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**E-Governance**



# E-Government in India: Costs, Benefits, Challenges & Complexities

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**Abstract**— IT revolution a world-wide phenomenon today has stirred societies and governments to embark upon IT-based social and administrative processes. As a result of this many countries throughout the world have adopted electronic means of governance of the state, which is better known as e-governance or e-government. India, as one of the pioneering countries in I.T revolution has also made great strides in e-governance. The national e-governance plan of Indian government seeks to lay the foundation and provide impetus for long term growth of e-governance with in the country. E-Governance as a national policy has the potential to benefit India's citizens exponentially and maximize the return on the government's investment in it. This report attempts to evaluate e-governance from being more than just a government website on the Internet to strategic plan to bridge the gap between the government and the electorate, especially the demographically, economically or literary ones. We begin with an introduction to e-governance with an Indian perspective followed by a discussion of the cost and challenges involved in implementation of e-governance. We then attempt to outline the benefits of e-governing the state. Finally we try to present the ground complexities with e-government i.e. the major issues associated.

**Keywords**— E-Governance: Electronic-Government, E-Government, E-Governance Costs, E-Governance Challenges, E-Governance Benefits, ICT: Information and Communication Technology

## I. INTRODUCTION

### A. The Legend : India

The ancient land of India is one of the oldest civilizations in the world with the kaleidoscopic variety and rich cultural heritage. During the last 63 years of its independence, India has grown from a large british colony with an area of 32,87,263 sq. km to its distinctiveness of being the seventh largest country in the world., supporting a population of 1.15 billion people of varied races, religions and languages providing the world trained manpower along with innovators and leaders.

To run such a vast state with such a rich, vibrant cultural heritage, a sovereign socialist democratic republic with a parliamentary system of government has been followed post-independence. The major advantage of this is that the govt of state is carried out with the cooperation and consent of the people, thus providing a method to deal with differences and conflicts. Owing to the large varied physical boundaries of the Indian subcontinent and considering the vibrant collection of people that form its citizens, our physical structure of governance though the best in principle still suffers from problem like corruption and impenetrability. It is said that, true democracy comes to a country only when no one goes hungry to bed and every citizen has equal information, basic edition, equal resources and a lot of commitment.

### B. E-Governance

In his report titled, E-Governance and Developing Countries, Michiel Backus has aptly defined e-governance as, " the application of *electronic means* in (1) the *interaction* between government and citizens and government and businesses, as well as (2) in internal *government operations* to simplify and improve democratic, government and business aspects of Governance.

The definition supports our point of discussion, but we now try to outline the objective of e-governance and other from the Indian context. The *strategic objective* of e-governance has always been to support and simplify governance for all parties - government, citizens, businesses and other agencies. The use of ICTs can help connect all these parties and support various processes and activities of governance. Hence, e-governance makes effective use of electronic means to support and stimulate good governance. Therefore the objectives of e-governance and good governance overlap significantly. Good governance is an exercise of economic, political, and administrative authority to better manage the affairs of a country at all levels, national and local. It will also be useful here to present objectives for e-democracy which refers to all processes and structures that encompass all forms of electronic interaction and communication between the

elected and the electorate. The two main objectives of *e-democracy* are:

1. To provide citizens access to information and knowledge about the political processes, services and choices available
2. To make possible the transition from passive information access to active citizen participation by following what can be called as the I2REC approach that includes informing, involving, representing, encouraging and consulting the citizen in the functioning of the government.

For the purpose of *e-government*, there is a clear distinction between the objectives for internal processes (operations) and objectives for external services which are outlined as follows:

*External strategic objectives:* The external objective of e-government is to satisfactorily fulfill the public's needs and expectations on the front-office side, by simplifying their interaction with various online services offered. The use of ICTs in government operations facilitates speedy, transparent, accountable, efficient and effective interaction with the public, citizens, business and other agencies.

*Internal strategic objectives:* In the back-office, the objective of e-government in government operations is to facilitate a speedy, transparent, accountable, efficient and effective process for performing government administration activities. Significant cost savings (per transaction) in government operations can be the consequence. Therefore, after understanding the diversity of the Indian continent, the e-governance concepts and its objectives from the Indian perspective we now evaluate e-governance in the Indian subcontinent.

## II. E-GOVERNANCE- THE COSTS AND CHALLENGES INVOLVED

Transforming proposals into practice has a big controlling aspect- the cost factor. Suggesting e-government as a expansion of our current centralized govt in order to increase its penetrability, efficiency and overcome its limitations is easy on paper but implementation in a country like India that extends from the lofty Himalayan heights to the tropical Rain Forests of the south is a giant task. With a population constituting of people from all the five human races at different social and economic levels, the introduction of e-governance everywhere, anywhere and for all is an enormous and challenging task. To support our claim we now present the results of a study carried out in India

**Table 1. Infrastructure Creation Costs for E-governance**

Cost Expenditure for case comments and timing	Actual components, plus (in thousand Euro)	Cost amount (in months) if known
Expenses end user hardware Examples: PCs, mobiles, PDAs, local printers, etc.	One laptop and over 280 clients	301512 laptops,
Expenses end user software Examples: off-the-shelf tools, client software, etc.	Windows operating system for the .	17736 applications / servers and clients
Expenses system hardware Examples: servers, networks, centralised centralised printers, etc.	33 servers, over 20 switches, wireless LAN towers in 14 places, over 30 laser storage media, printers, over 30 DMPs etc.	70944 routers, switches,
Expenses for developments and changes development, software programming, content developments such integrating new software designing new Internet/web-based facilities, etc.	Examples: In house application software development done in 4 software development centres at the Collectorate employing over as populating a database, 30 software professionals. Rs.30 lakhs with existing tools or	53208 applications software modification,
Expenses on actions of implementation surveying user requirements, pilot testing,	Examples: Development centres at the Collectorate	17736 planning, employing over 30 software professionals. evaluation, etc.
Expenses for training and technical support by organisation, hiring trainers, etc.	Examples:	45472 courses funded
Expenses for other activities/purchases	Wireless radios	35472

between Feb, 1999 and June, 2001. The efforts targeted rural population, women, physically challenged people, widows, below poverty line families, poor students in schools and colleges, Transport license seeker. The attempt was infrastructure creation in the rural and urban areas of large towns and medium cities with not more than 5 million inhabitants. The end result of the same are presented below:

The above figures clearly validate the fact that the initial implementation setup costs of e-governance projects in a developing nation like India are quite high and the government needs to be prepared to bear these costs along with the maintenance costs involved. Another evident question here again is the fact that is it actually possible to successfully implement such projects in every district, zila and parishad of our country while even after 63 years of independence we are still trying to overcome illiteracy, poverty and ignorance.

