interpretation.

- **Define metrics** - Once goal measurements are refined into a list of questions, metrics should be defined so that they provide all the quantitative information to answer the questions in a satisfactory way. The metrics defined must ensure that sufficient information should be available to answer the questions.

4.1. Goal Measurement of the GQM Preliminary Plan

In case of BPR Projects under examination, the definition of the goal measurement associated with BPR is made using the template provided by Basili et al. We define our goal measurement based on our CSF as shown in Table 3.

For the above goal measurement we defined a set of questions as per Table 4 based on the BPR dimensions (figure 1). The questions for our goal measurement focuses on identifying objective and quantifiable aspects that were related to the baseline characteristics of the business processes that needed change.

<table>
<thead>
<tr>
<th>Table 3: Goals Measurement</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Analyse:</strong></td>
<td>The actual redesign of business process</td>
</tr>
<tr>
<td><strong>For the purpose of</strong></td>
<td>Understanding the BPR</td>
</tr>
<tr>
<td><strong>With respect to</strong></td>
<td>BPR Implementation</td>
</tr>
<tr>
<td><strong>From the view point of</strong></td>
<td>Project Mangers / Program Directors and project team</td>
</tr>
<tr>
<td><strong>In the context of</strong></td>
<td>Departments where BPR initiative are undertaken</td>
</tr>
</tbody>
</table>
4.2 Description of Metrics

In this section the team shows the definition of each metric and the relationship between the questions defined above and the metrics (Table 5) for the three Projects. We have also represented graphically the relationships (Figure 2). The graphic represents the three levels: measurement goals, questions, and metrics. Metrics can help answer more than one question.

For each metric we defined the following aspects: what they measure, when they must be measured, what possible values they could have, the metric scale, who will measure it, what medium is used for data.

Table 4: The definition of questions related with goal measurement

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>Questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Change Management</td>
<td>What is the magnitude of redesign for each business process?</td>
</tr>
<tr>
<td></td>
<td>What jobs are affected by the changes?</td>
</tr>
<tr>
<td></td>
<td>How many departments are affected by the changes?</td>
</tr>
<tr>
<td>People</td>
<td>How many users are involved?</td>
</tr>
<tr>
<td></td>
<td>Are key users for each business process involved?</td>
</tr>
<tr>
<td>Process</td>
<td>How many business Process need to be redesigned?</td>
</tr>
<tr>
<td></td>
<td>What other business process are affected by the redesign?</td>
</tr>
<tr>
<td></td>
<td>What is the complexity associated with these business processes?</td>
</tr>
<tr>
<td></td>
<td>How long will the redesign take?</td>
</tr>
<tr>
<td>Technology</td>
<td>What is the ICT Architecture involved in facilitating integration / convergence?</td>
</tr>
<tr>
<td></td>
<td>What is the effort (man years/ man days) for the custom built application?</td>
</tr>
<tr>
<td></td>
<td>What is the ERP implementation effort?</td>
</tr>
</tbody>
</table>

Table 5: Definition of Metrics and relationship with Questions

<table>
<thead>
<tr>
<th>Q</th>
<th>Magnitude of Re-design</th>
<th>Magnitude of redesign that is necessary for each business process</th>
<th>Low for each process (High for OLTP)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q2</td>
<td>Number of jobs affected</td>
<td>Number of jobs that are affected for each redesigned process</td>
<td>Nil</td>
</tr>
<tr>
<td>Q3</td>
<td>Number of departments</td>
<td>Number of departments related with the redesign</td>
<td>One</td>
</tr>
<tr>
<td>Q4</td>
<td>Users Involved</td>
<td>Number of users involved in the redesign</td>
<td>Citizens and Govt. Dept.</td>
</tr>
<tr>
<td>Q5</td>
<td>Business Process Redesigned</td>
<td>Number of business process that need to be redesigned</td>
<td>Search pattern is now changed to owners name instead of survey number. Integration in case of OLTP</td>
</tr>
<tr>
<td>Q6</td>
<td>Business Process affected</td>
<td>Number of business process that need change due to redesign of other process</td>
<td>Nil for e-Seva, Bangalore-One, Many for OLTP</td>
</tr>
<tr>
<td>Q7</td>
<td>BPR effort</td>
<td>It comprises of total number of departments involved, number of processes redesigned and people involved in each phase.</td>
<td>Service improved, Continuous increment of new services. High Effort Low Ownership in case of OLTP</td>
</tr>
<tr>
<td>Q8</td>
<td>Duration of Business process redesign</td>
<td>Estimated time necessary to redesign each business process</td>
<td>Three man months, for e-Seva and Bangalore-One. Nine months for OLTP</td>
</tr>
<tr>
<td>Q9</td>
<td>Cost</td>
<td>Cost involved in adapting the redesigned process</td>
<td>New approach adopted PPP Model</td>
</tr>
</tbody>
</table>
collection. Most of the metrics proposed are direct measurements except the metrics showing percentages.

4.3 Interpretation of Metrics

In relation to the magnitude of redesign metric, Guha et al. had developed a “project radicalness planning worksheet” in order to assess the BPR project radicalness. This worksheet includes eleven factors related with BPR project planning: strategic centrality, feasibility of IT to change process, process breadth, Senior management commitment, performance measurement criteria, process functionality, project functionality, project resource availability, structural flexibility, cultural capacity for change, management’s willingness to impact people and value chain target.

Each factor is measured in a Likert scale (1-5 scores). However, their view is not for each business process but for the project as a whole. We think that this method is very useful not only at the beginning of the BPR project to define the BPR plan and allocate the adequate resources but will sustain till the Project closure. This Plan also provides for establishing management commitment and support. Higher radicalness implies more commitment and lower radicalness implies more analysis of existing processes in order to improve them.

Based on the magnitude and the scale of effort involved in a BPR approach, Bancroft et al proposed a matrix of magnitude versus scale of effort. BPR effort is quite similar to the complexity of each business process. The more departments and people involved in the change, the greater the scale and therefore complexity of the BPR effort.

5. Examination of the Goals for e-Seva, Bangalore-One and OLTP in Andhra Pradesh

The Projects examined by the team are having specific e-government goals. The results at the end of the Project matters and the learning’s are carried forward in a knowledge society thereby consciously reducing the learning curve in implementing e-governance projects.

Goals of e-Seva and Bangalore-One are given as below:

- Providing a one-stop services to the citizens through a chain of Integrated Citizen Service Centres (ICSC)
All the counters should provide all the services at all the ICSC.

The architecture adopted should be scalable and secure.

The service time per transaction should be less than three minutes.

Minimize the queue formation at the centres.

The cost of transacting with the government should be reduced.

Selected services should be available over the Internet 24 x 7

(The services that do not involve an inspection or attestation should be offered over the Internet also to facilitate the citizen to avail them from Home / office).

Goals of OLTP in Andhra Pradesh are listed as below:

- Integrates all the Government offices at the mandal level horizontally
- Achieves vertical integration of all Government data within a department.
- Creates OLTP capabilities for as many departmental application systems as needed.
- Creates an architecture that permits sharing of data across departments.
- Ensures automatic updating of core data, especially of citizens and land, by automating all the processes that impact on or depend on such core data.
- Integrates seamlessly with the legacy systems in place already – especially the MPHS, CARD, sub treasury, and any other system that may become operational during the period of implementation of the Pilot.
- Creates a model that is replicable - technologically and commercially.
- Provides a cost-effective method of linking databases horizontally and vertically across departments geographically. (E.g. District, taluk / mandal, across the state).
- Conforms to the highest standards of security of systems, transactions and data integrity.
- Provides a web-based interface to the citizens and businesses for those intending to transact with the Government.
- Is compatible with the overall IT Architecture defined by the Government of Andhra Pradesh.

Table 6 depicts the complexities involved in the success of Bangalore-One and e-Seva and failure of OLTP.

6. Concluding Remarks

Based on the literature review that we made on the BPR topic, we propose that Project Managers / Program Directors must develop a strategic view of BPR instead of a tactical one. At the tactical level Project Managers / Project Directors are worried in redesigning their current business processes. However, a BPR effort is strategic in terms as an intervention, and probably the most important intervention associated with technology focus on the outcome.

While measurement of success or failure of e-governance BPR projects affect various aspects including Change Management, People, Process, Technology, Structure and Culture.

It is highly recommended that Project Directors and Process owners of the Project should not be disturbed through transfers to other assignments during the tenure of the Project phase. The Authors are in high agreement with the Thumb Rules outlined by Mr. J Satyanarayana in his book “e-Government … The Science of the Possible” and Hans J Scholl in his paper titled Electronic Government: A Special Case for ICT enabled Business Process Change outlines the following:

- Modest Objectives and scope more likely lead to electronic government project success than aggressive objectives and wide scope.
- Speeding up business process and improving services are the major motives for launching electronic government projects.

As e-government projects are a special case the authors strongly feel that there is a lot of scope to
investigate into data standards, e-security and its role as CSF because any citizen centric project must enjoy confidence of the citizens and administrative machinery / bureaucratic setup else the usage of the “e” will be greatly insignificant as mentioned by Karl Cushing[20] and Anil Panikar[21] based on their respective studies on usage and stakeholder confidence in e-Government Project in UK and India respectively. In the case of Bangalore-One, and e-Seva one finds that

- The use of the Internet to make utility payment is less than 1% of the total transaction carried out. Security concerns of the citizens have to be remedied by conducting third party audit to improve the citizen confidence.
- The Internet connectivity index issue has been discussed in developed countries like the United Kingdom the rate of usage of Internet for making payment for Government Services is 7% of the total number of transaction as security concerns are however making similar payment on Government portal however do not fear the use of the Internet to avail banking services but amongst the stakeholders.

References:

1. UN Global E-government Readiness Report UN United Nations publication Division for Public Administration, Report published in December 2005

<table>
<thead>
<tr>
<th>Factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rating for Seva and Bangalore</td>
</tr>
<tr>
<td>BPR effort</td>
</tr>
<tr>
<td>Replicable ICT Architecture</td>
</tr>
<tr>
<td>Scalability of ICT Architecture to add newer application</td>
</tr>
<tr>
<td>Stakeholders ownership of Project</td>
</tr>
<tr>
<td>Continuity of Project Director during Pilot Phase</td>
</tr>
<tr>
<td>Cross Functional Team necessity</td>
</tr>
<tr>
<td>Team involvement</td>
</tr>
<tr>
<td>ICT skills necessary for stakeholders</td>
</tr>
<tr>
<td>Project Management Skills</td>
</tr>
<tr>
<td>Success Rate Citizen Acceptability</td>
</tr>
</tbody>
</table>

*(Scale 1 – Nil, 2 – Low, 3 – Medium, 4 – Average, 5 – High)*
E-government: Macro Issues


About the Authors

Anil P Panikar After over two decades of hands-on experience in the areas of Business Development, Pre-Sales, Software Development in the IT Industry the author founded TS Management Consultancy in January 2006. Within a short span of time the author is the advisory for a Singapore based company for its foray into the Indian market in the mobile data streaming space. The author is engaged in Business Development Strategy Consultancy and execution for a Bangalore based ERP and System integrator. The author has extensive experience in the area of e-governance solution with Projects varying form USD 2 million worth to USD 32 Million. The author has extensive experience ERP, BPR and SCM consultancy. He has lead the IT Consulting Competencies with his previous employers. The Author is pursuing his Executive Doctoral studies in the area of e-governance under Dr. Vishnu Kanhere’s guidance.

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ABSTRACT

The role of information in all areas of the private sector and in government is now paramount for continued growth and stability in our societies. Information has become the lynchpin in the way we think, act and operate as a society. The necessity of citizen participation in the evolving e-government infrastructure is increasingly accentuated as the governments take their services more and more online. With the application of ICTs, there is already ‘a shift away from the centrality of organizational unit to the networks of information and decisions. There is now an enormous potential to create favorable conditions for restructuring the modern system of administration’. In this paper E-governance is conceived as the strategic, co-ordinated use of information and communication technologies (ICT) in public administration and political decision-making. The benefit of this to deliver greater efficiency of the institutions concerned, improvements in public services, and political participation and transparency, has been examined in the context of India’s rural development. The paper reflects on the politics of structuring technology programs at the micro and macro levels, highlighting the scope and importance of specific actors and social forces, and suggests how recovery of local knowledge and empowerment is possible. The paper offers thoughts on some of the challenges policymakers, International Developers and entrepreneurs face in unleashing the power of rural markets to better serve information and communication needs in rural and poor areas.

Keywords: Information and Communication Technologies, E-Governance, Public Administration, Rural Development.

1. Introduction

With the application of ICTs, there is now an enormous potential to create favorable conditions for restructuring the modern state and the system of administration (Polite 1990; Hogget, 1990; Loader, 1991). In contrast to past practices of centralized system of information base constructed by the government for the administrative control of increasingly large population (Foucault, 1991), the present trend in administration shows a ‘a shift away from the centrality of organizational unit to the networks of information and decisions’ (Castells, 1989, p, 142).

