THE CHALLENGES OF \textbf{E-GOVERNANCE}

\section*{CHAPTER-2

\vspace{1cm}

\textbf{Literature Review}

\subsection*{2.1 Introduction}

This chapter gives outline various models, literature survey and structure of e-governance in India. Every country has its own problems and limitations and that is why model of e-governance adopted by one country may not fit well to other countries. Hence various models of e-governance along with the model adopted by India have been discussed in details in this chapter. Literature review is an important and basic step in any research activity, as it forms the base of further study and explains that has been done in this particular sector and what more else can be done to solve the existing problem of e-governance.

\subsection*{2.2 Framework of E-governance}

There is no straightforward way to improve the e-government system at the local government level. There are many factors that control the system, including the structure of the government (tiers of the government system), local demographics (population, size, density), set of responsibilities authorized to local governments (government rule of orders) and the homogeneity of preferences within the area (policies and governance issues) (Commonwealth, 2004; Fox, W. F. and Gurley, T., 2006; Rahman H., 2010).

The framework includes Backend, middleware and front end delivery channels for citizens and businesses. Backend means databases of different government agencies, service providers, state Governments etc. Middle ware comprises of the communication and security infrastructure, gateways and integrated services facilitating integration of inter departmental services. Front end delivery channels mean home PCs, mobiles, kiosks.
and integrated services citizen centres. Now it is time to act and support internet knowledge and communication in developing countries like India.

India has developed a three-tier e-government framework comprising back-ends (databases of different government agencies, service providers, state governments, etc.), middleware (information infrastructure, citizen portal, gateways, integrated services, etc.) and front-end delivery channels (home PCs, mobile phones, kiosks, integrated citizen service centers, etc.) for citizens and entrepreneurs (Das S.R. and Chandrashekhar R., 2007). The framework of e-governance adopted by India is shown in Figure 2.1.

Figure 2.1 E-government framework of India (Source: Das S.R. and Chandrashekhar R., 2007)

According to this framework all information regarding the government and its transactions will be available on central portal called “The e-India portal”. This portal will be internally connected to different Government of India portals and different state portals. All the G2G, G2C and G2B transactions will take place through this portal. The connectivity to this portal will be through internet, LAN, WAN, intranet for the government organizations, where as the connectivity for citizens and businesses will be
through internet, mobile telephone networks, wireless networks, home PCs, integrated citizen service centers, kiosks and DTVs.

Today it is a global village where some are having information and many are not having it. In Indian culture this (concept of have and have-nots) is applicable in many aspects as in this global village. It is available in the case of basic needs like food, cloth and housing also. But here in e-governance only information haves and have-nots have been taken into account. Adopting a proactive strategy, and acting to bring internet to rural and agriculture communities in developing countries will help enable rural people to face unprecedented challenges brought on by changing global economy, political changes and environmental degradation. To deal with such challenges and to make critical decisions, people at all levels of society must be able to access critical information and communicate (Tripathi Vishwas, 2007).

2.3 E-governance Models

Different needs, priorities and environment force each country to adopt a different e-government model. In addition, the way in which each government implements an e-government is also different from one other, according to its goals and objectives and the availability of financial/economic resources. Yet, the elements for success or existing barriers commonly described in researches can help to nations that are newly initiating an e-government project. E-governance is based on the internet for operation. Various models have been designed and proposed by various organisations and institutions in various countries.

Most of these models have different number and names of stages; however, most of them have stages that share similar characteristics. In order to understand various thoughts within the e-governance sector, only five different frameworks and models have been considered here as follows.
2.3.1 Gartner’s Four-Stage model - Baum and Di (2000)