The above statistics certify that as with any other new technology or organizational concept, the introduction of e-government will face a number of challenges. Overcoming these challenges therefore would be one of the biggest tests for the government and citizens of any country planning to implement the concept. Major issues along with cost that shall and already have challenged the e-government initiative in India are:

- Lack of awareness about initiatives by the elected & trust between the elected and the electorate.
- Easy and effortless access to services by all.
- Usability of e-government websites
- Security concerns about protection of high-priority data
- resistance to change
- Lack of skills and funding at the local level
- Inadequate data protection laws
- Digital divide
- Lack of citizens' interest
- Lack of strategy and frameworks
- Altering the mindset of the government employees used to working in the manual mode.
- Build supporting infrastructures of power and all weather surface transport system to bridge the digital divide between the rural and urban India

The above are a few of the many and most common challenges that are hindering the absolute

implementation of e-government in many countries including India.

### III. BENEFITS OF E-GOVERNANCE

With E-Governance one can imagine an India where all and any kind of interaction with the government can be done through a simple mouse click 24 hr a day, 7 days a week, 365 days a year without waiting in never ending queue at government offices and without filling the govt clerk across the table to request him do his duty.

The essence of good governance is based on the premise that the laws and procedures are transparent, clearly defined & understood by those governed and the implementation is both quick and smooth. To this effect, the governance in a developing country is a challenge, because a majority of the governed (citizens) are educationally & socio-economically challenged. More so, in developing countries, where the governments are formed through democratic means, the challenge of governance is much larger as the governors themselves are at times not very clear on various rules and procedures

Like the Internet, e-government promises to deliver a number of benefits to citizens, businesses and governments. The most significant benefits of e-government for these three major beneficiaries are:

#### A. To Citizens

- Convenience of Enquiry: No more waiting in queues, half-day from jobs' E-Governance shall service you anytime, anywhere.
- More Information to Access: Using the same type of interface, one can access any kind of information, anytime, anywhere.
- More participative form of government: by encouraging online debating, voting and exchange of information

#### B. To Businesses

- More Information to Access
- Easy interaction with the concerned agencies
- Fostering economic development and helping local businesses to expand globally
- Reduced transaction cost and paperwork.

#### C. To Government

- Increased Efficiency

- Increased Esteemed
- Reducing the opportunities for corruption
- Creating services that cover as broad a spectrum of society as possible by bridging the digital divide.
- Rebuilding customer relationships by providing value added and personalized services to citizens.
- Reduced transaction costs and paperwork.
- Improved intra-departmental communication.
- Dissemination of similar services to all.
- Greater transparency into government functioning.

#### IV. E-GOVERNANCE-THE GROUND COMPLEXITIES

Every new initiative is bound to face tribulations; the same is true with e-governance absolute implementation in India. For e-governance to succeed in India 'e-readiness' for the same must first be built. This means strengthening infrastructure inadequacies, reducing the barriers to e-governance, and strengthening the drivers to E-Governance. The priority therefore is to build e-readiness in seven major areas:

- Infrastructure
- Institutions
- Laws
- Leadership and commitment
- Human capacities
- Technology
- Data systems

We now discuss a few major issues in e-government initiatives in India:

**A. Funding:** Funding is the foremost issue of e-Governance initiatives. The projects that are part of the e-governance initiatives need to be funded either through directly the Government or through the corporate sector. For the corporate sector to step into the funding activity their commercial interests needs to be ensured. Also the Government interest of Value Addition in services also needs to be taken care of while transferring the services to private sector. An effective strategy needs to be built by the government in this direction to ensure cooperation from the corporate sector in realizing absolute e-governance.

**B. Management of Change:** The delivery of Government services through the electronic media including EDI (Electronic Digital Interface), Internet and other IT based technologies would necessitate technical and legal changes in the decision and delivery making processes. These changes need not only be accepted by the Government and citizens but also be accepted by various interests groups like Employees unions. Under such conditions bringing in a change will involve altering the mindsets of the people, and a complete reengineering process for the same. This will involve training of the personnel at all levels, more so, at the lower rung of government managed organizations. There will also be a loss of vested interests and power amongst the legislature and the executive, which may lead, to resistance to change.

**C. Privacy:** First and foremost, the privacy of the citizen needs to be ensured while addressing these issues. Whenever a citizen gets into any transaction with a government agency, he shells out lot of personal information, which can be misused by the private sector. Thus, the citizen should be ensured that the information flow would pass through reliable channels and seamless network.

**D. Authentication:** Secure ways of transactions for the government services are is another major issue of concern. The identity of citizens requesting services needs to be verified before they access or use the services. Here digital signature can play an important role in delivery of such services. But the infrastructure needed to support them is very expensive and requires constant maintenance.

**E. Interoperability:** The interoperation of various state Governments, the various ministries within a state Government is a critical issue. Further how the various islands of automation will be brought together and built into one is another key issue of e-Governance.

**F. Delivery of services:** Since the penetration of PCs and Internet is still very low in many parts of the country, some framework needs to be worked out for delivery of the e-Services that would be Citizens expectations from e-government in India –the demand side Government's responsibilities to e-government-the supply side accessible to the poorest of the poor.

**G. Standardization:** Defining the standards for the various Government services is another issue that needs to be addressed. The standards need to be worked out not only for the technologies involved but also for issues like naming of websites to creating E-Mail addresses.

**H. Technology Issues:** A number of organizations, both in the Center and the States, have taken commendable initiatives to develop hardware and software platforms to address the challenges offered by e-Governance. At the central level in particular, the C-DAC, CMC and a number of others are noteworthy. The e-Governance initiative would have to address these Technology Issues/Objectives by identifying the appropriate hardware platforms and software application packages for cost-effective delivery of public services. This knowledge repository should be widely available through appropriate Demo-Mechanisms. Offering a basket of these models to the State departments, both in the Center and the State, could be suitably customized as per location and work specific requirements.

**I. Use of local languages:** The access of information must be permitted in the language most comfortable to the public user, generally the local language. There do already exist technologies such as GIST and language software by which transliteration from English into other languages can be made.

## V. CONCLUSIONS

E-Government has been widely accepted and growing trend worldwide. Developed countries like America have been the pioneers in such initiatives and have successfully implemented many e-government services. Partial implementations of the same have even been done in developing countries like India, we call such e-government projects partial as they have been implemented on a state-level depending on the availability of resources and the requirements. A few of the successful e-government projects in India are listed in the Table III.

The above table enlists a few of the successful projects implemented in different parts of the country by the government. Each of these and many other such projects showcases an attempt by the various state governments to implement the use of information and communication technology for development, a goal that includes poverty reduction and improved access to government services. This paper by no attempt is a critique of the government's efforts in the e-government's initiative to bridge the gap between the government and the citizen. Instead this paper attempts to highlight the issues involved, the expectations made and the complexities involved in successful implementation of such projects.