Revised concept of development communication has led to a re-examination of the advantages of traditional media as vehicles for information, persuasion and entertainment of people. Since the mid 1970s, there has been a steady growth in information and communication technologies and their application in rural areas.
development. In response to public demand the technology required for social innovation is also developing very fast (Melkote and Steeves, 2001). There is now a growing trend to build the capacity of entrepreneurs in the developing world, who are working in the rural areas to serve the poor. Though its penetration is still very low in many developing countries and it is still very much an urban-based ICT, it has now emerged as a major platform “allowing increased transparency, efficiency and accountability” (Bedi et al. 2001, pp.16-36) across the globe. Its advantages are now being accrued not only to the individuals but also intermediaries such as small and medium enterprises, NGOs, development officers, rural health centers and other development-related organizations (Richardson 1998b, pp. 173-77).

In the context of rural development FAO (Food and Agriculture Organization), for instance, has recently asserted that ‘people oriented’ and ‘beneficiary centric’ model of development can very well be possible if people are involved and motivated, and information and knowledge are shared. The New Technologies can establish dialogue with rural people by involving them in the planning process to improve the quality of their life. It can also overcome the barriers of illiteracy, language, intercultural differences and physical isolation. The cornerstone of this strategy is capacity building activities for rural and agricultural organizations and to enable the communities to freely network with other communities and other knowledge resources, making available at hand the best practices followed in similar situations all over the world. From the remotest field areas, one can contact development workers, professionals and others all over the world and get instant help.

The relevance of ICT is more pronounced in a supra-national-global context as developing economies are increasingly at the mercy of the international organizations who sometimes profess to act as a countervailing force to international trade and financial interests and at times undermine the role of representative local bodies, [1] This has brought about the problems of accountability of the institutions, accompanied by information asymmetries amongst bargainers that lead to costly delays and stalemates in modern economic set-up (Bardhan, P. 2001, p. 475-480). Market forces generally succeed in bringing together certain interests at specific levels but they fail when the transaction costs are high. With the necessary political orientation and support of the state, some argue, however, that ICT can help aligning the key actors and reduce the problems of alienation, fragmentation and dislocation of knowledge. For inter-organizational co-ordination special efforts need to be made to support and protect all organizations of workers’ and for a ‘social safety nets for workers’ (Hensman, R 2001; see also Koushik P. D 2004, pp. 123-124; Gupta A et.al. 2000, p. 85). Knowledge can become a means of power, if coalitions or networks of relevant actors evolve. [2] It may also promote participatory and consultative ‘good governance’ while harnessing the democratic potentials of these new technologies at the local level (Held, 1987, p. 285). In view of this expected role of ICTs, an attempt has been made to identify the potential benefits and limitations of the technology approach basing on some experiences of ICT programs for poverty alleviation in the rural areas.

1.1. Global Rural Network and the Rural Poor [GRN]

ICT and its continued relevance for rural development in the developing countries are best marked in the emerging global network and IT-led development initiatives by the national and global agencies. The activities represent a combination of awareness raising, capacity building and the expansion of the use of new technologies. Despite a strong claim for giving emphasis in certain crucial aspects (minimum needs) of rural development first [3], the infrastructure for the New ICT in the developing countries is not disregarded by the concerned agencies. Its likely net social benefit of applications draws one’s attention to the use of these technologies for the promotion of intermediate and appropriate technologies for poverty alleviation and sustainable livelihood. Developed Nations such as U.S and Canada assist in setting up community Internet access, especially in rural areas. The British government runs ‘Rural net’ for communities in rural areas to enable rural people avail of the new opportunities all over the world. Along with laying the necessary infrastructure, similar initiative needs to be taken in other countries. Some efforts by developing nations are already made for rural development using the latest technologies. For instance, the online financial services
provided by ICICI, a leading bank in India and its net enabled telephony used for online banking appeared in India at about the same time as in western countries. Efforts are being made to collaborate with global agencies for community Internet centers in India. The Government of Maharashtra has entered into an agreement with WorldTel, a private limited company incorporated in U.K. to work on developing state wide internet connectivity and reach through internet community centers. Besides, the e-ASEAN Task Force is developing a broad and comprehensive action plan, covering the necessary physical, legal, logistical, social and economic infrastructure needed for evolving an ASEAN e-space in the world of information and communication technology (ICT), and developing competencies within ASEAN countries to compete in the global market (Bedi et.al. 2001, p.172).

The development experts have recognized the potentiality of high returns of investment by incremental improvements in the efficiency of participants in the unorganized sector in the recent past. The artisans who produce the most authentic and finest crafts are those with the least access to the global markets. Under an online initiative called The Virtual Souk, since 1998, a financially sustainable, decentralized and locally controlled Web-e-commerce operation is helping the poorer sections of the people to organize themselves for achieving the economic targets (Maurice Hazan, ‘The Virtual Souk’, E-commerce for Unprivileged Artisans’ @ www.elsouk.com. The promise of digital development is that it might have the same reach as the original Internet boom of the mid-1990s – only this time, the most disprivileged communities, those who had missed out on earlier waves of technology, might be able to ‘leapfrog’ over their more developed competitors.

As the reach of the Internet and wireless communication technologies continues to expand at unprecedented rates around the world, concerns are growing about ways and means of bringing rural communities into the fold as well. A number of approaches have emerged, such as building bridges via globally dispersed online communities or via locally based community networks www.indianfoline.com. Numerous journals, Web sites, professionals, organizations and events have been addressing such pressing issues. A growing list of notable community networking initiatives for capacity building, information sharing and online marketing has emerged. [4] Since April 1997 the Rockefeller Foundation, through its Communications Office in New York, has been promoting a series of meetings among communication specialists to reflect on communication for social change at the hinge of the millennium. They contributed to the creation of a position paper that has been widely distributed in print and through various Web sites, in English, Spanish and French, enabling development experts to realize that much of the ideal communication processes that involve people could be found in a number of grassroots experiences in a variety of forms in many developing countries.

Rural Support programmes for connectivity are essentially designed with a view to provide enabling environment and capacity building for sustainable growth and development. ICTs are setting the stage for such interventions. In 1997, the World Bank initiated the World Links program (www.worldbank.org/world links) in response to developing countries’ demand for strategies to prepare the youth for coping with the global trend. Its principal capacity-building objective is to provide developing countries with sustainable solutions to problems mobilizing the necessary technologies, skills, and educational resources to prepare students and teachers to enter the Networked World. Over the last seven years, World Links has worked with several countries to bring underprivileged schools into a global school network.

Over the last few years, a growing list of notable community networking initiatives for capacity building, information sharing and online marketing has emerged in the developing countries. These include: FarmNet (for agricultural workers in Uganda), Nabweru and Buwama telecentres (for economic empowerment of women in Uganda), Rural Multipurpose Community Telecentres (libraries and online centres in Benin, Mali, Mozambique, Tanzania and Uganda), MahilaWeb (for information sharing about women and gender in Nepal), Pakissan (for farmers in Pakistan), PeopLink (artisans portal for 22 developing countries), Tortas (e-commerce portal for homemade cakes made by Peruvian women), Bankilare (a community network in
Examples in India include TaraHaat (for e-marketing in rural areas), AkashGanga (for dairy cooperatives in Gujarat), Warna Wired Village Project (for sugarcane farmers in Maharashtra), HoneyBee Network (documenting grassroots innovations for knowledge on sustainable natural resource management) and Gyandoot (community centre network in rural Madhya Pradesh). The National Informatics Centre is proposing a “Rural Studio” initiative for developing re-usable software components and services for the rural development sector, and IndianVolunteers.org networks volunteers interested in such initiatives. [5]

Various uses and applications of ICTs in rural areas of developing countries include aspects, such as finding markets for farm produce, fisheries catches and handicrafts, negotiating prices, arranging transport and delivery of inputs, obtaining information on market prices, consumption trends and inventory, financial transactions, rural eco-tourism, expanding educational opportunities, promoting telemedicine, supporting self-help group for global market, serving as a research tool participatory bottom-up approaches to development and so on (see Barr, 1998, pp. 154-56; Richardson, 1998 b, pp. 173-77):

2. ICT for Rural Development in India

2.1. Governmental & NGO Initiatives

Since Independence, the scientists, intellectuals, demonstrators, educators, designers and interpreters and many other types of expert bodies [both from Governmental and Non-governmental Organizations] have been using the science and technology as instruments for rural development and for political discourse to encourage the individual initiatives for the acquisition and dissemination of knowledge. [6] Government of India, through the successive five- year plans, had set up scientific organizations and introduced many rural development programs of varied nature, some of which were exclusively meant for poverty alleviation. But technology as a solution to the problems in rural India and experiences of the past technological projects failed in many ways because of the inadequacies on the part of the Planners to capture the state of underlying structural relationships that impeded in the process of development. The illiteracy, localism and language acted as barriers to transfer the technology to the rural areas. Many of the experiments remained within the four walls of the laboratories. With institutional measures for critical appraisal and scientific development and decentralization of administration, while some progress was made in the rural development initiatives during 1970s and 1980s, due to concentration of resources (material, social and economic) in the particular regions, inequalities increased between different groups and between the developed and underdeveloped regions.

Strategically, Government of India’s (GOI) initiative for electronic governance in 1980s was a critical move in the state and centrally sponsored poverty eradication programmes by connecting officials, non-official and the poor rural people. Like other developing countries, India also has gone through the process of political and economic liberalisation and economic growth under the advice of multilateral lending agencies, as part of structural adjustment policies, in the last two decades. Having completed the first phase of the economic reform, India, is moving on to the next phase of reform in the field of governance. To overcome
some of the problems of implementation of reform process that was initiated in the early era of global integration, India took few initiatives after 2000. A Core Group on Administrative Reforms (CGAR) was constituted in 2003 under the Cabinet Secretary to monitor the administrative reform and for follow up actions of the recommendations made by the Commission on Review of Administrative Laws (which was set up in 1998). Government of India’s Department of Administrative Reforms (DAR) initiated a ‘Minimum Agenda for e-Governance’ for the use of information technology, documented and disseminated the best practices in the areas of e-Governance (Singh, 2005, pp.54-56).

Efforts were made to develop supportive info-infrastructural facilities such as telecom and IT for making the e-Governance more operational for implementation of anti-poverty programs and to enhance the potential for grassroots innovations. Recognizing the complementarities of different services and the potential use of electronic media (Bhatnagar, S: 2000:4) the planners have tended to reorganize associated departments and programs in to some particular units for better co-ordination. For instance, many of the Rural Development programmes are now subsumed under IRDP during the ninth five-year plan. Furthermore, Planners are increasingly more aware of the ‘information asymmetries’ amongst bargainers that lead to costly delays and stalemates in modern economic set-up.

Slowly but steadily Indian villages are getting wired up. An ambitious IT Action Plan with 108 specific recommendations was submitted to Parliament and approved in July 19, 1998 (World Bank Report, 1998-99). Three general objectives were specified: to build a world class infrastructure; to increase software and IT services exports to $50billion by 2008; and to make IT available to all Indian citizens by 2008. One of the important recommendations of the First IT plan was to expand access to IT services, especially to rural areas. Some important steps were proposed to boost IT for agricultural and integrated rural development. A “Wired Villages” pilot project was launched in the state of Maharashtra, and efforts are being made to replicate it. Public Teleinfo Centers (PTIC) were proposed with multimedia capability and access to the Internet, to government and community information systems, and to market information. Finally, a major promotional campaign has been on the agenda to encourage computer applications and web content in Indian languages. The government is playing a “catalytic and enabling role to “take IT to the masses” and to recommend new development programs [www.asia.internet.com; www.mit.gov.in.]

While initial domestic stimulus for ICT and ICT service industries has mostly come from government and public sector expenditure (see Roy, 2005: 148), the potential use of computers in rural development administration in India, however, came through applied research of some academics during 1979-80 and since then a general awareness of computers was being created through various efforts made by the governmental and non-governmental agencies. The National Informatics Centre (NIC)- a central government department was set up to implement a national program called District Information System of National Informatics Center (DISNIC) to computerize all district offices for which free hardware and software were offered to the states (Report of the Working Group on District Planning, vol, Planning Commission, 1984). NIC developed a uniform software called Public Grievance Redress and Monitoring System (PGRAMS) as an effort towards capacity building for good governance (Singh, 2005, p, 56). In a separate program at the national level in India called ‘Computerized Rural Information Systems Project (CRISP), the Rural Development Ministry in India and NIC collaborated to develop software for planning and monitoring of IRDP sometimes in late 80s. The technological convergence of information technology, telecommunication, and entertainment electronics opened up new vistas in the life of the common man, reducing the rural-urban differences to a minimum. The national Information Infrastructure (NIC) evolved as a network of networks including nation-wide computer networks known as NICNET under the planning commission (Ninth five-year Plan, vol. 2, pp. 970-971). Investment required for the growth of ICTs has been now a feature of every central and centrally sponsored and state plan projects (Bhatnagar, S. 2000, p, 5). Department of education, under the ministry of human resource development, has set up an Educational Multimedia Center at the National Council of Educational Research and Training (NCERT) to catalyze IT usage across all segments
Backed up by political leadership, increasingly, governments in the developing world seek to tie e-government with their overall economic and social developmental objectives to reduce corruption, to increase transparency and quality of service (Bhatnagar, 2004: 32-35). The new Indian government, elected in 2004, led by the Congress and its allies, has focused on 'Common Minimum Programme' (CMP) in which the emphasis is on the needs of the poor (Roy, 2005). The Indian telecom network is emerging to be the core area in which the new Indian government has increased the share of foreign investment in the telecom sector. The new government’s IT Ministry has a plan to set up statewide information kiosk network connecting six lakh villages in India in the next three years. This e-Governance idea of the government would entail an investment of 3, 300 crores. The government has acknowledged the importance of vernacular content in increasing the use of Internet. Department of IT is already working with C-DAC to launch the Indian translation browser that would translate web pages into vernacular languages.