Gartner (an international e-business research consultancy firm) proposed a four-stage model for e-governance in a research note published in 2000. These phases have been defined based on experiences with e-commerce and e-governance in Europe and other western regions. In the least expensive first stage of “Presence”, Governments will move to the Internet and establish a minimum presence online. This phase is characterized by creation of simple web-sites. The primary goal here is to post information such as organisation mission, addresses, opening hours and possibly some official documents of relevance to public. In the second stage of “Interaction”, online presence will be updated and enhanced to include a searchable database of services and government staff will start interacting with communication tools such as E-mail. This phase is characterized by websites that provide basic search capabilities, host forms to download, and linkages with other relevant sites as well as e-mail addresses of offices or officials. In the third stage of “Transaction”, governments will start offering services online. At this stage, citizens will be able to avail government services and governments can use e-authentication and payment services for providing services. This phase is characterized by allowing constituents to connect and complete entire tasks online. The main focus of this stage is to build self-service applications for the public to access online, but also to use the web as a complement to other delivery channels. The Fourth stage of Gartner’s model is called “Transformation” in which governments will start integrating services across various levels and functions to provide integrated services from various departments. It is characterized by redefining the delivery of government services by providing a single point of contact to constituents that makes government organization totally transparent to citizens. Major things to note here is that requirement of cost, time and complexities increases from phase 1 to 4. Also constituent value enhances from phase 1 to 4. All these four stages are shown in the Figure 2.2.
2.3.2 Four-Stage model - Layne and Lee (2001)

In another four-stage model for developing a fully functional e-governance, Layne and Lee (2001) argued that e-governance is an evolutionary phenomenon and e-governance initiative should be initiated and implemented in an evolutionary manner. In this model, “Cataloguing” is the first step of model in which governments will start by providing information online. After the first stage of cataloguing information, e-governance projects will move on to the second stage of “Transaction”. In the second stage e-governance tools will start revolutionizing governments by changing the way they interact with their citizens. In the third stage of “Vertical integration” it is suggested that the focus of e-governance projects will move from mere automation and digitization of the existing process to transformation of government services. In the third level it is expected that vertical integration of different levels of government will communicate and connect with each other. The final stage in the Layne and Lee (2001) model is “Horizontal integration” in which information technology tools will horizontally integrate services across different functions of government. Various stages of the model are shown here in Figure 2.3.
2.3.3 Five-Stage Web presence measurement model – United Nations (2003)

Based on the global e-government survey conducted in 2003, the United Nations organisation presented a five-stage model of e-governance. First two stages of “Emerging Presence” and “Enhanced Presence” of this model are similar to the Gartner’s model. The first stage of this model will offer limited, basic and static information through an official website or a portal. A government web presence is established through a few independent official websites and the information will be limited, basic and static (G2C and G2B). The format of the first government websites is similar to that of a brochure or leaflet. The value to the public is that the information is publicly accessible. Internally (G2G) the government can also disseminate information with static electronic means. The second stage will include searchable databases and information related to laws and regulations. The content and information on these government portals will be updated regularly and
give up to date information to the citizens. In this phase the processes are described and thus become more transparent, which improves democracy and service. The third stage of this model is called “Interactive presence” in which government services will enter in an interactive mode with electronic signature facilities and multimedia capability. In this phase interaction between the government and the public (G2C and G2B) is stimulated with various applications. The citizens will be able to download forms, contact officials and make appointments and requests online which previously would have been only possible with long queues near counters. Internally (G2G) the government organizations can use LAN, WAN, intranet and e-mail to exchange information. The citizens can give their feedback and some suggestions on some policy decisions etc. This will bring a sense of participation for the citizen and improves the confidence of the citizen in the government. In the fourth “Transactional Presence” stage government services will be offered as online transactions. Citizens will be able to avail and pay for services using government portals. In this stage, users can actually pay for services or conduct financial transactions online. That is, all the transactions are done online without the citizen going to the office to finalize the decision. In this phase, internal (G2G) processes have to be redesigned to provide good service. Government needs to create new laws and legislation that will enable paperless transactions with legal certification. At this time the complete process is online, including payments, digital signatures etc. This saves time, paper and money. The final stage of the UN’s model is called “Networked presence” or seamless. It is a total seamless integration of e-functions and services across administrative and departmental boundaries. Here public can get G2C and G2B services at one virtual counter. One single point of contact is the ultimate goal. This needs a drastic change in the culture, processes and responsibilities within the government (G2G). Government employees in different departments have to work together in a smooth and seamless way. In this phase cost savings, efficiency and customer satisfaction are reaching highest possible levels (United Nations DPEPA, 2012). At this stage government agencies will be integrated to provide integrated services from various departments. Governments will also start providing feedback mechanisms and online consultation services for clients.
2.3.4 NICT’s enhanced state transformation model – Finger and Pecoud (2003)