From the above discussion we conclude that a long term and a short-term strategy for E-Governance implementation is the need of the hour. For successful implementation of any E-Governance plan Standards, Infrastructure, Legislations, Strategy all needs to be in place. It also requires establishment of various institutions under the Ministry of Information Technology and a well-established communication network between the state governments and the ministry members. Further E-Governance requires a Global Vision and local implementation. And above all it requires e-readiness in the minds of its citizens and the Government employees.

The quality of e-governance can be assessed on different attributes such as transparency, reduced corruption, fairness of treatment, quality of feedback and level of accountability.

**Table III. E-government Projects in India**

Project Name	State	Description
Bhoomi	Karnataka	Originated in the mid-nineties in Karnataka for reforms in land administration. System provides access to farmers via kiosks located at taluk (part of district) headquarters where for a nominal sum farmers may obtain certification of their land holding and cropping, as also submit applications for mutation.
CARD	Andhra Pradesh	Another land records project.
Gyandoot	Dhar district, Madhya Pradesh	A project to directly provide e-government services to citizens in the relatively poor to bridge the digital divide by providing computing services to rural citizens and also to generate employment for youth who were to man the kiosks as entrepreneurs
SARI The Sari (Sustainable Access Rural India)	Madurai district of the state of Tamilnadu	To link up village kiosks using a wireless technology. The kiosks would provide E-government services to rural citizens. The stated objectives were to improve the quality of life among the rural poor by creating employment opportunities with the help of ICTs.

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# Role of Information & Communication Technology in E-Governance

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**ABSTRACT**— E-Governance offers better services and has improved the performance of both public and private sectors of the country or in fact the whole world. The concept of e-Government along with e-Governance is also gaining popularity thereby making the process of public administration more efficient. But all this would not have been possible without the backup support of Information and Communication Technology (ICT). E-governance requires proper infrastructural support, telecommunication, solution architecture and technology selection, content development and management, information dissemination, etc and all this is provided by the ICT. Therefore, information society and communication technology play key roles in the process of E-governance. This paper discusses various issues related to the technological requirements for the successful implementation of e-Governance. Some of the services provided by e-Governance to the general public or the country at large have been considered and various technology trends in this respect have been discussed. The various concepts like reengineering, physical infrastructure, bioinformatics, web enabled services, programming paradigms, security, etc plays a major role in management of e-Governance. Only due to these technological enhancements, information dissemination, administration and public services have become more efficient. This paper also throws some light on what the Indian government is planning in this respect. The National e-Governance Plan of Indian government emphasized on better accessibility of government services to the common man and various government departments. This process has brought the local, state and central government departments more closer and the system of information sharing has been improved. Therefore, ICT has removed various barriers including geographical barriers, information exchange, technological compatibility problems, etc.

**KEYWORDS**—e-Governance: Electronic Governance, Governance, ICT: Information and Communication Technologies, BPR: Business Process Reengineering

## I. INTRODUCTION

The Information and Communication Technology (ICT) is effectively showing new dimensions to old institutional setups. With advancement of Internet services it has become easier to manage the customers and other services like e-Banking, EDI, e-Business, etc. Not only this, the field of Information and Communication Technology (ICT) has also enabled the government of various countries to serve their citizens in better and efficient manner, thereby introducing the concept of e-Governance. The main objective of e-Governance is delivering or exchanging the information, enhancing the business transactions, giving better services to the citizens and handle the various interactions within and across the government and business organizations. In one manner, it is reducing the communication and transaction cost and help in economic growth of the company. e-Governance has enhanced the information access and delivery of government and other services for the benefit of the citizens, business enterprises and government functionaries only with the back support of information and communication technology. IT is one of the tools for implementing the e-governance strategies effectively and efficiently.

ICT is playing a major role in transforming the old cumbersome system into new technology savvy network. ICT has opened new and easier doors of communication between the citizens and the government thereby improving the social and political arrangement of societies. The means of delivering and dissemination of information, transactions, inter-department interaction, collaborations and providing required support for back-office processes has been made much more easier by ICT.

ICT can be one of the key enablers of citizen centric service delivery mechanism to create easily accessible interfaces such as one-stop, automated service delivery outlets or common public service centers, devoid of harassment or corruption, minimizing waiting time and inconvenience to the public. ICTs can be used to reduce the paper work, improve efficiency, transparency, accountability and expedite the decision making process.

## II. ADVANTAGES OF E-GOVERNANCE

According to Sudhir Narang, vice-president, government and service provider business, Cisco Systems, India & SAARC, "Almost every state has an IT policy in place with the aim of evolving itself from being an IT-aware to an IT-enabled government. State governments are fast recognizing the benefits of an IT-enabled working environment. For governments, the more overt motivation to shift from manual processes to IT-enabled processes may be increased efficiency in administration and service delivery, but this shift can be conceived as a worthwhile investment with potential for returns. Some of the major advantages of e-Governance are:

- 1) Better communication among various government departments inside the country as well as across the world.
- 2) Creating more democratic environment as the system is transparent and involves the citizens to much extent.
- 3) ICT has given a reliable and secure system where the interactions and transactions can be done easily.
- 4) As ICT has reduced the overhead cost of communication, transportation, business transaction, etc leading to the economic growth of the country.
- 5) ICT is motivating the government employees to learn new technology driven administration methods thereby reducing their workload and enabling efficient handling of services.
- 6) The citizens can have 24 X 7 hours access to the information whenever and wherever required.
- 7) Improved customer satisfaction ratio that helps in building the trust of citizens on the government department and their policies.
- 8) ICT has enabled the citizens to take the advantage of online services such as all centers, e-Banking, EDI, etc.
- 9) ICT is also generating new jobs for the people leading to improvement in employment ratio.
- 10) The quality of government products and services has been improved due to the emergence of the concept of e-Governance.

## III. IMPACT OF E-GOVERNANCE IN INDIA

more The key advantage for initiating e-governance

projects in India is the strong IT domain of India. The Economic Times recently reported that the government in India is emerging as the fourth largest vertical spender on information technology after the telecom, manufacturing and banking and finance industries. Many Indian states have IT policies that detail the roadmap to be used for better governance with the help of IT. Thanks to e-savvy Chief Ministers like Chandrababu Naidu and S.M. Krishna, e-governance has become the buzzword for political success and the key enabler to facilitate reforms

Manoj Kunkalienkar, executive director, ICICI Infotech says, "As far as e-governance projects are concerned, the government is gradually changing its role from an 'implementer' to a 'facilitator and regulator'. It will encourage private sector participation in e-governance projects, so more projects in e-governance based upon the public private participation model should come about in the near future. " No doubt, e-Governance is a big challenge and a far big opportunity to bring services to all citizens but it is now moving towards reality for Indian citizens also.

There are various issues like infrastructural requirements, security and piracy issues, interoperability issues, social issues, etc that have to be taken care of for successful implementation of e-Governance projects. A reconceptualization of government services is mandatory if we want it to be socially accepted without any reservations by Indian citizens. A relevant issue will be to have all the citizens well aware and acquainted of the facilities offered by the e-Government and for this appropriate marketing actions and education for less skilled people is required especially in rural areas. Hence, e-Governance is an evolutionary phenomenon, and requires a change in the mindset of one and all – citizens, executives and the government.