Although the Federal Government has played an important catalytic and enabling role, most of the specific projects designed to spread IT to rural India have been organized by state governments, non-governmental organizations, corporate sponsors or, quite often, some combination of these sources. Eighteen state governments have followed the initiative of the federal government in announcing IT policies. These vary greatly in orientation, priorities and level of activity. A few examples illustrate the orientation in ICT applications initiated by Governmental and Non-Governmental Organization.

2.2. E-Governance and Rural Development: Some micro level Experiences

The idea of connecting rural India to the world has increasingly drawn attention of the digital pioneers, scholars, journalists, non-governmental organizations, and the corporate sector. Several initiatives, both Governmental and Non-Governmental, have already been taken, although many of such initiatives are in the form of pilot projects testing newer approaches. India is gradually becoming a laboratory for small experiments to link isolated rural pockets to the borderless world of knowledge.

In the e-Governance initiative, Andhra Pradesh has been foremost in developing citizen-oriented services. The 'networked mandals' (rural districts) of Andhra Pradesh are already promoting the IT mindset amongst eager villagers. India now has its own agriculture and rural marketing portals and sites that are offering information aimed primarily at the farmer. Websites like www.ikisan.com offer information both in English and telugu languages. Similarly, www.tarahat.com proposes to open up new ‘haat’ or village market via the Internet. Another instance of the new project is the central government’s initiative to start a process of allotting a Corporate Identity Number (CIN) to identify each community registered in the country. Computer–aided Administration of Registration Department (CARD), by Andhra Pradesh Government, is another example of such initiative (www.andhrapradesh.com). The Andhra Pradesh Government’s Twin Cities Network Services (TWINS) project, which was launched in December 1999, is also an experiment in providing a single window services to the rural areas. This model is expected to provide effective government services to the citizens. Bhoomi- Computerization of land records, initiated by the government of Karnataka, India, is a striking example where land titles are delivered online to millions of farmers in just no time bringing out a change of the earlier practice where bribes had to be paid and which took weeks to obtain a land title. E-Government has now a direct impact on reducing a number of intermediaries that citizens need to interact with in order to get government service (Bhatnagar, 2004: 33, 97-98).

RajNidhi Information Kiosk was set up on 23 March 2000 when president Mr., Clinton visited a remote village of Rajasthan to observe the functioning of a gram panchayat. The RajNidhi project is part of the state government’s vision of e-governance aimed at using the information technology to replace the traditional form of government and to overcome the deficiencies of the present system by introducing more open, transparent, and responsive service delivery system. The help centre of RajNidhi provides information, such as the process of obtaining electricity and water connections, their current rates, and the places where bills...
for these services can be deposited. This also provides different forms and procedures for obtaining various certificates such as caste certificate and the certificate for the place of residence. Moreover, information regarding ration cards, adding of names to the electoral list, and the other services related to the district collectorates can also be obtained from RajNidhi. Through its user-friendly interface RajNidhi enables the citizens to communicate their suggestions and complaints directly to the chief minister and other senior officers of the state (www.rajgovt.org).

The Taluk Automation Software (TAS) in Tiruvarur district of Tamil Nadu has transformed the Revenue department by introducing Internet facilities to the villagers. They have used mostly local people to carry out their jobs. Local people’s efforts have it possible to conduct annual settlement of village accounts (Jamabanthi) online. This has facilitated the village administration very much. The district has set up a data warehouse of land records at the Collectorate from where the general public can access the records, including orders passed by the various talukas. In addition to this there is Anbupani, an e-governance software for automating Old Age Pension (OAP), Widow Pension, Physically Handicapped Pension and related schemes in all Taluk offices.

A quiet revolution is taking place in Dhar district of Madhya Pradesh (M.P), where the Gyandoot programme has been successful. It is a community owned, self-sustainable and low cost rural Internet model. This has attracted worldwide attention. Its 31 village centers have been wired through an Internet network. Local rural youth act as entrepreneurs for running cyber cafes-cum-cyber offices on commercial lines without salary or stipend. The computers of this network have been installed in gram panchyat buildings. They have been called ‘Soochanalayas’ (information kiosks). The ‘Soochanalayas’ provide user-charge-based services to the rural people. The operators of this information kiosks are local people with minimum educational skill. The entire expenditure of the Gyandoot network has been borne by panchyats and the community with no expenditure burden on the government. Backed by necessary ICT infrastructure and the political will the M.P. government has decided to transfer nearly all the powers previously exercised by gram panchyats to gram sabhas or periodic meetings. It has thus gone from representative democracy at the grassroots to direct democracy. Such a change in the attitude of the government has yielded better results (see Manor James, MadhyaPradesh experiments with direct democracy, Economic and Political Weekly, 3 March 2001).

Warana Wired Village Project (Bhaskar and Rao, @ http://www.manageagri.com/) is another instance of the successful application of ICTs in some 70 villages of Kohlapur district of Maharashtra. The project has been jointly implemented by the government of India the National Informatics Center (NIC), the government of Maharashtra and Warana Co-operative Society. The project was initiated to serve the information needs of the farmers for different crop cultivation practices of major crops, sugarcane cultivation practices, pest and disease control, marketing information, dairy and sugarcane processing information etc., right up to the village level. The NIC was involved in setting up the hardware and software and establishing the connectivity through Wide Area Network (WAN) links such as VAT and dial up connections. Besides this information retrieval, there are two client-based applications to serve the farmers’ needs: the Dairy Information System and the Sugarcane Information System.

2.3. Services and e-Commerce Support

The Sustainable Access in Rural India project (SARI), a collaborative and interactive research initiative seeks to show that viable markets exist for information and communication services in rural poor areas by inventing and deploying innovative technologies, assessments, and business models. The ultimate goal is to link these activities to sustainable human development objectives. SARI’s founding partners include the edevelopment group at the MIT Media Lab, the TeNeT Group at IIT-Madras and the I-Gyan Foundation. The key research areas include: 1) technology, applications and content, 2) assessing social and economic impacts, 3) and business models for financially viable and self-sustaining access, through the development and introduction of appropriate and enabling technologies and applications to foster economic development
and for improving health and learning in the rural areas in a financially sustainable way, even as it reaches into the poorest and most disadvantaged communities. http://cyber.law.harvard.edu/itg/projects/current_projects.html.

The Centre for Knowledge Societies, Bangalore (www.cks-b.org) has collected socio-economic data on many of the projects undertaken by the centre. It is basically considered as people’s project as local people’s needs, contexts are taken care of for meaning intervention through ICTS (Arunchalam, S 2004). It is an important Pan Asia’s collaboration with the M.S. Swaminathan Research Foundation, which began in 1997. It aimed to assess and document the impact of ICTs in fostering sustainable agricultural and rural development and bridging the gap between the ‘haves’ and the ‘have-nots.’ In the second and third phase of this collaborative effort between 2001-2004, with additional funding from CIDA (Canadian International Development Agency), and MSSSRFC foundation has established additional village knowledge centers (VKCs), deployed ICTs more widely throughout the region, enhanced connectivity in rural Pondicherry, and assessed the potential sustainability of the projects for poverty alleviation and for improvements in the education and health sector. The social and economic impacts of ICTs are assessed systematically through surveys, interviews, and participatory rural appraisal techniques to determine their effectiveness in poverty alleviation in rural Pondicherry. Some of the ICT-based programs being implemented in the villages include the development of an ICT-enabled integrated health system, computer-assisted learning centres for rural children, a multimedia indigenous knowledge directory for Pondicherry, a web-based information on food security, and a training course in knowledge management for local women and so on. MSSRF is also experimenting with the use of open source software. The experience of this research project is now being integrated into the National Virtual Academy for Food Security and Rural Prosperity, a new initiative of the MSSRF for ending hunger and eradicating rural poverty in India.

The Honeybee Network and multimedia database, supported by Society for Research and Initiatives for Sustainable Technologies and Institutions (SRISTI) and IIMA started in 1990. This Honeybee project demonstrated how database developed by this agency could influence public policy. The project started with the basic objective to help people value their own local indigenous knowledge regarding any products and to connect people to people as bees connect to other bees while pollinating (see Gupta et.al. 2000:84-97). The project helped empowering the local communities and innovators enabling them to share their knowledge with others across large spatial distances, languages and cultures without being literate. It is observed that exposure to the Honey-Bee-database helped innovators to overcome inertia and generated a desire amongst the poor people to experiment particularly relating to traditional knowledge regarding pest control and veterinary science. Involving through research in farmer’s field and laboratories, and by extending financial and technological supports, the Honey-Bee-database, supported by SRISTI and IIMA, have demonstrated that ‘by building upon the knowledge of poor people we can enrich not only the local repertoire of ideas but also trigger initiatives, some of which may transform into innovations’ (Gupta et.al. op.cit.p.97).

SPOTS is an e-commerce support system that brings together spot market employers and employees by utilizing an agent based matching and negotiation mechanism. n-Logue Communications (www.n-logue.com), incubated out of the TeNet group, is providing connectivity for a series of new projects across India, including those in Madurai and Nellikuppam in Tamil Nadu, and Sikar, Rajasthan. The company works on a commercial basis in partnership with various local partners, including entrepreneurs and non-governmental organizations.

Tarahaat.com (www.tarahaat.com), promoted by Delhi-based Development Alternatives, is an extremely ambitious commercial project to provide online services to a large number of rural communities in north India. One of the more innovative aspects of this project is its highly interactive and graphics-intensive interface system, which allows semi-literate and neo-literate users enhanced access to products and services. The organisation had initiated information centres in several locations in Bundelkhand, MP and Bhatinda, Punjab, of which the latter are still functioning. While the project will provide a menu of services that is similar, in many ways, to other rural ICT projects, its current business model requires an astonishing influx.
of capital before it becomes self-sufficient. The movement of co-operatives from Co-ops to e-Cops is now making co-operatives much stronger by bringing members together and closer to the customers. Amul is one of the largest milk cooperative movement in India with its 10, 000 village cooperatives throughout Gujarat. Today, Amul operates India’s first national cyber store in some 120 cities, and an ‘Amul Cyber store Gifting Service’ capable of serving consumers in more than 220 cities of India. India’s ‘National Dairy Development Board’ has taken initiative for effective use of the computers for helping the cooperative unions connecting the villagers who sell milk to the union office. Special efforts have been taken to sideline the middlemen.

The Asian Centre for Entrepreneurial Initiatives (AsCent; www.toeholdindia.com) has made an early attempt to introduce CAD/CAM technologies to artisans in north Karnataka, alongside online advertising and sales. Keltron, a public sector undertaking of Kerala, India, is taking up a project to support the dying community of artisans and traditional handicrafts using ICTs. Keltron is planning to set up a major portal for supporting artisans working in traditional crafts and handicrafts in Kerala as a support to marketing their products. Kerala has a very rich traditional art forms, handicrafts made of various material including sandalwood, bamboo, timber, rubber wood, handloom, coir, coconut shells, mud, brassmetel etc. However, these artisans are facing extinction today for want of demand in the domestic market. Unless supported, these artisans would switch to other professions and alongwith them these traditional artforms will die as these have been inherited from one generation to another.

Another successful e-Commerce initiative keeping in view the need of rural poor is ITC’s e-Choupal - literally the ‘electronic village meeting place’ is an example of doing business with poor villagers in M. P. It is an attempt to source Soybeans from widely scattered and subsistence farmers who traditionally depended on the ‘mandi’, a place where the farmers brought their produce to be auctioned. In the traditional system, due to asymmetry in the access to information and choice between the farmers, the traders and processors of soybeans, farmers were always in difficulties in enforcing the contract. ITC, through e-Choupal initiative was successful in eliminating many of these constraints by providing access to information the farmers can independently obtain. Similar initiatives are being taken elsewhere, covering other products and services – such as wheat sourcing in UP and IT-enabled services, namely, telemedicine, eco-tourism, traditional medicine, traditional crafts sourcing goods and services from the rural areas (For details of e-Choupal initiative and profitable rural transformation see C. K. Prahalad, 2005 pp. 319-357). Info-infrastructure has enabled the farmers to reduce their transaction cost, making it possible for them to save more than what they could do in the traditional system. The model is centered on a network of e-Choupals in the villages, which are information centers armed with a computer connected to the Internet. A local farmer called the Sanchalak (co-ordinator) runs the e-Choupal with the help a Samyojak (collaborator).

3. Concluding Remarks

The info-infrastructure in India and the strategic coordinated use of information and communication technology in rural areas has brought about significant changes in the rural developmental practices. ICT-supported services aimed at meeting the requirements of information relating to three broad areas of rural development programmes, namely, decision support to Government and Non-Governmental Organizations, improving services for the Citizens, and empowering citizens through the access of information and knowledge. The various types of applications have focused on automating the process of delivering services to citizens to bring about transparency in the system.

Some of the micro level projects, that we have described, have successfully used ICTs and the lessons learnt from these experiences are very promising. We observed an appearance of a new paradigm of governance based on inter-governmental networks exchanging information and knowledge at the global scale and operating in the digital economy. This shift from government to e-Governance for rural development depicts
a mode of developmental administration in which power to determine public affairs cannot be exclusively assigned to a single organization, such as centralized governmental agency. In fact, the success of local development would depend on the determined and combined efforts of policy makers in partnership with local actors and non-Governmental Organizations (i.e. private industry, academia, research institutes, community groups, civic and voluntary organizations) as stakeholders in valued engagements.