In 2003 Finger and Pecoud proposed a new model for e-governance implementations based on three different policy levels (local, national and global), three different types of actors involved (private sector, government and third sector), three different policy functions (policy making, regulation and operations) and three different degrees of making use of new information and communication technologies (information, interaction and transaction). E-governance is presented as a dynamic concept based on the combination of these four aspects.

Figure 2.4 NICT’s enhanced state transformational model ; Source: (Finger M. and Pecoud G., 2003)

2.3.5 Indian Model for National E-governance

Government of India (GOI) has taken a pro-active role to provide e-enabled services to the citizens through e-governance. Government of India has also come up with a similar model as that of Gartner’s for its e-governance initiative. According to the national e-governance action plan, the e-governance model is shown in Figure 2.5 (United Nations DPEPA, 2012).
In the first stage, Information is collected and is made available to the citizens in the form of websites etc., this information will be regularly collected and updated. Then comes the communication stage, that is, the citizens will be able to download forms, contact officials and make appointments and requests online which previously would have been only possible with long queues near counters. Internally (G2G) the government organizations can use LAN, WAN, intranet and e-mail to exchange information. The third stage is the transaction stage where the citizens can do transactions with the government online, pay bills, reserve online tickets and finalize decisions etc., without going to the government offices. The fourth and the final stage is the integrated stage where a total seamless integration of e-functions and services across administrative and departmental boundaries takes place. That is the citizen can interact with the government at a single point and can transact with the government. Currently India is somewhere between Stage 2 and Stage 3, that is, some of the government transactions can be done online and most of the information about different departments is available online for the citizens.
Using e-government for improving efficiency and effectiveness of public service delivery in government structures is a major aspect for economic sustainability. The 2012 survey of United Nations has found that many states are moving from a decentralized single-purpose organization model to an integrated unified whole-of-government model contributing to efficiency and effectiveness (United Nations, 2012). Governments are having the aim to centralize entry points of service delivery to one portal where citizens will be able to get all government services regardless of various government departments and authorities providing these services. This survey assesses web portals with a view to the provision of e-information, e-services, which range from interactive to transactional to networked services, e-participation, and features that are the conduit for service flow from government to citizen and consequently a reflection of attention to governance processes. Due to such initiatives towards unified whole-of-government, citizens will not have to go to various departments for their different tasks.

In this survey, special recognition is given to countries having large populations like India and China. Table 2.1 presents e-government development in countries with populations larger than 100 million.

<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>China</td>
<td>78</td>
<td>72</td>
<td>1,341</td>
</tr>
<tr>
<td>India</td>
<td>125</td>
<td>119</td>
<td>1,225</td>
</tr>
<tr>
<td>United States</td>
<td>5</td>
<td>2</td>
<td>310</td>
</tr>
<tr>
<td>Indonesia</td>
<td>97</td>
<td>109</td>
<td>240</td>
</tr>
<tr>
<td>Brazil</td>
<td>59</td>
<td>61</td>
<td>195</td>
</tr>
<tr>
<td>Pakistan</td>
<td>156</td>
<td>146</td>
<td>174</td>
</tr>
<tr>
<td>Nigeria</td>
<td>162</td>
<td>150</td>
<td>158</td>
</tr>
<tr>
<td>Bangladesh</td>
<td>150</td>
<td>134</td>
<td>149</td>
</tr>
<tr>
<td>Russian Federation</td>
<td>27</td>
<td>59</td>
<td>143</td>
</tr>
<tr>
<td>Japan</td>
<td>18</td>
<td>17</td>
<td>127</td>
</tr>
<tr>
<td>Mexico</td>
<td>55</td>
<td>56</td>
<td>113</td>
</tr>
</tbody>
</table>

Source: (adopted from United Nations, 2012)

E-government has different business models with its own advantages and disadvantages with its own features and services that can be offered to the society. The society is always worried about the service delivery by e-government systems and hence the expectation is very high. As many models are available, it becomes very difficult for the governments to
select a specific model which has maximum benefits. In this digital era a standardized e-government model is needed to cope with the tremendous and continuous changes in the dynamic ICT environment (S. Jayashree and G. Marthandan, 2010).