Major challenges before Indian government for implementation of e-Governance projects are :

- 1) Addressing security concerns in terms of data privacy and data loss prevention
- 2) Awareness of the schemes by general public especially citizens living in rural areas
- 3) Successful Interdepartmental collaboration
- 4) Reengineering of the government processes and policies
- 5) Well developed infrastructure
- 6) Tendency to resist the change in work cultural by the employees

- 7) Higher investments for setting up the required infrastructure and as well as generating the skilled labor.
- 8) Barriers to awareness, adoption and diffusion of available e-government services
- 9) Studies that map the progression of e-government from initiation to maturity
- 10) Challenges to integration and implementation of newly joined-up e-governance service
- 11) Hiring the right mix of personnel for sustaining the project.
- 12) Ensuring stakeholder acceptance and participation towards the successful implementation of e-Governance
- 13) Capacity building – As more and more projects are implemented, government needs to build qualified pool of resources to manage the system.
- 14) Issue of availability and affordability of broadband Internet connections
- 15) Business Process Reengineering (BPR) has to be done from the ground level.

#### IV. E-GOVERNANCE PROJECT 2010-11

According to Sudhir Narang, Vice-President, government and service provider business, Cisco Systems, India & SAARC, “Almost every state has an IT policy in place with the aim of evolving itself from being an IT-aware to an IT-enabled government. State governments are fast recognizing the benefits of an IT-enabled working environment.”

Some of the government initiated processes are as follows:

##### 1) I-T Department, UIDAI Agree ‘IN-PRINCIPLE’ To Roll Out PAN CARDS –

This project is headed by the Nandan Nilekani and finance ministry. The Income Tax department and Unique Identification authority have agreed “in-principle” to come together for rolling out PAN cards with unique 16 digit Aadhaar number. The Aadhaar, earlier known as Unique Identification Number, will be issued after collection of prints of all ten fingers, iris and face.

##### 2) e-Book keeping Project in Bibinagar Mandal, Andhra Pradesh –

The Society of Elimination of Rural Poverty (SERP),

an autonomous society of the Department of Rural Development, Government of Andhra Pradesh, has initiated this ICT project for Self Help Groups (SGH). The project aims at equipping the SHGs with a portable computing device, which could enable them in maintaining records of the financial transactions in a more simple and efficient manner. This project is a part of Indira Kranti Pratham (IKP) initiative taken by the Government of Andhra Pradesh. This is the major programme of the State Government which provides ownership rights on lands to the landless poor.

##### 3) MCA21 e-Governance Project –

MCA 21 Project as a Mission Mode Project under the National e-Governance Plan has been drawn. MCA 21 envisages electronic filing of compliance related documents in an inter-active paperless mode, through a dedicated portal on the Internet. The Project will facilitate the companies in their compliance of the provisions of the Companies Act, and also empower the stakeholders by providing them access to the corporate data in a convenient, user-friendly mode.

##### 4) E-Governance in PDS (Public Distribution System) –

E-Services project, under the National E-Governance Action Plan of the Department of Information Technology in the Government of India, is being implemented by this department with an assistance of Rs.4.92 Crore for automating PDS activities and providing electronic services to citizens. Following are highlights of the project:

Computer hardware, ie. Desktop computers and printers, have been supplied to all offices of Deputy Commissioners, Assistant Commissioners in Chennai and all District and Taluk Supply Offices across the state and all district taluk and district supply offices have been linked through Tamil Nadu State Wide Area Network (TNSWAN). Chennai city offices have been linked through broadband connections. Inter-office correspondence as well as correspondence with complainants has been largely switched to email

An online service has been launched in January 2009 enabling any citizen to login to <http://www.consumer.tn.gov.in/commodities.htm>, register their email address for a particular fair price shop in any district and get details of allotments of essential commodities for the current month.

##### 5) E-Panchayat –

“E-panchayat is an ongoing project and every year fresh targets are being made to strengthen the processes and

identify loopholes and pursue subsequent rectification,” says DK Jain, joint secretary, Ministry of Panchayati Raj. The software e-Panchayat comprises decentralized database and planning, budgeting and accounting, implementation and monitoring of schemes, citizen-centric services, and unique codes to panchayats. In the Cabinet meeting held on May 18, 2006, e-Governance in Panchayati Raj Institutions (e-PRI) had been approved as a Mission Mode Project (MMP) under the National e-Governance Plan (NeGP).

The e-panchayat initiatives would focus on the identification of information as well as services needs of stakeholders, process re-engineering and generation of Detailed Project Report (DPR). The e-Panchayat software has thirty major modules pertaining to different aspects of rural administration. The main focus is to provide services like birth certificate, caste certificate, tribe certificate, death certificate, applying for old age pension, widow pension, ration card, register land/property, registration with state employment exchange, registering grievances with Women Commission, check land records and check agriculture process online. The e-Panchayat software would be extensively used by both states and the union ministries for a whole range of activities in order to participate in the District Planning process. The software would also provide the panchayats linkages for speedy and transparent transfer of funds and help them automate their own functioning.

The e-governance initiatives of 1,215 local self government institutions in Kerala including 999 Grama Panchayats, 154 Block Panchayats and fourteen District Panchayats is being driven through a dedicated project named Information Kerala Mission (IKM). As part of this project, seven major systems including Plan formulation, monitoring and implementation (Sulekha), citizen services like civil registration and certificate issue (Sevana), revenue, finance and accounts (Saankhya), public works and purchase, administration and establishment and local body institutions covering Panchayat Committee, Standing Committees, Grama Sabhas, etc, were extensively studied, and applications developed. Taking into account aspects of scalability, web technology has been used in most of the applications and products along with local language interfaces.

In West Bengal, e-panchayat initiatives focus on four major areas such as improving financial management, physical monitoring of important programs using mobile technology, use of geo-referenced maps for people centered decentralized planning, common service centers for decentralized services. In terms of improving financial management, the state government has revamped the roles for introducing the double entry system of accounting in the panchayats. The software

IFMS (Integrated Fund Management System) has been developed for accounts keeping of the Zila Parishads and the Panchayat Samitis. GPMS (Gram Panchayat Management System) software has been developed for both accounts keeping and supporting the generation of birth and death certificates, trade licenses, management of tax, etc. Three hundred and thirty-one out of 333 Panchayat Samitis (PS) have been using IFMS as on January 2010. This has been done in order to make the accounts cashless in nature. This has improved the system of maintaining records and retrieving the data as and when required. In West Bengal, real-time information on the deployment of labor and payment of wages are being captured using mobile technology.