The official guidelines of the IT policies stipulated the action plan with greater attention on participation and transparency involving intermediaries both from governmental and non-governmental organizations. As valuable partners, Governmental and non-governmental agencies are involved in innovations and indigenous economic development. However, all this would require an organizational culture to design and solve problems based on grassroots level experiences and life events, and must be adapted and integrated with the local needs (see Stiles, K. W, 2000); see also http://www.cdt.org/egov/handbook.

Major problems in the rural areas are linked to the gaps in knowledge and imperfections in information. [7] The inadequate communication channels between poor and intermediaries (both official and non-official agencies) adversely affected the democratic process and constrained the process of forming coalitions between poor and development agencies. In a number of studies it is revealed that ICT reinforce inequalities rather than bridging the gaps that exist between men and women, rich and poor regions in accessing the ICT facilities (see Heeks, 1999, 2003; World Bank 1998). IT-mediated processes involve issues of power, class, gender, race, culture, economy and ideology. According to some recent estimates prepared by the Centre for Knowledge Societies, it is revealed that ICT- access is likely to increase socio-economic opportunities for dominant caste landholding elites, as the services are precisely calibrated with the cultural assumptions and economic needs of the land-owning dominant caste.

Poor (Non-elites) rural communities lack certain kinds of social networks and access to social, intellectual or financial capital, and therefore find it more difficult to take advantage of rural ICT networks. Indirect social discrimination is more difficult to address, as the elite and urbane personalities who often design rural ICT projects are likely to encounter and work with rural elites when they visit the field. Incompatible cultures and resource constraints make a huge difference in finding common ground in communication, a problem that has been discussed extensively by scholars writing about participatory action research (Gersch 1998, Steeves, 1998).

So, therefore, the challenge is to create conditions for reversing the polarities. Driven on by the hype from ICT Vendors and the media that makes ICTs an icon for modern development, technological enthusiasts are pushing ICTs vigorously under the guise that technology per se is development. [8] In fact, there is a need to separate the technology from the information it produces. It is necessary to examine people’s capabilities to receive, process, use, and transmit information. Some prior knowledge and certain amount of trust between receiver and source is necessary to locate and evaluate the importance, utility, and relevance of the information received (Heeks, 1999). As the poor are constrained structurally by different social and geographical conditions, there is a need to develop supportive programs and the re-distributive policies more effectively responding to the needs of the different communities (EPW, 17 March, 2001:918-919).

Development agencies have to overcome many hurdles to the use of Information Technology in rural areas. The vast majority of Web sites are in English, a language that more than 95 percent of Indians do not speak. Moreover, there are problems related to inappropriate software, expensive hardware and weak infrastructure. In each of these fields, while the landscape is slowly changing, disprivileged groups, such as dalits, adivasis, artisans will be relatively disabled from taking advantage of the opportunities offered by rural connectivity.

Achieving the better future will require a new development model, one that goes beyond the conventional focus on free-market capitalism, entrepreneurship, and global trade expansion—although such factors will play important roles. Nor will traditional, top-down development directed by governments and financed by
foreign aid be adequate. Instead, what may be desirable is a bottom-up model that makes credit, communications, information, energy sources, and other self-help tools directly available to communities and individuals in poor regions, empowering them to take charge of their own development.

There is a clear consensus among development professionals that training and capacity building are key components for the success of e-Governance (Colle et al. 200, Jensen and Estherhuyt, 2001; World Links, and others). India’s Dhan Foundation, have developed programs to assist their self-help groups in applying for loans from banks and government programs (http://www.dhan.org). Mechanisms and legal provisions for billing, settling accounts, issuing credit/smart cards, and transferring funds determine the appropriateness, cost, and quality of certain services (e.g., e-commerce, national and international remittances). This business backdrop is a combination of government policy, the legal and regulatory environment, and practices within financial institutions, and therefore depends on diverse stakeholders to ensure its effectiveness.

Education and health are critical application areas if the Internet is to directly address core development objectives in rural areas, and they also can help with economic self-sustainability through powerful public-private collaborations. The World Links project (http://www.world-links.org/), for instance, has been developing an after-school community telecenter program in Uganda. Under this program, schools in rural Uganda that are equipped with computer labs and VSAT-based Internet connections are opening up their labs to outside clients in the afternoons and evenings on a cost-recovery basis. Funds are then used to cross-subsidize daytime educational use. In capacity building initiative in rural India, Pratham (www.pratham.org), Akshara and The e-Learning Center together represent the most important attempt to create IT-enabled learning software for disprivileged children. They have developed educational games, which are now being tested in several rural areas through the Centre for Knowledge Societies, Bangalore.

eGurucool (www.egeurucool.com) and Zee Interactive Learning Systems (www.zils.com) represent commercial attempts to provide online educational resources coupled with products ranging from in-class instruction to interactive CD-ROMs, to cable TV programmes. These products are predominantly in English, although efforts are being made for regional language translations. The Centre for the Development of Advanced Computing (C-DAC; www.cdacindia.com) has been working on Indian language fonts and software for over a decade. Most State-sponsored IT initiatives, as well as many rural ICT projects, now use their fontographic standards, if not their text-processing software. In another significant development, a machine language translation project based in Hyderabad called Anusaraka (www.iiit.net/anu/anu_home.html) promises to allow Indian language users translation between various Indian languages, as well as access to English language resources on the Web.

Overall, we can say that ICTs are necessary but not sufficient condition for development unless they are integrated with the national, local and international bodies. Indeed, ICTs currently have a far greater enabling value in building capacity within intermediary institutions than in directly affecting the poor. These intermediary organizations in turn have championed the causes of greater democracy, social equality, bridging the gaps between what the poor have and what they would need in order to use ICTs.

Notes
1] Technology planning is no more a local affair. National technology planning is influenced greatly by the trade-related policies developed by the World Trade Organization (WTO), a successor to the GATT. Some critics caution that unless the developing countries are well prepared and co-ordinated, there would be greater dependence on the developed countries for technological development (see Hamelink, 2001).

2] An instance for such an effort is ‘The Global Knowledge for Development’ (GKD), which has helped people solve their problems, forge partnerships, and become allies in the global quest to make developmental information and knowledge available to all (www.globalknowledge.com).
3] In south Asia, for some critics, where most rural populations lack running water and sanitation systems, where electricity is still a scarce and intermittent resource, where roads are poor and education a luxury, these new technologies truly appear to be far removed from the everyday concerns of the poorest sections of the countryside. Despite this feelings amongst many critics, Economic development experts ranked improvement in telecommunication infrastructure as most important in the context of rural development (Ontario Federation of Agriculture ‘Internet and Rural Development Recommendations for Strategy and Activity, @ www.fao.org, 1995. There are some scholars in India who are very optimistic about the prospect of IT revolution and India’s ability to unleash its vast economic potential. (Jagdish Bhagwati, Confederacy of Doers’, India Today, special millennium issue, October 2000; see also Times of India, 2 February, 2002 ‘Asia will be global power center by 2005).

4] For most comprehensive listing of projects in the Indian context see web pages of the “India Digital Divide” project of the World Economic Forum’s “Global Digital Divide Initiative,” which was launched at the January 2000 meeting in Davos, Switzerland. India digital divide initiative hosts a public websites to “raise awareness on the digital divide in India and to collect and showcase projects and activities that have been carried out in India that help bridge the digital divide between India and the rest of the world. [see betty.hansom@uconnvm.uconn.edu. For description of initiatives and evaluation of the ICT projects see the printed edition of the Global Information Technology Readiness Report 2001-2002 as well as other companion publications of Oxford University Press. http://www.oup-usa.org/reports/; see also the listing of the association of progressive communication http://www.iicd.org, http://www.apc.org, , and the UNDP’s Human Development Report 2001 http://www.undp.org/hdr2001. India’s National Association of Software and Service Companies (www.nasscom.org), Inomy.Com (www.inomy.com) and many of their web sites host important statistics and information on India’s Internet economy. BytesForAll.Org (www.bytesforall.org) is a voluntary online community that shares information with other Web-oriented advocates across south Asia. The NGO Voices serves as a research and capacity-building resource for community radio, and is beginning to experiment with the interface between Internet and radio. Mahiti.Org (www.mahiti.org), a branch of the NGO Samuha provides IT-services for NGOs in Bangalore.

5] Online trade and commerce in small towns and rural areas in India have grown five times in the last year (see Times of India, ‘Rural India joins the Online Trading’, Feb, 11, 2006).

6] This was made clear by the science policy resolution in 1958 and in ‘The Proceedings of the Third National Conference of Scientists, Technologists and Educationists’, which was held in 1970.


8] In several instances, advocates of ICT applications for rural development tended to underplay the larger social/political/economic resource inequality issues in the process of marketing the ICTs as the new weapons in the war against underdevelopment. Heeks, 1999, p, 18, Panos, 1998 a.

References


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45 The Proceedings of the Third National Conference of Scientists, Technologists and Educationists (1970), The Committee on Science and Technology, Government of India, New Delhi, p.5.


47 Times of India, Feb 11, 2006: ‘Rural India Joins online trading party’.


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**About the Author**

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E-government in Road Transport: A Case Study

G.P. Sahu* and Vindhyesh. N. Gupta²

ABSTRACT

This paper analyses the e-governance initiative in the area of bus transport by the Andhra Pradesh State in India. Andhra Pradesh State Road Transport Corporation (APSRTC) is the largest Passenger State Road Transport Undertaking in India. It has a fleet of more than 19000 buses operating 65 lakh kms / day and transporting 1.2 crore passengers daily within the state of Andhra Pradesh and to the neighboring states. The Computerisation of bus pass system in Hyderabad city of Andhra Pradesh is to provide significant benefits both to the citizen and to the Corporation with respect to reduced delays and increased promptness in delivery of service. This project which is essentially demand driven and genuinely customer-centric and benefits both the citizen and APSRTC. From citizen point of view, the benefits include increased access to the bus pass centers, reduced waiting time at the counters, anywhere renewal of pass, doing away with the need to submit photographs, better environment at the bus pass centers etc. From APSRTC point of view, the benefits include reduced manpower, improved image, cost effectiveness and better control and accountable.

1. Introduction

E-governance originated in India during the seventies with a focus on in-house government applications in the areas of defense, economic monitoring, planning and the deployment of ICT to manage data intensive functions related to elections, census, tax administration etc. The efforts of the National Informatics Center (NIC) to connect all the district headquarters during the eighties were a watershed. From the early nineties, e-governance has seen the use of IT for wider sectoral applications with policy emphasis on reaching out to rural areas and taking in greater inputs from NGOs and private sector as well.

While the emphasis has been primarily on automation and computerization, state endeavors to use IT include forays into connectivity, networking, setting up systems for processing information and delivering services. At a micro level, this has ranged from IT automation in individual departments, electronic file handling, access to entitlements, public grievance systems, service delivery for high volume routine transactions such as payment of bills, tax dues to meeting poverty alleviation goals through the promotion of entrepreneurial models and provision of market information. The thrust has varied across initiatives, with some focusing on enabling the citizen-state interface for various government services, and others focusing on bettering livelihoods.

The national e-governance plan (2003-07) reflects the strategic intent of the central government in the right perspective. Many projects are earmarked under this plan, and it is trying to address the digital divide.

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2 Corresponding Author: (Phone +91-9313032399, Email: sahu_ganesh@rediffmail.com)
² Jawaharlal Nehru Technical University, Hyderabad, India
2. Case on Andhra Pradesh State Road Transport Corporation (APSRTC)

APSRTC is the largest Passenger State Road Transport Undertaking in India. It has a fleet of more than 19000 buses operating 65 lakh kms / day and transporting 1.2 crore passengers daily within the state of Andhra Pradesh and to the neighboring states of Maharrastra, Chhattisgarh, Orissa, Tamilnadu and Karnataka. APSRTC buses also operate to Goa and Pondicherry. Passengers equivalent to the entire population of Andhra Pradesh are transported in APSRTC buses every week. APSRTC Operations In Hyderabad City: Out of 19000 buses, 2655 buses are being operated in the twin cities of Hyderabad and Secunderabad and its suburbs. Different types of bus services offered in the city are City Ordinary, City Express, Metro Express, Metro Liner / Veera, City Sub-urban, and District Sub-urban.

Bus Pass Activity In Twin Cities: About 30 types of bus pass are being issued to 4.0 lacs commuters every month from different centers of the city. In view of large number and types of passes, lot of manpower is deployed for this gigantic task of issuing 4.0 lakh passes every month. In spite of this, the waiting time for the citizen to get a pass used to be very high and there was lot of criticism from the commuters on this count. In order to streamline the process of issue of bus passes, it has been decided to computerize the entire activity of issue of bus passes duly increasing the number of centers and networking all centres to facilitate issue and renewal of pass concept from any Bus Pass center, irrespective of the center where the bus pass was initially issued.