This United Nations Survey 2012 is based on the four stages of the model emerging, enhanced, transaction and connected. From this survey it is found that models of an integrated portal differ across countries and regions. While a few countries are progressing towards one national integrated portal, others have developed their e-government offerings with a view to more than one portal. Various countries are progressing to go over higher stage, but efforts of countries at all levels of development are still affected by a lack of integration of administrative simplification with e-government development plans, lack of infrastructure and human resource capacity and a gap between e-services supply and demand. Developing and under developed countries, in particular, continue to contend with traditional barriers to ICT investment such as lack of technical skills, high costs of technology, and ineffective government regulation and size of population.

2.4 E-governance at different levels

E-governance status of various countries and states is divided in two parts namely international and national levels.

**International level**

Leaders of e-government of 2012 survey include Republic of Korea (0.9283), the world leader in e-government, is also the top performer in Asia with around double the average world e-government offering. The 2\textsuperscript{nd} slot is taken this year by Singapore (0.8474) followed by Israel (0.8100) and then Japan (0.8019). Asia is home to 60 percent of humanity. With some Asian countries, including China and India, averaging around 8 to 9 per cent of the continent’s GDP, Asia as a whole continued to expand e-government services further. Investments were made horizontally to expand infrastructure, including
support for broadband and mobile access, while at the same time governments reached out to provide greater online services and improve e-governance. In 2012, three of the world’s top 20 e-leaders are from Asia, and the region as a whole has a higher level of e-government development than the world average. It conforms that Asian countries including India are performing well in the development of e-governance and are working on the right track. The Table 2.2 given below shows that topper of the world in e-governance is from Asian countries. Pictorial representation of the Table 2.2 is shown in Figure 2.6.

<table>
<thead>
<tr>
<th>Name of Country</th>
<th>World E-governance Development Rank in 2012</th>
<th>World E-governance Development Rank in 2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>Republic of Korea</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Singapore</td>
<td>10</td>
<td>11</td>
</tr>
<tr>
<td>Israel</td>
<td>16</td>
<td>26</td>
</tr>
<tr>
<td>Japan</td>
<td>97</td>
<td>109</td>
</tr>
<tr>
<td>United Arab Emirates</td>
<td>28</td>
<td>49</td>
</tr>
<tr>
<td>Bahrain</td>
<td>36</td>
<td>13</td>
</tr>
<tr>
<td>Kazakhstan</td>
<td>38</td>
<td>46</td>
</tr>
<tr>
<td>Malaysia</td>
<td>40</td>
<td>32</td>
</tr>
<tr>
<td>Saudi Arabia</td>
<td>41</td>
<td>58</td>
</tr>
<tr>
<td>Cyprus</td>
<td>45</td>
<td>42</td>
</tr>
</tbody>
</table>

Source: (adopted from United Nations, 2012)

India has also developed an India development gateway in addition to National Portal of India (NPI). “The National portal of India developed as a single-window system to access information and services, with the specific objective of reaching the ‘un-reached’ rural communities of India, especially women and the poor. It catalyzes the use of ICT tools for knowledge sharing, leading to development” (available at www.indg.in). A variant of the National Portal, but targeted towards a specific group of people, this portal contains specific topics aimed at the rural poor like agriculture, rural energy, etc., and features forum discussions and “ask an expert” section. Making it available in English and in eight local dialects, the government’s main objective is to stimulate women, the poor, and people in the remote rural areas to use technology to their own advantage (available at www.gov.cn).
Asia being a large region it is divided into many parts namely western Asia, central Asia, southern Asia and eastern Asia. India lies in the southern Asia and e-governance in southern Asia is shown in Table 2.3 below. Diagrammatic representation of Table 2.3 is shown in Figure 2.7.