## V. FUTURE OF E-GOVERNANCE IN INDIA

With the advent of ICT, many governments have taken steps to use this as a tool to modernize their workings and as a result, it has impacted both the service provider i.e. government and the recipient (the citizen). The rise of e-government has been one of the most striking developments of the web. As the Internet supported digital communities evolve, and assuming that they do indeed grow to incorporate individuals around the country (and globe), they present the national governments with a number of challenges and opportunities. Govt. leaders in India are starting to realize that e-governance is the key to drive today's economy with an increased participation from citizens. Providing services online is no longer going to remain optional for local and central government as demand for providing services @ internet speed has been coming from the citizens.

Access to accurate and timely information is a critical pre-requisite for national development. Policymakers, planners, researchers, investors, etc. depend on reliable information for planning and decisionmaking. The mission of the ICT department should be to develop policies that will help integrate communication technologies and public information systems and also harness the full potential of resources within the sector for effective communications. There should be Citizen-centric e-government that calls for an e-government that focuses on the citizen needs (for public service delivery) and aspirations (for active participation in decision-making processes).

As e-governance uses ICT, as the dominant tool, it facilitates efficiency and transparency in the democracy thus opening new avenues for social and economic development and attracts investment and assistance.

## VI. CONCLUSION

After the above discussion we can say that the objectives of achieving e-governance and transforming India goes far beyond mere computerization of stand alone back office operations. It means , to fundamentally change as to how the government operates, and this implies a new set of responsibilities for the executive and politicians. This demands for basic change in the work culture that maintains, processes and retrieve the information through an electronic system and use that information for decision making. The effective use of IT services in government administration can greatly enhance existing efficiencies, drive down communication costs, and increase transparency in the functioning of various departments. As of now, e-governance projects are being run only in certain departments. This approach will gradually be extended to all departments eventually, leveraging the power of IT to streamline administrative functions and increase transparency.

The government in India has been continuously endeavoring to provide citizen services in a better manner. There have been several successful initiatives and many noteworthy projects have been undertaken in various states of India. The present work tries to study the various e-government projects across India with a view to explore the natures of implementations of these projects, benefits imparted from them to citizens. Some of the successful initiatives are: Gyandoot, e-seva, SETU and SUDA, etc. Internet services like Internet-enabled electronic payments, downloading of forms and government orders and filing of applications on the Web are also offered. For India, the rise of Information and Communication Technology is an opportunity to overcome historical disabilities and to become the master of one's own national destiny.

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# Factors Influencing of E-government In India: A Review

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**ABSTRACT**– India is developing country. It seems that the rate of adoption of e-Government has globally fallen below expectations although some countries are doing better than others. Clearly, a better understanding of why and how citizens use government websites and their general dispositions towards e-Government is an important research issue. This paper initiates discussion of this issue by proposing a conceptual model of e-Government adoption that places users as the focal point for e-Government adoption strategy.

## I. INTRODUCTION

E-government is a relatively new area of study in the Information Systems (IS) field that is concerned with use of ICT by the government agencies to electronically deliver its services (The World Bank Definition). According to Carter and Belanger (2005) the relationship of government with recipients of its electronic services is characterized as; government to citizen (G2C), government to business (G2B); government to employees (G2E); government to government (G2G). In a comprehensive review of the e-government studies within above mentioned relationships, Titah and Barki (2006) concluded that the most e-government studies fall under five distinct categories that explore the influence of; a) managerial practices, b) individual and organizational characteristics, c) IT characteristics, d) measurement of e-government, e) government subcultures; on e-government adoption. In a G2C context, the focus of this paper is on influence of individual and organizational characteristics on e-government adoption.

There are number of empirical studies undertaken in different countries to study e-government adoption: for example, Singapore (Fu et al. 2006); The Netherlands (Horst et al. 2007); Turkey (Akman et al. 2005); USA (Carter and Belanger 2005). The early adoption of ICT and higher levels of awareness regarding use of technology has aided e-government research to prosper in the developed nations (Sheridan and Riley 2006). On the other hand, citizens in developing countries are far behind in adoption of ICT (Nikam et al. 2004). In India, for instance, e-government research is in its early stages (Gupta and Jana 2003) and a country with huge population can hardly afford to be left behind in harnessing the benefits of implementing

e-government (Bhatnagar 2002). Despite India's economic prosperity and emerging influence in the development of Information Technology (IT) sector in south-east Asia (Bajwa 2003), there are limited studies that have addressed adoption of e-government services in India. To the best of our knowledge, only one empirical study partially discusses the factors of e-government adoption in India (Dossani et al. 2005) and a few case studies that illustrate the merits of implementing e-government services (e.g. Bhatnagar 2002; Cecchini and Scott 2003; Rao 2004a). These studies are conceptual, descriptive and exploratory in nature and fail to provide relevant facts regarding the current state of e-government in India. An attempt is made to identify gaps in the literature that would have implications for future research in a developing country such as India and provide better understanding of citizen beliefs and organizational characteristics of governments (local and federal) that influence adoption of ICT technologies and electronic services by citizens of India.

This paper will begin with conceptual definition of e-government; analyze the individual and organizational characteristics of adoption; and critical assessment of empirical studies in the literature.

Further more, a critical assessment of the factors influencing e-government adoption by citizens will be followed by discussion on e-government adoption studies focusing India.

## II. DEFINITION OF E-GOVERNMENT

Moon and Norris (2005) provides a simple definition that e-government is perceived as “means of delivering government information and service” . According to the World Bank “E-Government refers to the 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” (The World Bank Definition). E-government is the most frequently cited term in comparison to e-governance, online government, one-stop government and digital government (Andersen and Henriksen 2006). Riley (2003) refers to ‘government’ as a superstructure that deals with decisions, rules, implementation and outputs of its policies; whereas ‘governance’ refers to

functioning based on processes, goals, performance, coordination and outcomes.

The extant literature on public administration offers various conceptual definitions of both the terms, however Sheridan and Riley (2006) makes an interesting remark that e-governance and e-government are often used interchangeably and clarifies the distinction by stating that e-governance is based on four processes; namely electronic consultation, electronic controllership, electronic engagement and networked societal guidance; whereas, e-government refers to the structure that is responsible for electronic service delivery, electronic workflow, electronic voting and electronic productivity. Saxena (2005) argues that e-governance refers to the 'outcomes' as a result of 'effects produced' by public administration, whereas, e-government refers to the 'outputs' as a result of 'efforts expended' by the public administration; and mentions that e-government is perceived to be a sub-set of e-governance. In an attempt to provide a synthesized definition of e-government from extant literature, Yildiz (2007) mentions that e-government refers to the use of ICTs by public administration to create a networked structure for; interconnectivity, service delivery, efficiency, effectiveness, transparency, and accountability.