2.1 Objectives of E Gov initiative in transport:

The Computerisation of bus pass system in Hyderabad city of Andhra Pradesh is to provide significant benefits both to the citizen and to the Corporation with respect to reduced delays and increased promptness in delivery of service. The major objectives of the project are:

- To increase accessibility to the citizen, by increasing the number of Bus Pass Centers.
- To provide services at the doorstep of the customer through a wide network of centers.
- To provide anywhere renewal facility to the citizen irrespective of the place of issue of the ID Card. In manual bus pass system the commuter had to go to the same center where the ID Card was issued for the renewal.
- To reduce waiting for the citizen by making each renewal of pass within 10 seconds
- To capture the photo on-line with web camera and simplify the process in issuing the Identity Card to the citizen.
- To reduce bogus passes duly incorporating security features in the system.
- To create better environment and hygiene to the pass holders, at the Bus Pass Centers.

3. Transformation: Before and After

Before Implementation:

**Manual Bus Pass Issual Process:** Bus Passes were issued through 13 bus pass centers manually earlier. The commuters applying for bus passes are issued an ID Card and a ticket. The ID Card is valid for one year and the ticket is valid for one month in case of monthly pass and for three months in case of quarterly passes.

The salient features of the manual process are summarized below:

- Processes managed manually by APSRTC.
- No Public Private Participation
- Centers not networked
- Longer waiting time
- Lesser coverage
Cumbersome accountal procedure
Manual accountal of transactions
Lesser control over system and cash accountal
No service to pass holders on Sundays and Holidays

The commuter applies for a bus pass duly filling the prescribed application form and pre printed ID Card along with required documents like Bonafide Certificate in case of students and Employer certificate in case of NGO passes etc. On receipt of the application from the commuter the operator verifies details and credentials and if satisfied issues preprinted ID Card and bus pass ticket duly stamping the validity dates i.e. from date and to date. Every month the commuter has to approach the same center for renewal. There are about 30 types of bus passes and these are broadly categorized into the four types as:

- Bus Passes for Students.
- Bus Passes for Non-Gazetted Employees.
- Bus Passes for General Commuters.
- Bus Passes for physically challenged.

In view of the overwhelming growth and the complexity of the system and to provide superior and faster services to the pass holders and to achieve more security and maintainability, APSRTC decided to revamp its bus pass issue system by computerizing the entire activity on pilot basis.

**After Implementation:**

The Bus pass issuing activity was totally computerized with main focus of making the process simpler, faster, more cost effective and to provide superior services to the citizens. Another important focus was to provide services at the doorstep of the customer through a wide network of centers and also to outsource non-core activities since the Corporation’s main business is to run buses. The project succeeded in the following manner:

- Increased accessibility to the citizen, as the number of Bus Pass Centers has increased from 13 to 56.
- Anywhere renewal facility to the citizen by networking all the centers. In manual bus pass system the commuter had to go to the same center where the ID Card was issued for the renewal. Now the bus pass can be renewed at any of the 56 bus pass centers, irrespective of the place of issue of the ID Card.
- Reduced waiting time for the citizen. As barcode was incorporated in the ID Card, just by reading the ID Card with the barcode reader, the data of the pass is captured automatically without any data entry. Hence each renewal of pass takes only 10 seconds which resulted in drastic reduction of the waiting time of the pass holder compared to the manual system.
- There is no need for the citizen to submit the photographs as the photo is captured on-line with web camera.
- Reduction of bogus passes: With security features included in the pre-printed ticket and ID Card like hologram, void pantograph etc., it is almost impossible to generate a bogus pass.
- Better environment and hygiene was provided to the pass holders at all the Bus Pass Centers

The impact of the project is explained in Table 1.

**4. Technology used**

The computerised system was evolved to achieve better controls, simplicity, transparency, and speedy services to the commuters.

- Detailed documentation was prepared covering the following:
- Software Requirement Specifications for the Software.
- Use-case, data flow, architectural diagrams and test cases.
### Table 1: Transformation at a glance

<table>
<thead>
<tr>
<th>Activity</th>
<th>Before Project</th>
<th>After Project</th>
<th>Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Submission of attested Pre-printed ID card</td>
<td>Pre-printed ID card is submitted after affixing the attested photo by concerned authorities</td>
<td>ID card is generated automatically by the system by grabbing the photo online with unique ID number and center name</td>
<td>Saves time and effort for the applicant.</td>
</tr>
<tr>
<td>2 Issue of Money Receipt to pass holder</td>
<td>Manual Money Receipt will be prepared and issued to the commuter, for account of money</td>
<td>Money is accounted automatically, eliminating the need for money receipts</td>
<td>Less paper work.</td>
</tr>
<tr>
<td>3 Lamination of ID card</td>
<td>Not provided</td>
<td>Bar-coded ID Card is laminated and then only issued to the commuter</td>
<td>In built security ensures no one can issue bogus cards.</td>
</tr>
<tr>
<td>4 Issue of Fresh Pass</td>
<td>Pre-printed Denomination passes are issued, on which ID card no , validity dates are entered manually</td>
<td>ID card is read by BAR CODE readers and displays the data pertaining to the ID card holder and generates PASS with unique number</td>
<td>Saves a lot of time and eliminates scope of human error.</td>
</tr>
<tr>
<td>5 Renewal of Pass</td>
<td>Collects the old pass, prepares pre-printed denomination wise renewal pass, fills up the details and issues.</td>
<td>BAR CODE on ID card is scanned by barcode reader to fetch the data and pass is renewed within 10 seconds.</td>
<td>Fastens the process and reduces waiting time for the applicant.</td>
</tr>
<tr>
<td>6 Issue of Greater Hyderabad pass</td>
<td>Fare is calculated manually and preprinted money receipt is issued to the computer.</td>
<td>System automatically calculates the fare and issues the pass instantly</td>
<td>Process re engineered to increase convenience</td>
</tr>
<tr>
<td>7 Physically Challenged Pass</td>
<td>For escort a separate Money Receipts is issued manually</td>
<td>Escort pass is generated by the system automatically.</td>
<td>Citizen feels cared for and is more comfortable.</td>
</tr>
<tr>
<td>8 No of centers</td>
<td>13 only</td>
<td>56</td>
<td>Easier accessibility</td>
</tr>
<tr>
<td>9 No.of counters</td>
<td>39</td>
<td>148</td>
<td>Faster process.</td>
</tr>
<tr>
<td>10 Financial &amp; MIS reports</td>
<td>Manually prepared</td>
<td>System generated</td>
<td>Saves time and effort.</td>
</tr>
<tr>
<td>11 Reports submitted to Government for reimbursement</td>
<td>Manually prepared</td>
<td>System generated</td>
<td>Saves time and effort.</td>
</tr>
<tr>
<td>12 New passes</td>
<td>New passes were issued at selected centers.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Hardware specifications for the hardware and network equipment to be installed at each center.
- Detailed report formats.
- Detailed procedures for issue of different types of passes etc.,

The Software is developed and deployed in three-tier architecture with Oracle 9i as data base tier Microsoft Net framework as the application tier and browser based on the presentation layer. The Operating System was Windows 2003 Enterprise Edition. All the business logic is incorporated in database procedures. Hence the interoperability can be easily achieved by designing proper Web Services using SOAP and XML. The Software is designed to take care of total security of the data, faster transactions, centralized control, scalability
and hence better maintainability. The system is able to issue a new pass with id within 90 seconds i.e., photo grabbing, printing of identity card, lamination of ID card, issue of fresh bus pass, taking cash and handing over the pass and renewal should be made within 10 seconds i.e., printing of renewed pass and taking cash and handing over the pass including at remote terminals.

The database administrator has the total control of the database. The accessibility of data and programs will be pre determined for different users with user name and passwords. The user hierarchy is as under:

- Manager
- Supervisor
- Operator

User Manuals have been prepared with details of operator screens, methodology to be adopted for issue of different types of passes, eligibility and documents required for different passes, pass fares and validity dates, procedure to submit invalidated vouchers, disable bogus passes etc.,

Procedure and methodology for issue of different types of passes like Student passes, NGO passes, PHC passes, General Passes and Route passes has been standardized so that all operators at all the centers follow the same procedure. The proforma of ID card, ticket, and application form and report formats are also standardized. These are augmented by regular notifications and circulars.

Center Managers and Operators were imparted training both at the time of induction and later to update their knowledge about new types of passes, procedural changes etc., Any change in system and procedures are communicated to the Managers and Operators so that they implement them in a correct manner.

Re-engineering was done for the following:

- Redesigning the Identity Card, Ticket and application forms duly incorporating security features like hologram, void pantograph etc.,
- Cash Collection Procedures: Centralised remittance of the cash in APSRTC Bank account.
- Issue of computerized money receipt on-line for students.
- Sale of applications on-line
- Issue of route passes on-line.
- Preparation of Student passes off-line.

All important documents and procedures have been standardized. The important ones being:

- Identity Card
- Ticket
- Application Form
- Procedure for claiming the commission.
- Procedure for submitting invalidation vouchers

All the roles and responsibilities of the personnel involved in the system i.e. APSRTC personnel and the partners, have been clearly defined in the agreement, keeping in view the changes consequent upon changing from a manual to a fully IT enabled system. These are reviewed periodically in meetings and brain storming sessions, and the roles and responsibilities based on experience are further refined.

5. Sustainability and other Benefits

The usage pattern and the Citizen Patronage furnished below demonstrate the patronage of citizens to the PAAS project:

With respect to sustainability, the project has been in operation successfully since June 2004 and almost all the bottlenecks and teething problems have been overcome and the entire project has been fully stabilized.
and is sustainable. The project is self sustaining and APSRTC is having a cash inflow even after paying the commission to the Agency, thus confirming its financial viability.

Since the revenue collections are done online on a real-time mode the reconciliation is also online and thus accountability is 100% and there is no scope of corruption as the collections are directly remitted electronically into APSRTC bank account.

The cost per transaction will come down over a period of time once the establishment costs are recovered.

**Cost Reduction to USER**

- Increased accessibility and anywhere renewal facility will reduce the traveling cost to the citizen from traveling to far places to renewal passes.
- There is no need for the citizen to submit the photographs as the photo is captured on-line, thus the cost of photograph is saved to the citizen

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Month</th>
<th>No. of passes issued (Lakhs)</th>
<th>Amount Realized (Rs. Lakhs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>July 2004</td>
<td>3.71</td>
<td>980.58</td>
</tr>
<tr>
<td>2.</td>
<td>August 2004</td>
<td>3.37</td>
<td>921.64</td>
</tr>
<tr>
<td>3.</td>
<td>September 2004</td>
<td>3.83</td>
<td>977.21</td>
</tr>
<tr>
<td>4.</td>
<td>October 2004</td>
<td>4.05</td>
<td>1041.99</td>
</tr>
<tr>
<td>5.</td>
<td>November 2004</td>
<td>4.28</td>
<td>867.22</td>
</tr>
<tr>
<td>6.</td>
<td>December, 2004</td>
<td>4.52</td>
<td>908.81</td>
</tr>
<tr>
<td>7.</td>
<td>January, 2005</td>
<td>4.64</td>
<td>970.51</td>
</tr>
<tr>
<td>9.</td>
<td>March, 2005</td>
<td>3.84</td>
<td>839.03</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>44.82</strong></td>
<td><strong>10179.96</strong></td>
</tr>
</tbody>
</table>

- Citizen can transact business with RTC quickly leading to saving in time

**Cost Reduction to Corporation**

- Reduction of man power: Since the cash is directly remitted into the bank account of APSRTC, man power used to handle the cash earlier are withdrawn. Similarly, there is significant saving in manpower as all the operators are out sourced to carry out the regular activity of issue of bus passes.
- There is greater security to cash collected
- Reduction of bogus passes: With security features included in the ticket like hologram, void pantograph etc., it is almost impossible to generate a bogus pass.
- As against cash outflow for the Corporation earlier, the Corporation now has a cash inflow due to implementation of the project.
- Process simplification and greater control over the system

Thus it could be seen from Table 3 that the project has resulted in saving of Rs.323.72 lakhs per annum to the Corporation.

‘PAAS’ Project is a unique experiment, which is essentially demand driven and genuinely customer centric and which benefits both citizens and ‘APSRTC’.
From citizen point of view, the benefits include increased access to the bus pass centers, reduced waiting time at the counters, anywhere renewal of pass, doing away with the need to submit the photographs. From APSRTC point of view, the benefits include reduced manpower, improved image, and financial viability.

**Replicability**

In view of success of the project in Hyderabad City, it has been decided to replicate the same in other major cities like Visakhapatnam, Vijayawada, Warangal etc. The entire model is replicable without any re-engineering.

The system is working well and the results are quite satisfactory. Teething troubles have been sorted out and the system is stabilized and sustainable.