Table 2.3 E-government development in Southern Asia

<table>
<thead>
<tr>
<th>Name of Country</th>
<th>World E-government Development Rank in 2012</th>
<th>World E-government Development Rank in 2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maldives</td>
<td>95</td>
<td>92</td>
</tr>
<tr>
<td>Iran</td>
<td>100</td>
<td>102</td>
</tr>
<tr>
<td>Sri Lanka</td>
<td>115</td>
<td>111</td>
</tr>
<tr>
<td>India</td>
<td>125</td>
<td>119</td>
</tr>
<tr>
<td>Bangladesh</td>
<td>150</td>
<td>134</td>
</tr>
<tr>
<td>Bhutan</td>
<td>152</td>
<td>152</td>
</tr>
<tr>
<td>Pakistan</td>
<td>156</td>
<td>146</td>
</tr>
<tr>
<td>Nepal</td>
<td>164</td>
<td>153</td>
</tr>
<tr>
<td>Afganistan</td>
<td>184</td>
<td>168</td>
</tr>
</tbody>
</table>

Source: (adopted from United Nations, 2012)
A review of cases suggests that more and more governments are now using public-private partnership to provide services. In India, citizens can visit 51 E-Seva centres (community one-stop-shops) with 400 service counters spread over the state of Andhra Pradesh where they can pay taxes and utility bills, register births and deaths, and apply for driver licenses and passports, among other transactions. The E-Seva centres are established with the help of partnerships between the government and private firms with government providing staff and firms providing hardware and software. Internet users in developing countries increased from 44 per cent of the world’s population in 2006 to 62 per cent in 2011 and 37 and 10 per cent of these users are in China and India, respectively. Convenience is the dominant factor and generally understood as enjoying 24x7 accesses and saving travel. Convenience is often found as a stronger incentive than mere cost-saving, even in developing countries (e.g., Malaysia, India, and Albania). Privacy and security concerns are also important. They potentially work as barriers impeding e-
service usage as they prevent users from trusting and therefore using e-government services (United Nations, 2012).

**National level**

Recognizing the increased importance of an informatics led development model, in 1975 the Government of India decided to take effective steps to utilize information systems and resources for a computer based governance decision support. The subsequent establishment of the National Informatics Centre (NIC) in 1976 with the financial assistance of the United Nations Development Program (UNDP) was the first major step towards implementing e-governance in India. The ensuing years saw a large number of e-governance initiatives launched at both national and state levels. These projects are implemented to address deep rooted problems related to government services. Based on the advice of the Second Administrative Reforms Commission (ARC), the GOI formulated a National e-governance Plan (NeGP) in 2003. A wide array of e-governance projects were envisaged and implemented after the introduction of NeGP. Most of these projects were implemented on a regional basis and some were rolled out by the national government mostly focusing on conducting government business like filing of income tax returns. Various southern states have done better than other states implementing various G2C e-governance projects. Some of these projects lacked proper processes and standards, and addressed the different requirements using a wide array of technologies. The latest position of e-governance in India states can be estimated from a report released in 2010 is shown through the Figure 2.8.

Indian Government is using IT to facilitate governance. In the last some years, e-governance has been seen as enabler for common man. IT enables delivery of government services as it caters to a large base of people across different segments and geographical locations. The effective use of IT services in government administration can greatly increase existing efficiencies, drive down communication costs, and increase transparency in the functioning of various departments. It provides easy access to tangible benefits may be it through applications such as online form filling, bill sourcing and payments, or complex applications like distance education and telemedicine. As of
now, e-governance projects are being run only in certain departments. This approach will be extended to all departments eventually leveraging the power of IT to streamline administrative functions and increase transparency (Tripathi Vishwas, 2007).

The rapid development and adoption of the ICT is transforming every aspect of human life, including the way humans interact, trade, manufacture, entertain and provide services. Many new inventions have impacted the course of human development in the last century but not as Information and Communication Technologies did. ICT has opened up new avenues and opportunities for growth and development around the world, and the initial wave of these profound technological changes were led by commercial ventures. The ICT revolution has brought significant changes and economic savings to many private and government organisations. By utilizing the enormous potential offered by new generation ICT tools and internet, many organisations have transformed the way they conduct business. This new revolution encouraged governments across the world to utilize the potential of ICT to transform the way they govern.