### III. E-GOVERNMENT AND ITS BENEFITS

"E-Government refers to the delivery of [government] information and services online through the Internet or other digital means" (Muir and Oppenheim, 2002). It is about delivering improved services to citizens, businesses, and other members of the society through drastically changing the way governments manage information (Accenture, 2002). However, the e-Government challenge is not a technological one. Rather, the challenge is to use technologies to improve the capacities of government institutions, while improving the quality of life of citizens by redefining the relationship between citizens and their government (Gautrin, 2004). Initially, e-Government may seem like another option for communication with citizens. But in the face of rising demands from demographic, economic, social, and global trends, e-Government no longer appears to be a matter of choice, but a necessity for any country wishing to enter the 21st century as a competitive nation in the world arena. Governments have been viewed as complex, mammoth bureaucratic establishments with a set of information silos that erect barriers to the access of information and make the provision of services cumbersome and frustrating. With e-Government, the quality of services provided to citizens and businesses can be improved

significantly while attaining greater efficiency for all participants. The provision of 24/7 services can improve the level of satisfaction among citizens and enhance their acceptance of the public sector (Stiftung, 2002). E-Government can result in significant cost savings to governments and citizens alike. These potential huge savings are dependent on how quickly adoption rates increase (Eggers, 2004). The services offered by e-Government are categorised into three phases: **publishing, interacting, and transacting**. Government websites are primarily being used to obtain information; to date limited progress has been made in interacting with citizens and online business transactions (Accenture, 2004).

Previous studies have emphasised website navigability and aesthetics (Reichheld et al., 2000), personalisation and customisation (Thorbjornsen et al., 2002), customer loyalty programs (Sharp and Sharp, 1997), promotions (Kendrick, 1998), and permission marketing (Seth, 1999) as key strategies for attracting customers to frequently visit a website. The results of these studies can be effectively used in building government websites to increase the adoption of e-Government. So far two models have been proposed in the literature that address e-Government adoption. Warkentin et al. (2002) propose a conceptual model with citizen trust as the underlying catalyst for e-Government adoption. Gilbert and Balestrini (2004) propose and test a model that combines attitude-based and service quality-based approaches. Additionally, a number of frameworks based on the Technology Acceptance Model and the Theory of Reasoned Action have been proposed to explain the consumer adoption of Internet. These frameworks relate adoption to innovation and behaviour. The literature on consumer adoption of e-Government seems to be, at best, fragmented; little effort has been made to develop an integrative framework that identifies the appropriate nature of relationships among key drivers of adoption. The objective of this paper is to propose a conceptual model of e-Government adoption using the vast marketing and information systems literature on the adoption of the Internet by individuals. Given the parallels of Internet adoption in the private corporate sector to e-Government adoption, such an approach could enhance our insights into the key drivers of e-Government adoption.

In the business world, the Internet has changed the way that marketers foster relationships with their customers and also the way customers participate in the marketing process. Wind *et al.* (2002) observe that the Internet makes it possible for the customer, not the technology or the company, to be at the centre of all marketing and business strategy. Moreover, Wind

and Rangaswamy (2001) argue that a customer-centric online marketing strategy goes well beyond providing a functional and aesthetically pleasing website and personalised products, to fully engaging individual customers in all facets of marketing activities. The digital marketplace is infinitely re-configurable to accommodate such an approach. Engaging customers in the marketing process from product design to pricing, distribution, and communication is crucial to building strong, loyal, and profitable customer relationships that could ultimately result in competitive advantage for the firm. This concept of user involvement is also used effectively by the Indian government to promote e-Government. The Indian government site continuously evolves based on regular feedback from its users.

Instead of visiting a department at a particular location or calling the government personnel at a particular time specified by the government, citizens can choose to receive these services at the time and place of their choice. The accessibility of government services also increases since, despite government's mammoth infrastructure, there are always a limited number of personnel interacting directly with the citizens and waiting times, even on the phone, can be long. The electronic delivery of government services, especially the availability of different forms and the option of electronically submitting them, provides a considerable saving of time and money for individuals. Technology now makes it possible to personalise a website to a point where delivery of services could be tailored to meet the specific needs of an individual, thereby increasing the satisfaction of citizens from government services (Gilber and Balestrini, 2004). The adoption and usage of online government services has a special significance for developing countries. Unlike developed countries, the governments of developing countries have an incessant shortage of resources. They are always short of skilled personnel and facilities to provide adequate services to their citizens. The concept of information and service provision by telephone is non-existent in most of the developing countries. A personal visit to the department and face-to-face interaction with government personnel is mandatory to receive any type of service. Getting a form from a government department, so conveniently available online in a number of developed countries and taken for granted, costs citizens of developing countries significant time, effort, money, and frustration. The online delivery of government services could, therefore, tremendously increase accessibility and bring significant time and cost savings to citizens in developing countries. The element of transparency built in the online channel could also alleviate corruption, a serious problem in a number of developing countries. Therefore, e-Government could virtually revolutionise

the provision of government services in developing countries. Access to the Internet by citizens is a serious issue but it could be dealt with by providing public access terminals.

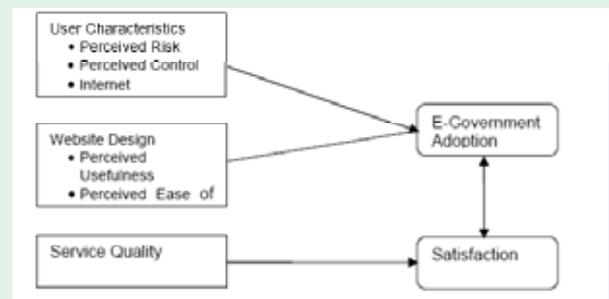


Figure 1: Conceptual Model of E-Government Adoption

#### IV. CRITICAL ASSESSMENT OF EMPIRICAL STUDIES ON EGOVERNMENT ADOPTION

Empirical suggestions of some e-government studies often differ with findings in the literature. Consequently, lack of generalizability is frequently cited as one of the limitations in some empirical studies (Horst et al. 2007; Fu et al. 2006). Deursen et al. (2006) makes an interesting observation; despite similarities in Dutch and Scandinavian culture, welfare state, and political system; the usage of e-government vastly differs in these countries. The time span to undertake comparative empirical research is considerably long and in this regard, Moon and Norris (2005) suggests that longitudinal studies of more than two years could provide more clarity in the results. Critical assessment of studies serve multitude of purposes. It highlights shortcomings of theoretical framework for research; provides opportunity to compare studies, methodologies, research findings from the literature; and helps identify gap in the literature for future research. In the following sub-sections this paper does critical assessment with a focus on: selection criterion of studies; research methodology; individual, demographic and non-demographic characteristics of citizens. Following this section, the emphasis of critical assessment would be on studies related to adoption of e-government services by citizens in India.