The following are the future plans:

**Table 3: Cost Benefit Analysis**

<table>
<thead>
<tr>
<th>Sl.no.</th>
<th>Particulars</th>
<th>Manual System (Rs Lakhs)</th>
<th>PAAS System (Rs Lakhs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expenditure:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Salaries for ADCs/BCs (107 * 8000* 12 months)</td>
<td>102.72</td>
<td>0.00</td>
</tr>
<tr>
<td>2</td>
<td>Salaries for Supervisors (6 * 12000* 12 months)</td>
<td>8.64</td>
<td>8.64</td>
</tr>
<tr>
<td>3</td>
<td>Electricity &amp; Telephone Charges</td>
<td>24.00</td>
<td>0.00</td>
</tr>
<tr>
<td>4</td>
<td>Stationary (70000*12) cost</td>
<td>8.40</td>
<td>8.40</td>
</tr>
<tr>
<td>5</td>
<td>Miscellaneous Cost</td>
<td>12.00</td>
<td>0.00</td>
</tr>
<tr>
<td>6</td>
<td>Commission to be paid to the agent</td>
<td>115.00</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total Expenditure</td>
<td>155.76</td>
<td>132.04</td>
</tr>
<tr>
<td>Revenue (service charges):</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Service Charges for IDs for issue of 6 lac passes per annum</td>
<td>60.00</td>
<td>120.00</td>
</tr>
<tr>
<td>2</td>
<td>Service Charges for Renewal@ Rs.5/-</td>
<td>220.00</td>
<td></td>
</tr>
<tr>
<td>II</td>
<td>TOTAL SERVICE CHARGES</td>
<td>40.00</td>
<td>340.00</td>
</tr>
<tr>
<td></td>
<td>PROFIT/LOSS (11-1)</td>
<td>-115.76</td>
<td>207.96</td>
</tr>
<tr>
<td></td>
<td>(b) (a)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>III</td>
<td>Net Savings (a-b) per annum in Lakh Rs.</td>
<td></td>
<td>323.72</td>
</tr>
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</table>

- Replication of the system at other major cities like Vishakapatnam and Vijayawada.
- Web based bus pass registration and payment.
- Door delivery of bus passes.
- Issues of bus passes through mobile counters.
The entire system is planned and designed in a citizen centric way. Care was taken to provide adequate number of bus pass centers and counters. The software was designed in such a way that the ID card and pass are generated in minimum time so that the waiting time of the pass holder is drastically reduced. Facility was provided to capture the photograph of the pass holder (without troubling him to attach the photograph as in the manual system), and to laminate the ID card. In the earlier manual system the pass holder has to approach the same bus pass center where the pass was first issued. With computerization and networking of all the centers, the pass holder can approach any of the 56 centers as per his convenience for renewal of the pass. The Bus Pass Centres have good ambience and comfort.

The major achievements are summarized below

- Total process was outsourced which enabled Public Private Partnership.
- Increased accessibility to the citizen from 13 to 56 centers.
- All centers are networked.
- Anywhere renewal facility is provided to the citizen.
- Reduced waiting for the citizen.
- There is no need for the citizen to submit the photographs as the photo is captured on-line.
- Online review of transactions.
- Scope for misuse drastically reduced.
- More secure system.
- Greater control over all activities.
- Significant reduction of man power
- Reduction of bogus passes: With security features included in the ticket like hologram, void pantograph etc., it is almost impossible to generate a bogus pass.

6. Concluding Remarks

Bus Transport Project is a unique project, which is essentially demand driven and genuinely customer-centric. It benefits both the citizen and APSRTC. In the earlier manual system, the citizen has to go to a particular center throughout the year for renewal of the pass. Now with computerized and networked system, the citizen can go to any center of his choice for getting a fresh pass and for renewal of the pass. Earlier long queues were found at all the centers as it used to take lot of time for issue of a pass in view of manual entries. Now by just scanning the barcode on the ID Card, renewal of pass can be done in 10 seconds. Hence the citizen can just walk-in any time to any of the centers for renewal of pass and walk-out within no time. As against the earlier 13 centers, now 56 centers are functioning. Thus, from citizen point of view, the benefits include increased access to the bus pass centers, reduced waiting time at the counters, anywhere renewal of pass, doing away with the need to submit photographs, better environment at the bus pass centers etc. From APSRTC point of view, the benefits include reduced manpower, improved image, cost effectiveness and better control and accountability. The project is self sustaining and APSRTC is having a cash inflow even after paying the commission to the Agency, thus confirming its financial viability. The entire model is replicable without any re-engineering and it has been decided to replicate the same in other major cities like Visakhapatnam, Vijayawada, and Warangal etc. Thus the e governance initiative at the state bus transport system has been a well thought of and executed plan from both a macro and a micro perspective.

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Competitiveness Through E-government in Power Sector: Identification of Critical Success Factors to Acquire Winning Edge

Geetika1* and Neeraj Pandey 2

ABSTRACT

The present paper endeavors to look at e-government in the framework of fundamentals of democracy. The potential of e-government in the form of G2E (Government to Employees), G2C (Government to Customers), G2B (Government to Business) and G2G (Government to Government) is underutilized in public sector utilities in India. The special context for analysis is focused on power sector in India with special reference to Uttar Pradesh Power Corporation Limited (UPPCL), a large public sector enterprise (PSE), which is facing challenges of ever-increasing consumer population, billing discrepancies, poor customer services, frequent breakdowns, high transmission and distribution losses and unsatisfactory grievance handling. An attempt is made to identify the critical success factors (CSF) and imperatives of e-government in the state-owned power utility to ensure not only survival of state power utilities, in the eminent threat of losing monopoly status, but also ensure competitiveness against the IT-savvy private players which are entering in the production, transmission and distribution arena as a result of privatization of power sector.

Keywords: e-government, critical success factor, competitiveness, monopoly

1. Preamble

The concept and process of e-government as understood by the World Bank (2006) “use by government agencies of information technologies such as Wide Area Networks, the Internet, and mobile computing that have the ability to transform relations with citizens, businesses, and other arms of government.” These technologies can serve a variety of different ends i.e. better delivery of government services to citizens, improved interactions with business and industry, citizen empowerment through access to information, or more efficient government management. The resulting benefits can be less corruption, increased transparency, greater convenience and less corruption through increased transparency.

It is about the choices governments make about how information and communication technologies will be deployed to support citizen choices. The most common areas of e-government applications are electronic commerce and business regulations, taxation and revenue, law enforcement and courts, digital democracy, agriculture, health, transport and education.

As an aftermath of reform process, public sector enterprises (PSEs) are losing their monopoly status and entering into oligopoly and monopolistic markets. Hence in order to remain competitive and sustain their

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market share and leadership the PSEs have to imbibe the nuances and compulsions of modern systems, one of which is the implementation of e-government for their survival. The extent to which e-government is planned and implemented shall decide the level of success and excellence of an organisation.

Various state governments in India have made initiatives in this direction and the outcome has been overwhelming. The Karnataka government’s ‘Bhoomi’ project has led to the computerisation of the centuries-old system of handwritten rural land records including records of right, tenancy and cultivation certificates (RTCs). The project is expected to benefit seventy lakh villagers in 30,000 villages. In Hyderabad, through e-Seva, citizens can view and pay bills for water, electricity and telephones, besides municipal taxes. They can also avail of birth/death registration certificates, passport applications, permits/licenses, transport department services, reservations, Internet and B2C services, among other things. The eChoupal, ITC’s unique web-based initiative, offers farmers the information, products and services they need to enhance productivity, improve farm-gate price realisation, and cut transaction costs. Farmers can access the latest local and global information on weather, scientific farming practices, as well as market prices at the village itself through this web portal—all in Hindi. eChoupal also facilitates the supply of high quality farm inputs as well as the purchase of commodities at the farm (Pande, 2004).

2. Critical Success Factors

Another important dimension to ensure efficiency in operations is the identification of critical success factors (CSF) for the industry / sector and the efforts by organisations to link them with the organisational goals and strategy. It is not only relevant for for-profit organisations but also for those owned and managed by governments. In the implementation of e-government identification, analysis and giving proper weightage to each critical success factors shall be crucial for organisational success. The critical success factors shall ensure a more focused planning and implementation strategy in business operations, thereby increasing the chances of success in a competitive scenario.

The concept of critical success factors (CSFs) was given by Daniel (1961) and was popularized by Rockart (1979). The central idea in the CSF is that certain factors are critical for the success of an organisation and if these are not met, the organisation might fail (Bergeron and Begin, 1989; Boynton and Zmud, 1984. The CSF was applied as a component of strategic information management by Wilson (1989). Daniels success factor concept was overlooked until when John F. Rockart further refined “the success factor concept”. Rockart defined CSFs as the limited number of areas in which satisfactory results will ensure successful competitive performance for the individual, department or organisation. CSFs are the few key areas where “things must go right” for the business to flourish and for manager’s goals to be attained.

Critical Success Factors (CSFs) are important for an organisation because they support the planning process, communicate the role of IT, assist in prioritizing IT investment decisions, guide managers on understanding where best to focus their attention on helping the organisation be successful, promote structured analysis processes. Bullen and Rockart (1981) suggested five sources for an organisation to consider when identifying CSFs viz. The method used by Rockart includes conducting two to three CSF interviews in separate sessions by a trained consultant with an organisation’s management team. The first interview focuses on identifying a limited number of CSFs and the underlying organisation goals related to the CSF. A discussion around the measures that can be used to support the CSF also takes place in the first session. The second interview session is used to review the identified CSFs and have an in-depth discussion around measures to support the CSFs. Sometimes a third session is used in the process to obtain final agreement on CSFs and the measures to support them. In the present paper authors have adapted this method and have included employees at lower levels in the organisation as also experts from academia to finalise the critical success factors in the power sector in India and see the achievement of these factors through e-government.
3. Power Sector in India

The quantity and quality of power supply is a key issue in economic growth paradigm. In India, the power sector is witnessing massive transformation vis-à-vis restructuring, regulation and private sector participation especially for the last few years. The Government has promised “Power to All” by 2012 i.e. power shall be made available to every citizen of India on demand although the task is hurculean since almost 40% of the population of India is still denied the benefits of electricity (Electricity Act, 2003). The installed generation capacity has increased from a mere 1,362 MW in 1947 to 1,23,668 MW as on 31st December, 2005 (powermin.nic.in). The power transmission and distribution network has also grown substantially. The State Electricity Boards are being unbundled as per the new Electricity Act, 2003 in almost every state. The erstwhile purely government department / Board set up is now being given a corporate identity. These power corporations are being further divided into strategic business units as discoms i.e. distribution companies. As on March, 2005, a total of eighteen state electricity boards have been restructured (http://www.powermin.nic.in); one of the first among those restructured is Uttar Pradesh Power Corporation Ltd. (UPPCL), which has emerged from trifurcation of Uttar Pradesh State Electricity Board (UPSEB). The present system suffers with high level of T&D (transmission & distribution) losses; national average is over 50% against the international average of T&D losses at 10% (Electricity Act, 2003), power theft, inadequate metering, ineffective practices of billing collection, low motivation level of employees and lack of liquidity in the power sector. At the same time States have to provide several non-remunerative social services such as rural electrification, free unmetered power supply and other subsidized rates to certain category of consumers due to socio-political compulsions. The losses have gone up to dangerous levels touching as high as 50% in some states (Power Policy 2003, Government of UP). The main issues confronting the power sector are therefore both operational and regulatory in nature.

The distribution businesses in the state power utility sector in India are traditionally characterized by manual and cumbersome processes, besides limited transparency. The deployment of information technology has been mainly in multilevel aggregation of data or large-scale data processing. The several standalone applications have limited ability to effectively interface and integrate either with other applications or with potential applications to be deployed in the future.

In wake of the deficiencies of existing system and government initiatives for multi prong reforms, power sector can be taken as a very suitable area for study of e-government and CSF. The implementation of e-government initiatives in the power sector in India have high potential of resulting in better reliability and quality of supply, reduced technical and commercial losses, higher customer satisfaction and a fundamental change in the work culture.

Another important issue is that all the forms of e-government viz. G2E (Government to Employees), G2C (Government to Customers), G2B (Government to Business) and G2G (Government to Government) are crucial to the power sector. The figure exhibits the relationship between e-government its various arms and their implications and critical factors for in the perspective of power sector.

As can be seen that the critical factor for G2C in power sector would be quantity of power measured in terms of number of hours in a day power supply is available. The power sector also has internal customers’ the employees whose satisfaction will be dependent on employee friendly attitude of the organisation which will monetary as well as non monetary dimensions. Another category of customers would be institutional customers especially business units. They will be happy only when quality of service is satisfactory. Interruptions in power supply may cause serious losses in terms of quantity and quality both. Finally the suppliers (NTPC, Hydro-power plants other government departments, ministry will need coordination. The overall efficiency will be an outcome of all of these. E-government can be used as a tool to create synergy
4. Identification of Critical Success Factors in Power Sector (A Case Study of UPPCL)

As part of power sector reforms process, Uttar Pradesh State Electricity Board (UPSEB)-the sole power entity in the state of Uttar Pradesh was trifurcated on January 14, 2000 with the aim to increase organisational efficiency and to ensure optimization of resources. The employees of the erstwhile Uttar Pradesh State Electricity Board were given the choice to opt for any one of three newly created corporations viz. Uttar Pradesh Power Corporation Ltd., Uttar Pradesh Rajya Vidyut Utpadan Nigam Ltd. and Uttar Pradesh Jal Vidyut Nigam Ltd. Uttar Pradesh Power Corporation Limited (UPPCL) is responsible for planning and managing the power sector in Uttar Pradesh through its transmission and distribution units.

The case of UPPCL has been taken as representative of all restructured public sector enterprise in power sector. The logic behind this is that Uttar Pradesh is the largest state of India in terms of population, and UPPCL has largest market base in the power sector in the country. Uttar Pradesh is one of the few states who are first to initiate the reforms process in power sector. In the first phase the erstwhile electricity board was corporatized resulting in creation of UP Power Corporation Ltd. and recently the state has decided to open up power sector to private players thereby eliminating monopoly of UPPCL. Erstwhile UPSEB had long history of losses-ever since it inception it has never been able to come out of red. Even corporatization has failed to turnaround it and UPPCL is suffering with the legacy of financial and other losses. The story of UPSEB and UPPCL is very similar to those of other state power utilities hence it is appropriate to take it as a case study to understand the entire power sector in the country. Presently, the degree of e-government in UPPCL is quite low and confined to internal billing system and grid management only.