Developing further from the definition of an e-government, the e-government performance has been defined and measured in various ways. Mere successful application of technological innovation cannot constitute successful e-governments. Studies on developed countries imply that successful e-governments are those that achieve multiple
values like efficiency in administration, innovation in organization, effectiveness of public services, transparency and participation. (Nour et al., 2007) proposed efficiency, effectiveness, access, accountability, equity, empowerment and participation, transparency, availability of services, responsiveness and integrity as critical goals of an e-government, and investigated a relationship between these goals and contextual factors such as the degree of e-government readiness and the level of democratization. Similarly (Norris D.F. and Moon M.J., 2005) consider administrative change, efficiency and revenue generation as critical e-government outcomes. These studies show that an e-government is considered successful when it realizes these visions and goals.

The five year plans have been used as main instruments to review the progress and take necessary corrective actions, in the form of new policies and programs with financial planning for overall development of country. The five year plans provide an opportunity to the government to assess the progress and take the new initiative to achieve the necessary targets. On the same pattern for developments in e-governance sector National e-governance Plan (NeGP) was implemented for the period 2003-2007.

E-governance practices in India emerged and evolved mainly from native institution, but the range of success of e-governance initiatives has not been uniform. Certain southern states (like Andhra Pradesh, Karnataka, Kerala, Gujarat) have gained success in applying path breaking e-governance models. Due to successful implementation of such projects time and costs for getting services has reduced a lot. This reduction has changed the people’s perception regarding e-governance. This is happening both for the urban and rural people and their satisfaction level has increased regarding delivery of public services.

2.5 Literature survey

A literature review provides valuable insights in choosing appropriate research techniques and structure. E-governance is an interdisciplinary field spanning other disciplines (Jafari S. M. and Ali, N A., 2011). Thus, for the purpose of this study, the review was not limited only to leading journals in the computer discipline and instead of searching by journals the focus was set for the search by topic across all relevant journals
and also reputed conference proceedings. The indiscriminate use of “e-governance” and “e-government” in the literature and in articles keywords was made. In the beginning existing literature related to the general aspects of e-governance and its implementation in India has been given.

2.5.1 General literature review

(Sivakumar D., 2000) has explained that E-mail, web publications and internet development should become accessible to the common public. There is a problem of haves and have-nots (digital divide) in Information Technology sector as well. There should be local level field work by competent social workers to cover the have-nots of IT to provide them access to information technology applications. However, another study (Heeks, 2002) shows that a large number of e-governance projects either completely or partially fail in developing countries due the gaps that exist between the design and reality of implementations.

(Islam N., 2003) explained that Panchayati Raj system has promoted development in terms of infrastructure, poverty alleviation, education, health and improvement of living conditions in rural India. Empirical evidences from various Indian states have shown that the decentralisation exercises succeeded to some extent in Karnataka, West Bengal, Kerala and Andhra Pradesh. Southern states are performing well in e-governance implementation. Accountability and transparency are the most important pillars of the decentralised governance that ensure successful delivery of the services at the grassroots level. It was found that there is a close relationship between decentralised governance and people's participation, accountability and transparency. But this does not mean that this all is possible due to decentralised governance but this has been possible due to various factors including social, political and economical.

(Gronlund Ake, 2003) has described governance in terms of a system consisting of three interrelated societal spheres: the political sphere, administrative sphere and civil society. These spheres have different nature in terms of their motivation, interests, focus unit and mode of operation. The successful electronic governance information system will be those who best and most constructively integrate interests and modes of
operations of all these three spheres. The anatomy of successful e-governance information system is shown in Figure 2.9.