##### 4.1 Selection Criterion of studies for assessment

The basic premise of considering the selection criterion is to include arguments from empirical research and conceptual studies for a balanced assessment. Occasionally empirical research results have contradicted with the established findings in the extant literature, for example, in relation to the influence

of the following factors on adoption of e-government service; 'perceived ease of use' (Gilbert et al. 2004); 'perceived usefulness' (Horst et al. 2007); gender (Akman et al. 2005). This considers a selection criterion to include a mix of theoretical, conceptual and empirical studies that enhances the need for sound arguments for assessment. Based on the selection criterion outlined by Grabner-Krauter and Kaluscha (2002) this paper considers modifying few conditions to include those studies that provide valuable insight into the usage intention of e-government services. The criterion for selection of research studies is subjective in nature and includes those studies that have considered: 1) focus on government-to-citizen electronic services adoption; 2) primary data collection techniques directly from citizens; 3) case study approach; 4) quantitative analysis; 5) qualitative analysis; 6) qualitative and quantitative analysis; 7) theory guided research leading to empirical results; 8) conceptual framework based on established theories in the literature; 9) conceptual models of e-government development.

#### 4.2 Assessment of research methodology

Some empirical studies have considered quantitative analysis (Dimitrova and Chen 2006; Dossani et al. 2005; etc.) and suggest that smaller sample size is considered as a major limitation in the research (Carter and Belanger 2005; Horst et al. 2007). Some studies have considered case studies based on qualitative analysis (Choudrie et al. 2005; Pilling and Boeltzig 2007; etc). Some case studies consider comparison between two or more e-government initiatives for citizen (Choudrie et al. 2005; Pilling et al. 2007) and some considered non-comparative approach to highlight the success of individual e-government initiatives (Bhatnagar 2003a; Cecchini and Scott 2003; Saxena 2005). Only one study identified by this paper has considered quantitative and qualitative analysis for their research and realized that "data triangulation ...integrated new ideas for quantifying qualitative data for use in quality assessment" (Barnes and Vidgen 2006, p. 776).

This paper found that quantitative studies encounter limitations in their research with respect to the size of sample (Carter and Belanger 2005); selection of appropriate statistical tool (Horst et al. 2007); lack of internal validity (Barnes and Vidgen 2006); lack of external validity (Fu et al. 2006); and lack of representative sample (Akman et al. 2005). Also found were the limitations of qualitative studies, such as; subjective nature of analysis (Gupta and Jana 2003); credibility of analytical techniques (Barnes and Vidgen 2006); generalizability of results (Fu et al. 2006); and lack of proportionate representative sample (Choudrie

et al. 2005). The limitations of these studies improve our understanding of the complexities involved in the selection of research methodology and collection of primary data.

#### 4.3 Assessment of individual characteristics of citizens

In a G2C context, various studies have investigated individual characteristics that affect attributes of e-government, such as; quality of website (Barnes and Vidgen 2006), access to e-government (Choudrie et al. 2005; Gilbert et al. 2004; Pilling and Boeltzig 2007), measurement and assessment of benefits (Gupta and Jana 2003), infrastructure (Dossani et al. 2005); intention to use e-government (Carter and Belanger 2005; Horst et al. 2007; Schaupp and Carter 2005; Warkentin et al. 2002). The results from these studies are overwhelming and confusing to an extent that conceptual clarity is required to investigate holistic view of e-government adoption. In the extant literature of technology adoption, perceived usefulness (PU) and perceived ease of use (PEOU) have been accepted as the dominant beliefs that affect intention/usage of technology and e-government (Warkentin et al. 2002). Horst et al. (2007) examined the determinant factors of adoption of e-government services in The Netherlands and found that perceived usefulness of e-government services has no direct influence on intention to adopt e-government. Similarly, they also found that 'perceived behavioral control' (PBC) did not influence intention to adopt e-government, which is one of the major constructs of a model based on Theory of Planned behavior (TPB). Horst et al. (2007) suggest that smaller size of sample may have influenced the results and conclude that there is a need to substantiate their findings in another research.

Gilbert et al. (2004) supports the findings of Horst et al. (2007) and indicates that perceived usefulness and perceived ease of use are insignificant in their ability to influence adoption of e-government services, which is in contrast to the findings commonly accepted in the literature. Their research emphasizes on identifying the factors important in evaluating the use of e-government service rather than measuring the perceptions regarding the use of service. Drawing on Higgins and Ferguson's (1991) study, Gilbert et al. (2004) suggests that the functional aspects of the service should be clearly distinguished from the technical aspect of the service. Their implicit assumption is that the "consumers find it difficult to separate how the service is being delivered (functional) from what is delivered (technical)" (p.288). They conclude that trust and financial security are important barriers to adoption in comparison to four other barriers such as experience, information quality,

low stress and visual appeal. Out of nine factors identified concerning barriers of adoption, this study doesn't specify 'most' significant and 'least' significant factors in their analysis.

Two studies in our review (Barnes and Vidgen 2006; and Gilbert et al. 2004) have differing opinions regarding the measurement of user's perception. In a study that measures users perception regarding quality of Inland Revenue website of the UK government, Barnes and Vidgen (2006) used e-Qual 4.0 instrument to distinguish the interactive users from the non-interactive users on dimensions of information, usability, design, trust and empathy respectively. Information was rated with the highest score and empathy received the least score by both the type of users. This study suggests that usability and inability to communicate with the organization (empathy factor) affected the perceptions of interactive users. Barnes and Vidgen (2007) indicate that perception of interactive and non-interactive users concerning factors (e.g. information and empathy) are important to both of them, whereas the significance of factors (design, usability and trust) is subjective in nature for both the type of users.

Emphasis of this study is on perception of both types of users towards the quality of Inland Revenue website of the UK government. In contrast, Gilbert et al. (2004) stresses on identifying the factors without measuring the perception. They argue that it is important to investigate the service quality attributes (e.g. reliability, control, enjoyment) in a comparative sense (for example; between traditional service and online service) rather than focusing only on technology (e.g. online service).

#### 4.4 Assessment of demographic and non-demographic characteristics of citizens

The moderating role of demographic characteristics of individuals such as age, experience, gender, education and voluntariness of use of technology has been explored in the B2C e-commerce (Venkatesh et al. 2003). The effectiveness of these characteristics in e-government adoption is yet to be substantiated theoretically and empirically. In an attempt to explore the possibility of gender difference in adoption of e-government services, a study in Turkey found that gender differences were huge in terms of "perceived acceptance of Internet and e-government" (Akman et al. 2005, p. 251) and concluded that gender gap existed in accessing the Internet and e-government. According to Akman et al. (2005) these findings are in contrast to the study of Levy (2002) in the US that suggested "disparity in Internet usage between men and women has largely disappeared" (Akman et al. 2005, p.251).

Drawing inference from the study of Cakir and Cagiltay (2002), their study suggested one possible reason for this difference could be due to 'cultural tendencies' that lead to adoption of different online communication styles by men and women.