The process of identification of CSFs has been undertaken by adapting the method suggested by Rockart. The basic element of the method is retained that is seeking opinion from management team of the organisation. However the same has been amended in the way that firstly, along with management, employees of the organisation have been involved and secondly, in the final round of discussion experts from academia have also been consulted. The reasons behind this are that (i) any reform process can be successful only by active participation of the employees (ii) employees in power sector such as technicians, electricians and junior engineers are those who directly link the organisation with the end users and (iii) applicability of e-government in the achievement of thus identified critical success factors has to be vet by electrical engineering and IT experts. This has significantly broadened the scope of analysis and thus validates the findings. As already stated we have conducted our study on UPPCL as the representative of Power sector in India.

5. Methodology

Opinion of employees and managers of UPPCL have been collected by means of survey and those of experts by interview method. The survey method has been used to identify broad categories of CSFs which were ratified / modified on basis of expert opinion

5.1. Employees’ Opinions

All the employees irrespective of cadre and level were taken as survey population with the rationale that the employees of the organisation are most suitable source for identifying the ‘things’ which ‘must go right’ (Rockart, 1979). The total employee population was divided into two broad strata i.e. Officers (Assistant Engineers and above) and Non-officers (Junior Engineer and below). The purpose was to ensure that the sample is not skewed on either side and all the population items get equal opportunity to share opinion under each stratum, selected on a random basis. A total of 1540 employees (518 Officers out of 5000 officer category employees i.e. approximately 10% and 1022 Non-officers out of 25000 non-officer category employees i.e. approximately 4%) were administered the survey tool. The survey tool was structured disguised questionnaire with closed ended questions using ranking. Nature of questions was disguised so as to avoid respondent’s bias. The respondents were asked to identify the most critical reason for poor performance of
5.2. Expert Opinion

Experts’ views on the critical success factors (CSFs) in the power sector in India have been collected using Delphi method. The experts consisted of IT Experts, Power Regulatory Experts and Electrical Engineers. The Delphi Method is based on a structured process for collecting and distilling knowledge from a group of experts by means of a series of questionnaires interspersed with controlled opinion feedback (Helmer and Dalkey, 1999). The technology forecasting studies which eventually led to the development of the Delphi method started in 1944. At that time General Arnold asked Theodor von Karman to prepare a forecast of future technological capabilities that might be of interest to the military (Cornish, 1977). Delphi represents a useful communication device among a group of experts and thus facilitates the formation of a group judgment. The Delphi method has been widely used to generate forecasts in technology, education, and other fields (Cornish, 1977). Under Delphi method experts do not meet face to face rather they are given the problem and asked to give their independent opinion. The moderator collects and compiles these opinions and if views are divergent the compiled views are again distributed to the experts for a second opinion. The process continues till a conclusive result is obtained.

In the present study the Delphi Method has been used for collecting experts’ opinion due to various reasons. One, it is a very cost effective method of group decision making which saves time and resources of not only the information seeker but also of the experts. Two, the method has some intrinsic advantages such as there is no possibility of halo effect or other kind of biases on the experts due to anonymity. The method also eliminates the possibility of polarization among experts which is often very common aspect in discussion meetings.

The experts were requested to give their opinions on two aspects, one ranking of CSFs and two, implications of e-government in power sector. The critical success factors emerging from the analysis of survey results were given to the experts for their individual opinion. In the first round the respective ranks as achieved by analyzing employee responses were concealed so that independent opinion could be drawn. The experts were asked to rank these factors in the background of imminent privatization of power sector and the advantages of e-government applications. In the second round experts’ opinions were summarized and communicated back to all the members of the group along with the ranking emerging from the survey.

This was done to provide them the others’ point of view advantage and to facilitate the group decision making process.
6. Discussion and Analysis

The opinions collected from survey and from experts have been separately analyzed and then a comparison is made to reach final conclusion.

6.1. Survey Findings

The responses collected from survey have been compiled and the results are analysed on basis of percentage method. The following tables from Table 1 to Table 5 summarise the percentage of responses on each of the aspects inquired. As we analyse these results it can be seen that the most important reasons causing poor performance of the power sector in opinion of employees are related to technology followed by structure and employee related reasons.

The employees of UPPCL highlight the technology-related reasons as the most important reasons for poor performance, whereas employee related and structure related reasons have secured a distant second and third place respectively. It is especially important in the light that power generation, transmission and distribution is a high technology intensive area. The observation by employees identifying technology related reasons as the most important cause of poor performance of the corporation speaks their understanding of the system and level of involvement. It will not be overstating the fact in this context that technology intervention in the form of e-government in the power sector may address these issues in a more effective way.

A further segregation of these three broad categories of reasons for poor performance throws more light on the issues and brings out several new dimensions. These results are summarized in Table 2 to Table 4. An analysis of the findings follows every table of data.

The technology-related reasons are the most important cause for the poor performance of UPPCL as per the perception of its employees. Among the technology-related reasons, the non-implementation of energy audit technologies to counter pilferage of power is most important issue. The employees want the focus on enforcement for countering pilferage, which is the single largest contributor to the high transmission and distribution losses in the state of Uttar Pradesh. Also, many employees explicitly blame lesser use of information technology for poor performance of the UPPCL.

In the Employee related reasons the employees of UPPCL found corruption to be the most compelling reason closely followed by motivation. It was heartening to learn that the employees themselves are conscious of the menace of corruption in the system. Average age of employees was not at all found important to have any bearing on productivity. This response may be due to the socio-cultural environment of a typical public sector enterprise.

This identification can be seen to have far reaching effects of e-government in the organisation because one of the most significant advantages of e-government is transparency which is essential to eliminate avenues for corruption. A clean organisation will be a better place to work where productivity and efficiency are recognized. This will in turn help assuage the motivation level of employees. As low motivation level has emerged as the second most important factors among the employee related reasons, and as also many researches have shown positive link between motivation and performance, it is being pre-empted that a positive link may be seen between e-government – transparency – low corruption – better work environment – higher motivation - higher productivity – higher growth. The chain is self enforcing and creates a virtual continuum of growth, as has been described later in the paper.

The employees of UPPCL are of the opinion that there should be clear accountability in the key result areas. Creating smaller distribution circles, where specific targets may be allocated for different posts, can facilitate this. The employees are quite particular about two most important issues viz. revenue and customer services, which if addressed through adequate accountability system, has potential of improving the
organisational performance and also in bringing turnaround in the organisation. The large number of subordinates at lower levels of the organisation also causes operational, regulatory and supervision-related problems, which might lead to poor performance of the organisation.

Finally the employees were also asked to rank five dimensions to improve organisational performance which have ultimately been used to frame the critical success factors. These ranks have been tested against the responses given for poor performance and thus a preliminary list of CSFs has been prepared. Table 5 gives the summary of responses and thus the ranks arrived at.

A large number of employees of UPPCL are of the view that career planning of each employee within the organisation shall be highly motivating. It will lead to higher productivity and job satisfaction, besides reducing absenteeism and employee turnover. The need for implementation of proper energy audit technologies was emphasized by majority of the employees. It shall help in reducing pilferage, besides improving the monitoring the supply of power to the consumers. The employees also feel that there should be accountability at all levels of hierarchy, so that the employees may be rewarded for their excellent performance, besides counseling and training the under-performers. Further, smaller distribution regions shall help in allocating responsibilities and fixing accountability of the employees. This shall also help in better management of quantity and quality of power in the specified distribution region. Such initiative have potential of greatly motivating the employees of UPPCL.

### Table 1: Reasons For Poor Organisational Performance

<table>
<thead>
<tr>
<th>Critical Factors</th>
<th>Response in %age (Number of Employees)</th>
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<tbody>
<tr>
<td>Technology-Related Reasons</td>
<td>60%  (936)</td>
</tr>
<tr>
<td>Organisational Structure-Related</td>
<td>23%  (352)</td>
</tr>
<tr>
<td>Employee-Related Reasons</td>
<td>17%  (252)</td>
</tr>
</tbody>
</table>

6.2. Expert Opinion

The final reports of the experts were compiled and responses were averaged to get the final list of CSFs. Responses from all the experts were given same weight. The summary results are given in the Table 6. They have also given their opinion about advantages of e-government in power sector.

As is shown in the table, the experts have converged on technology related reason to be most crucial for power sector and that too distribution system since it is a utility in which quality and quantity parameters of the product are most important for all categories of customers (Figure 2). Second place is occupied by energy audit followed by accountability, career planning and decentralization.

The experts were also asked to give opinion about the effectiveness of e-government applications in power sector especially in the light of imminent entry of private companies including mighty multinationals. The experts were unanimous as far as the advantages of e-government were concerned in the power sector. They highlighted the need for transparency in public dealings and the increasing consumer awareness regarding right to information. Another factor as identified was emphasis on quality of service even if a little higher price is to be paid. In this context the success of private power companies in other states were cited, e.g. Reliance Energy Limited.
Table 2: Technology Related Reasons

<table>
<thead>
<tr>
<th>Critical Factors</th>
<th>Response in %age (N)</th>
</tr>
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<tbody>
<tr>
<td>Non-Implementation of Energy Audit Technologies</td>
<td>57% (885)</td>
</tr>
<tr>
<td>Transmission and Distribution Losses</td>
<td>22% (343)</td>
</tr>
<tr>
<td>Lesser Use of Information and Technology</td>
<td>21% (312)</td>
</tr>
<tr>
<td>Employee Related Reasons</td>
<td></td>
</tr>
<tr>
<td>Corruption</td>
<td>50% (778)</td>
</tr>
<tr>
<td>Low Motivation</td>
<td>44% (670)</td>
</tr>
<tr>
<td>High Average Age</td>
<td>6% (92)</td>
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</tbody>
</table>

7. Concluding Remarks

The results of the survey and experts opinion have been compared to understand the difference if any between the summary lists of critical success factors in power sector in India. The Table 7, clearly shows that there is no difference in the opinions of employees and experts in the ranking of the CSFs except for two of these where the opinion is just reverse. Employees have identified ‘career planning’ as the most critical success factor whereas the experts have given it the fourth rank. On the other hand experts have identified ‘smaller distribution regions with autonomy’ as the most important factor whereas employees place it at the fourth position. All the other factors have been given same position by both the sources. Now the question arises that what should be the final rank.

We have accepted the opinion of experts against employees. The logic is based on the findings of other components of the survey; where the disguised nature of the questionnaire has helped in arriving at unbiased conclusion. As per Table 1, majority of respondents (60%) in the survey have ranked Technology Related Reasons at the first position and the least number of employees (17%) placed Employee Related Reasons at first position and hence career planning can not be taken as the most critical success factor. Secondly, as per Table-3 under Employee Related Reasons, Motivation is second in terms of percentage responses. These two findings clearly show that the identification of ‘career planning’ as the most critical success factor suffers with respondents’ bias.

Hence it can be concluded that experts ranking is more sound and scientific and is also supported by survey results in totality.

The employees also ranked ‘Accountability at all levels’ at the third position in agreement with experts. Therefore it can be fairly concluded that the decision makers, intelligentsia, the implementers all alike agree upon the need for transparency which vindicates our contention that application of e-government in power sector is very useful and advantageous for all the stakeholders.

We here conclude that e-government is a facilitating tool for strengthening the critical success factors which ultimately will result in increased efficiency and productivity resulting in satisfied customer which is necessary ingredient for achieving competitive edge. The symbiotic relationship between e-government, the CSFs and competitiveness are described in Figure 2.

The linkage between e-government and critical success factors create a synergy which enhances efficiency,
Table 4: Organisational Structure Related Reasons

<table>
<thead>
<tr>
<th>Critical Factors</th>
<th>Response in % (Number of Employees)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inadequate accountability system in revenue realization and services</td>
<td>46% (712)</td>
</tr>
<tr>
<td>Large number of subordinates at lower levels</td>
<td>29% (449)</td>
</tr>
<tr>
<td>Many Hierarchical Levels</td>
<td>25% (379)</td>
</tr>
</tbody>
</table>

productivity and customer satisfaction leading to providing the organisation a winning edge over competitors. The focus of CSFs and their implementation and achievement shall result in a win-win situation, both for the customers and the employees of the organisation. This shall lead to higher efficiency and productivity, besides increased customer satisfaction. Ultimately, this will help the organisation in gaining competitive edge in the industry through symbiotic and synergistic e-government, CSFs and competitiveness combination.

8. Recommendations

The paper recommends that the power sector reforms should focus on application of e-government with emphasis on the CSFs. However, while implementing the CSFs through e-government the socio-cultural environment in which organisation is functioning and its employees are working needs to be taken into consideration. The change process of implementing CSFs should be smooth and inclusive of employees and other stakeholders. This may be done by taking all the concerned parties into confidence and through comprehensive communication on all issues to all stakeholders. The job security, working conditions, wages, career advancement and autonomy should be given due care in this process. The change process should be one-time activity with specific time frame so that it minimizes insecurity and cost escalation, besides facilitating employee participation and support.