![Figure 2.9. Anatomy of successful e-governance information system](image)

(Bhatnagar S., 2002) has explained that e-government services cover delivering citizen services, services to business, industry, e-communication and document processing, and empowering citizens through access to information. (Cilingir D. and Kushchu I., 2004) explained that services may be availed online by departments, through conveniently located service centers or through a portal, and today through mobile phones, termed M-Government. E-governance hardware and software solutions are available from various vendors covering a wide range of requirements.

Several authors have expressed their views on the impact of the e-governance on the Government. But there is not a clear consensus on the need to have bureaucratic system transformation with the use of ICT and e-governance. According to (Jaeger, 2003; Jaeger and Thompson, 2003) there is positive impact of e-governance on the government structures as it has helped in achieving good governance by reducing cost, better
dissemination of information, promoting better involvement and interaction, and efficient delivery of services. (Kraemer K.L. and King J.L., 2003; Kallinikos J., 2004) are not convinced about the importance of transforming the current model of government bureaucracy. 

(Bhatnagar S., 2004) has suggested that, ICT has the ability to bring dramatic changes or transform government institutions; rather than automate or reform organisational structures, outcomes and outputs. Information and Communication Technologies could contribute positively towards achieving better governance by making them more efficient, transparent and effective.

(Wong W. and Welch E., 2004) have explained broader policy objectives implicit in e-government such as accountability and transparency and are related to global normative pressures, their realization is dependent on the national and bureaucratic character rather than technology adoption.

(Gronlund Ake, 2004) tried to assess the maturity of e-governance field as a research area. This study concluded and showed it immature because theory generation and theory testing are not frequent, case stories ( nor theories , no data) and product descriptions ( no analysis or test) are frequent, dubious claims are frequent appear in 29% of papers and only a few of the cases where theories are either tested or generated concern the role and nature of government, most concerns general organisational issues that could find a place within traditional information system conferences.

(Sundar D. K. and Garg S., 2005) have explained that mobile-government can lead to delivery of government services to the doorstep of the citizens. In the context of urban local bodies, the use of advanced tools such as the semantic web and ontologies for information sharing will enable the service providers to increment and add services quite easily. The semantic web enables the service provider to deploy software agents for seamless sharing of information across the spectrum of applications and providing the citizen a personalized view of service requirements. The deployment of web-enabled, mobile devices such as PDA and tablet make it possible to offer services at the doorstep of the common citizen cost effectively. The availability of multi-lingual text-to-speech and local language interfaces has enabled to lower the barriers to accept these devices. The proposed framework by authors for mobile-governance in urban local bodies is
replicable and captures the required skill levels through the technology to deliver quick and quality services at the doorsteps of the citizens by minimizing the transaction costs.

(Verma R. M., 2005) has explained that, like the printing press ICT has potential to bring revolutionary change in the concept of governance and change current views of democracy, society and public administration. Internet has also been rightly called the successor to the printing press. The wide spread penetration of ICTs into social and economic spheres has provided ability to change how they collaborate personally and commercially. E-governance can not be separated from the reality of good governance and must be really rooted in it. If governance is relational exercise then e-governance must be cut from the same cloth. From this perspective e-governance is less about automation of government forms and services and more about facilitation of defined objectives with respect to government relationship with its constituencies. (Norris D. F. and Moon M.J., 2005) conclude that, the progress towards integrated and transactional e-governance is slow.

A report submitted by the National Knowledge Commission, 2005 to the Government of India refers that E-governance projects in India are restricted to computerisation of existing paperwork procedures without simplifying them, resulting unnecessary delays and red tape. There is a need to have government processes re-engineered by eliminating unnecessary steps and by reducing the time taken in each step. In-order to enable real e-governance there is a requirement to have “radical shift” in public government interaction processes.

(Kraemer K.L. and King J.L., 2005) explained that implementation of IT in government departments without enacting the necessary reforms will result in wastage of resources. This is mainly due to the fact that, Information Technology is a catalyst for reform but unless other supporting factors are not in place; IT will fail to achieve any significant change.

(Mulgan, 2005) explained that major organizational changes are required to achieve a transformation of services; not accompanying technological changes with organisational changes often results in mere automation of existing procedure rather than transformation. However “there is not a single example of an entire public service that has been radically re-engineered to make the full use of new technology”.