The research of Pilling and Boeltzig (2007), takes a different approach towards significance of individual characteristics of adopters and suggests that proponents of diffusion of innovation theory focus more on the "individual characteristics of the adopters (socioeconomic characteristics, personality traits, and communication behavior), holding the individual responsible for his/her problems" (p.36). They argue that focus should be on 'systematic barriers' to the Internet and e-government, such as; unequal Internet access; unequal access to e-government; problems with website accessibility and usability; that "prevent people from accessing and eventually adopting technology such as the Internet and e-government" (p.36). In a comprehensive review and comparison of e-government initiatives in the US and UK, their study suggests; creating learning environment, improving

## V. OPERATIONALISATION OF CONSTRUCTS

The objective of this paper was to propose a centric-centric conceptual model of e-Government adoption. This study provides an understanding of issues involved in e-Government adoption and lays groundwork for empirical studies. However, operationalisation of constructs and identification of measures is the first step towards empirical studies. Therefore, the literature was thoroughly examined to discern specific measures for the constructs proposed in the conceptual model. The constructs proposed in the model, along with underlying measures culled from various studies in the literature, are summarised in Table 1.

## VI. CONCLUSION

The delivery of information and services by the government online through the Internet or other digital means is referred to as e-Government. Governments all over the world, especially those in the developed countries, have been making significant strides in making their services and information available to the public through the Internet. However, the success of e-Government efforts depends, to a great extent; on how well the targeted users for such services, citizens in general, make use of them. The issue of e-Government adoption, therefore, warrants a significant research. The two models and various frameworks proposed in the literature that address e-Government

**Table 1.** Measures of the constructs

Construct	Author	Measures
User Characteristics	Fires <i>et al.</i> (2004).	Financial risk, performance risk, psychological risk, social risk,
Perceived Risk	Ueltschy <i>et al.</i> (2004)	convenience risk, and overall risk
	Miyazaki and Fernandez (2001)	Privacy concerns and system security concerns
Perceived Control	Wu (2006)	Perceived control over the site navigation, the pace or rhythm of the interaction, and the content being accessed
Internet Experience	Miyazaki and Fernandez (2001)	Duration of experience and frequency of use
	Cho(2004)	Frequency of use, duration of experience, approximate time spent per week, and average time spent per visit
	Kolsaker <i>et al.</i> (2004)	Frequency of use and usage pattern
Website Design	Davis (1989)	Work more quickly, job performance, increase in productivity, effectiveness, and makes job easier
Perceived Usefulness		
Perceived Ease of Use	Davis (1989)	Easy to learn, controllable, clear and understandable, flexible, and easy to become skilful
Service Quality	Parasuraman <i>et al.</i> (1985)	Tangibles, reliability, responsiveness, assurance, and empathy
	Cronin and Taylor (1992)	Expectation, performance, and importance
	Dabholkar (1996)	Expected speed of delivery: expected ease of use, expected reliability, expected enjoyment, expected control, prior experience, need for interaction with the service employee, and expected service
	Sureschander <i>et al.</i> (2002)	Core service or service product, human element of service delivery, systemisation of service delivery, tangibles of service, and social responsibility
E-Government Adoption	Gilbert and Balestrini	Willingness to use (2004)
	Carter and Belanger (2005)	Intent to use
Satisfaction	Shanker <i>et al.</i> (2003)	Service encounter satisfaction, overall satisfaction

adoption primarily relate adoption to innovation and behavioural aspects. The literature on consumer adoption of e-Government appears fragmented and is devoid of an integrative framework that identifies the appropriate nature of relationships among the key drivers of adoption. This paper proposes a conceptual model of e-Government adoption by drawing on the vast marketing and information systems literature on the adoption of the Internet by individuals. Further, this paper addresses a need in the literature for more rigorous conceptual frameworks to better understand the drivers of e-Government adoption. The models consider citizens to be the focal point of e-Government services. The proposed model underscores the fact that citizen characteristics need to be properly understood, along with other factors that generate satisfaction, before developing an effective e-Government adoption strategy. This model is premised on the belief that a higher level of satisfaction – shaped largely by the extent to which government can provide a rich, engaging, hassle-free, secure, and reliable experience – leads to a higher level of adoption.

User characteristics and website design directly influence e-Government adoption. User characteristics consist of perceived risks associated with using services such as financial and performance risk as well as data security and privacy. Also important are perceived control over the process, as consumers are unaware how their personal information is being used, and the extent of Internet experience, such as the length of time users have been exposed to the Internet, the frequency of usage, and the time spent on each visit. Website design variables, based on the technology acceptance model, are perceived usefulness and perceived ease of use. User perception as to the usefulness of the online information or services provided by the government could significantly increase the adoption rate. However, the perceived usefulness goes hand in hand with perceived ease of use, i.e., how easy it is for users to access, navigate, and consume the information. Service quality has a direct bearing on user satisfaction, which in turn influences the adoption of e-Government. Online satisfaction has primarily been measured in the literature as overall satisfaction spanning a long

period of time and satisfaction with the most recent service encounter. Various authors have used varied means to assess online service quality. However, the use of appropriate measures to gauge e-Government service quality for a citizen centric model would require fulfilling user-defined expectations of service quality. The model proposed in this paper is based on existing theories but needs to be empirically tested to determine its validity and reliability. The next phase in the current stream of study would be to operationalise the constructs based on the measures identified in this paper and propose refinements in the model, if any, on the basis of empirical findings.

This paper conducts a comprehensive review of the empirical studies in the context of G2C e-government adoption by citizens. There is a need to develop concise definition of e-government service for better operationalization of the concepts used for research. Future research in e-government adoption should consider sound theoretical framework research that has been tested successfully in other empirical studies. This paper draws attention to the importance of individual characteristics of adopters and lays emphasis on its significance discussed in the extant literature. The assessment of empirical studies highlight remarkable differences in observations of various studies and carefully analyses the underlying reasons presented in these studies. This paper also looks into the organizational factors that have been considered in the literature related to barriers of adoption of government services. These factors provide an improved understanding to address the needs of citizens. Finally, this paper takes into account the lack of e-government studies in developing countries, especially India and suggests that individual characteristics of citizens are important to study the factors that influence e-government adoption. Also, these factors can be influenced by varied cultural background of citizens. Due to lack of empirical and theoretical G2C studies examining cultural influence, this paper acknowledges the contextual exclusion of culture and its influence on adoption of e-government usage by citizens; which is also a limitation indicating that culture can have a profound impact on e-government service adoption. A number of studies in B2C e-commerce suggest that culture plays significant role in adoption of ICT by consumers, across different countries.

Drawing insight from these studies can open up further avenues for studying cultural influence on e-government usage by citizens. Finally, a review of e-government studies in India also indicates that none of the empirical studies have considered a theoretical model to examine the influence of individual characteristics of citizens on

adoption of e-government services; and an assessment of empirical studies suggests that care should be taken in adopting: suitable research methodology, appropriate sampling techniques, and data collection for future empirical research.

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