The CSFs advocate process reengineering in all divisions and department of the power utility. There are two approaches of e-government interventions viz. incremental approach and process reengineering approach.
The later is a better approach in the power sector in India due to political, technological and cultural factors. A “change process” must not be prolonged in such an environment as it takes its toll in terms of employee patience, time, money and technology. The incremental IT interventions shall hamper in bringing uniformity and stability in the system. Also, the state power sector utilities are mostly government controlled in developing countries, where ‘resistance to change’ is quite high. Hence the ‘change’ process in the power sector has to be well planned and efficiently engineered taking care of resistance at individual as well as at group levels. The political will is very crucial along with creating cultural change in the newly corporatised power units. If these two entities are comprehensively informed and integrated through various sources, they are satisfied and may lead to increase in productivity and profitability besides reducing absenteeism and employee turnover.

The UPPCL should focus on above CSFs for its survival and competitiveness in the very near future. The private sector power companies like Reliance Energy Limited, Torrent Power, CESC Limited, etc. are poised to enter into the state of Uttar Pradesh as production, transmission and distribution companies. The two most important stakeholders in an organisation are consumers and employees.

The computerized system in the power sector will revolutionize the way state power utilities conduct their business by reducing operating cost, improving customer service and increasing employee efficiency e.g. billing could be expanded to cover all customer types and grow into a comprehensive customer information system (CIS). Service connection and maintenance processes could be systemized and integrated with this CIS. Material management and staff functions such as human resource and finances may be e-enabled in
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different phases. This will not only help UPPCL combat the competition by furthering the strengths and minimising weaknesses but will enable it to retain its commercial leadership in power generation and distribution in the state.

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Dr. Geetika is presently Assistant Professor and Dy Dean Planning and Development at MN National Institute of Technology, Allahabad. She has eighteen years of experience of teaching and research and four books and 38 papers to her credit, published in refereed journals, edited books and in proceedings of national and international conferences. Two candidates have been awarded PhD degree under her supervision while three have submitted their theses and awaiting the oral examination. She is Principal Investigator of a Major Research Project financed by UGC. Her areas of interest include, Strategic Management, Organisational Behaviour and International Economics. She is life member of ISTD New Delhi and IIPA New Delhi and member AIMA, New Delhi. She has been member Executive Committee AMA and chairperson of Allahabad chapter of ISTD for 2004-05.

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Issues and Initiatives in ICT and E-governance: A Study of Transport Sector in India

Reena Sethi

ABSTRACT

Transportation is vital for economic activity. Information has found several applications of technologies. This study examines the issues of egovernance in transport section. The research revealed lack of confidence in employees in using technologies like digital signature, firewall, etc. Hence, government should accentuate change management and capacity building, besides creating conditions for strengthening ‘trust and security framework’.

Keywords: ICT, E-Governance, Transport Sector, Impact, Issues

1. Introduction

Internet has helped in increasing relationships and connectivity within the society, e.g. every person you contact through internet has access to scores of people, thus increasing relationship with people who can potentially assist you. Anyone you want to meet or contact in the world is just near to you because of the power of internet. Momentum of internet penetration in India increased from .1% in 1998 to 4.5% in 2005. The actual figure as on March, 2006 shows 50,600,000 internet users in India. Internet has three essential ingredients associated with the concept of economic globalization, i.e. international trade, foreign direct investment and capital market flows. The United States has many success stories relating to E-governance. India’s population is four times as compared to US, thereby signifying that E-governance has a bigger role in terms of reach and coverage.

2. Scope of E-governance in Transport Sector

Efficient transport plays a vital role in fostering international trade. The removal of barriers to trade in the transport sector is, therefore, an enabler of development. The transport sector is in itself an important area of economic activity. Liberalization in transport has made an important contribution to the broader thrust of globalization of trade. In future, with the enhancement of efficiency and reduction in the costs of trade through activities like E-Procurement linked to inventory control systems, there will be freer and more open markets in the trading of physical goods. ICTs and E-Governance have potential to remove barriers in the transport sector.

One of the most striking developments in international transport over the past couple of decades is the containerization of general cargo. Ports around the world are responding to this trend by investing heavily in container terminals. Ports, Shipping and Chartering agencies should integrate their activities through ICTs.
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and port connectivity systems so that economic globalization proliferates with increasing connectivity between global agencies of transport sector. With increased networking, more economic activity will percolate between various organizations in different countries.

Transport provides a catalytic role in introducing development in all areas. Most of the population in India lives in poverty and suffers grossly from inadequate access to resources. After independence in India, full accessibility to all villages with the main cities has not yet been achieved. However, it is hoped that networking and globalization will do this task earlier than the connections through road, rail or river. Transport sector is already investing large amounts in infrastructure that includes IT also. The over all spending in government sector increased to Rupees 38 billion in 2002-03 showing an increase of over 12 per cent over the previous year. A great part of capital investment in transport goes into large road projects.

A survey of 300 employees and 300 visitors of Ministry of Shipping, Road Transport and Highways has revealed benefits, issues, initiatives and thrust areas for increasing impact of ICT and E-Governance in transport sector.

3. Benefits

A summary of some benefits revealed in the survey are given below:

- E-governance has changed governance functions and processes for superior accountability and transparency.
- Organizational effectiveness has improved with the help of E-governance technologies in the form of IT and communication technologies.
- The computerized processes have saved transaction time while enabling speedy, secure and paperless clearances for a number of schemes at a single window. This potential should be fully exploited at RTOs in Department of Road Transport and Highways and at entry / exit points in the ports.
- E-governance has helped in promoting better informed and quality decision making by policy makers in the transportation sector through the provision of improved information to both the public and private sectors. Better the quality of information available, more quick are the decisions. Collaboration is crucial to decision-making process, but this aspect is yet to be fully exploited.
- E-governance has potential to provide disciplined governance. Fundamental cause for corruption is that people do not want to wait or shuttle from one office to another to get their jobs done, while they prefer to pay bribe. When things are controlled through a single window in RTOs or port establishments in an E-Governance environment, transparency automatically percolates down. Leakage in government expenditure and revenue earning can be plugged effectively.
- E-governance is resulting into borderless departments as Ministry can easily interact with its attached offices / autonomous bodies, etc., like Shipping Corporation of India, NHAI, NITHE, Directorate General of Shipping, etc.

4. Issues

With all the above beneficial impacts of ICT and E-Governance on the society also come some issues. The biggest of these issues is unequal absorption of technology. There is a ‘digital divide’ - the gap between those who have access to technology (mobile technology, computers and internet) and related services and those who do not have access to these resources. This digital divide exists at all the levels of society, e.g., the tribal minorities in India -vs- the majority population; the rural illiterate in India -vs- the urban educated; least connected North Eastern states -vs- India’s ‘most wired city’. Hyderabad; most corrupt state of Bihar in India -vs- the least corrupt state of Kerala. More than half a million Indian villages are not part of the global village and are deprived of economic freedom. Similarly, there is a divide between the knack of private and public sector. The World Bank has also observed that there is a significant divergence in the spread of globalization.
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across the world.

A review of literature as also the survey revealed that most of the organizations that implemented E-governance faced problems during the initial phase on account of following issues:

- Infrastructure issues,
- Social and cultural issues,
- Security and privacy issues,
- Intellectual property and ownership rights,
- Hardware and software issues,
- Administration issues,
- Financial issues,
- Legal and regulatory issues,
- Implementation issues,
- Re-engineering of processes and
- Outsourcing human resources due to limited availability of IT man-power.

5. Impact of E-governance policies and E-preparedness

With the Transport Ministry taking active steps in the adoption of information and communication technology for the socio-economic development of the country, G2B, G2C, G2G and G2E transactions are becoming important segments of government operations. The Ministry of Shipping, Road Transport and Highways has achieved commendable initiatives in E-Governance.

The specific impact in so far as computerization of housekeeping jobs is concerned, appears to be optimistic. As regards citizen-centric operations, E-Governance seems to be influenced by factors such as technology, organization culture, top management support and behavioral considerations. One important findings of the study is that the department must consolidate its internal activities before achieving G2C transactions. The use of computers has so far been limited to automating a range of back office functions, such as payroll accounting, while the requirement is to have networks for improved transactions. The E-Governance infrastructure will be of little use if it is applied only for sending mails and entering data.

E-preparedness of the Ministry is established in the survey. Even though the Ministry is ready for E-Governance due to expedient initiatives, yet, they have far way to go. In so far as capital investment is concerned, there is adequate provision under the tenth plan outlay for IT. However, the need is to judicially use the investment for E-Governance programmes and initiatives. A lot of investment has taken place in hardware and software, yet it was revealed in the survey that employees are not fully prepared for the change. Change management is an issue, which should be tactfully set in motion.

A series of initiatives taken by Ministry include file tracking through DMIS, pay roll computerization, parliament question software, inventory control, libsys, leave management software, etc. Above all, smart card scheme for driving licenses and registration certificates sponsored by Government of India through ‘Vahan and Sarathi’ programmes is proving beneficial Online presence is visible in many areas. However, E-Procurement and E-Tendering applications have not yet been fully operationalized. There is plenty of scope to broaden the internal benefits of computerization to business community in both port and road contracts.

Earlier, simply to rectify the minor problems, staff of the Ministry was relying upon NIC. But now, the same are being solved by them independently or with the assistance from colleagues. This is due to improved intensity of computerization and E-Governance. Some change is visible now as we find senior officers of the level of Joint Secretary and Secretary also working on computer that was unheard of a few years back. However, the picture is not absolutely exciting, as it appears to be. It was opined in the survey that very few
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officers are self-confident in sharing files, taking back ups in CDs or operating anti-virus software and the least about operating digital signatures. Taking cue from user surveys, it is opined that during next few years, 50-60% of younger population will be computer-savvy when full fruits of E-Governance will be received.

6. Recommendations

Based on analysis of opinions of respondents and experts, following suggestions are made:

i) Change Management and Capacity Building

Every major change has its history in success. However, the skills and confidence along with change management are required to counter challenges. Training and re-training is required to handle new requirements. It is important that the issue of change management is emphasized in the training programmes. E-Learning coupled with E-Leadership has an immense scope in capacity building for E-Governance.

ii) Data Base and Content Improvement

Impact of E-Governance can be visualized from the fact that today, websites of both the departments have reached a stage where the government can boast of certain achievements. Operative issue for E-Governance, i.e. the readiness of government to access to information is already there. Website of the Department of Road Transport and Highways ranks 59 and that of Department of Shipping ranks 42 as per E-Readiness report of 2003 by Department of Information Technology of Government of India. The present survey revealed that there is much scope for improvement in the content and website updation in the Departments of Ministry of Shipping, Road Transport and Highways. The website of Department of Road Transport and Highways is very popular despite the fact that many provisions are static in nature. There is considerable divergence in performance among various divisions in the context of implementation of E-Governance initiatives. Road Transport Division is ahead in the race with implementation of smart card scheme for Driving License (D/L) and Registration Certificate (R/C). While the services relating to D/L or R/C of vehicles have been brought into the domain of E-Governance, there are many services like road safety measures, pollution control, payment of vehicle challans, etc., which need to be brought into its fold. Similarly, website of Department of Shipping has rich content. The websites of both the departments show an ‘enhanced presence’ as per UN’s five stage model. In most areas, they are ‘partially interactive’. It implies from the study that the organizations should improve their E-Readiness index to avail the overall benefits of Information and Communication technology.

iii) Strengthening the Trust and Security Framework

Policy makers should understand that nothing happens without trust. Every strategy, decision and action should be related to future expectations. The survey revealed that the survey revealed 22% of public respondents did not use internet because of lack of trust. At the same time, about 32% employees were not confident in operating anti-virus programmes / firewall. None of the respondents had used digital signature/authentication/cryptography method during day-to-day work because of lack of confidence in using this technology. Digital certificate might seem difficult to non-technology savvy employees. Security consideration was also one of the reasons given by some respondents for not using the internet. Only 36% of employees perceived confidence in sharing information over LAN / WAN. These findings suggest that government organizations must strive hard to maintain security of their systems and develop trust of users in the new technologies. A leap from manual to automated system throws up many issues.
iv) Network Security

Awareness is required for maintaining privacy policies, wireless security, content security, virus control, internet security, information security, etc. Security techniques are important for appropriate security interfaces with tools like personal firewall, encryption, cyber terrorism, data recovery, computer forensic, Virtual Private Networks (VPNs) etc. The survey revealed that interest has recently moved into the transport sector to ensure protection of assets, hardware, software, data and systems documents and maintenance of data integrity in the form of consistency, accuracy, availability, appropriation and completeness, besides preparedness for disasters.

7. Concluding Remarks

E-governance offers a perfect platform for government-to-government interaction among global transport agencies in the field of logistics, repository of road data bank, issuance of documents like driving licences, E-Challans, E-Ticketing, E-Parking, monitoring of vehicles and cargo movement through GIS / GPS / information technology, etc. Data warehousing and data mining techniques can be utilized for such massive tasks. Innovative practices should be adopted by top management to explore thrust areas in E-governance, build capacity, change attitudes and re-engineer the processes and procedures to meet the new demands.

There is a need to evaluate the risks and rewards of information technologies vis-à-vis the nuts-and-bolts of implementation. Networking of all organizations under the control of transport sector, both Road Transport and Shipping is crucial, through the power of internet, broadband, wi-fi, broadcast, cable and satellite technologies and services.

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