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A number of studies also conclude that due to various inherent characteristics of government systems, the contribution of ICT towards organisational change is limited or it supports status quo. (Welch E.W. and Pandey S.K., 2006) found that e-technologies are often used in organisations to strengthen existing structures rather than weakening them. Evidence for the blurring effect of e-governance implementation was provided in their empirical study of e-governance and bureaucracy. Depending on literature review, (Chen Y. N et al., 2006) explained the difference between developed and developing countries and various key factors were identified for a successful e-government implementation and its framework.

(Welch E.W. and Pandey S.K., 2006) stated that IT implementation will not provide much benefit without streamlining and rationalizing existing workflows before implementation. Another interesting aspect of ICT implementation in government structures is related to its ability to blur the existing functional boundaries without altering the existing structures. Due to the more formalistic nature of public organisations and have a high level of work related record keeping. In developing countries physical files are used for decision making and hierarchical process of doing many jobs still exist. Many computers generated authorized documents and slips are not accepted by many departments without proper manual signatures and stamps. The traditional environment needs to be changed and before that legal support for digital files is required.

(Riley Thomas B., Sheridan William, 2006) explained that building effective e-government facilities follows a supply chain process: research analysis, design, planning, deployment, training, operations, feedback and improvement. Although any of these steps might conceivably be either expanded into sub-routines, or contracted into larger steps, these activities are recognizable and manageable. Depending on resources available, all these steps need not occur in a single linear process- some may run in parallel depending on size, scope and strategy of the project. However all these steps have to be properly engaged if project is to succeed.

(Uniyal Pramod, 2007) has explained that induction of IT into good governance, at the rural level is not easy because of unstructured nature of rural development, low literacy level and reluctance to adopt IT. Hence successful implementation of e-governance requires proper environment in which it can be operated.
(Gupta Vinay, 2007) has said that globalization has made its footprints in every walk of life and governments are required to keep pace with it. For it governments should make policies in such a way that it should foster acceptance of governance and e-governance as well. Government requires building citizen centric service oriented and efficient public service delivery policies in light of e-governance.

As per study made by (Bhatnagar S. et al., 2007), for reducing corruption the outcome is mixed, e-government seems to have the potential for significant reduction in corruption in service delivery, as has been shown by a few projects. Operating costs and investment per transaction in most of the projects are less than the direct cost reduction reported by the clients. Therefore it is possible to charge a user fee that will cover the costs and make the applications economically viable. The approach of assessing impact on different stakeholders, using multiple dimensions and a mix of direct and indirect measurements stands validated. Results obtained from this study are not generalized because all these projects are serving urban clients.

Regarding adoption and impact of ICT on society, (Bhatnagar S. et al., 2007), results indicated that respondents who have used both the manual and computerized systems in the five projects selected for three states (Gujarat, Karnataka, Andhra Pradesh) have indicated an overwhelming preference for the computerized system. Their preference is backed with the identification of areas where concrete benefits have accrued to them. In most cases the cost of accessing service has been reduced because the number of trips has been reduced significantly and the waiting times have come down by nearly fifty percent. Quality of service delivery and quality of governance have also improved moderately with computerization.

(Kumar T. et al., 2008) have said that India is taking an important step for national spread of e-governance services backed by productive learning from pilot projects like CSCs, Railway Reservation, Income Tax, MCA-21 etc. It is found in study that decentralization should be one of the critical outputs for any e-government system. This is more relevant and critical because of the fact that scaled up and mission-mode projects need active participation of different stakeholders in the governance process including the citizens, the different partners of the government systems, the local self
government institutions, the extra-state actors from the private sector and the civil society.

Generally, developing countries are lagging behind in e-government adoption as compared to developed countries. (Bjørn Furuholt and Fathul Wahid, 2008) have grouped, e-government challenges in developing countries, into three categories, management, infrastructure and human factors. Strong political leadership is one of the most important success criteria for e-government projects in general and in developing countries in particular. Also there is a need for procedures to track and respond to suggestions, critique, and complaints, to encourage the citizens and to increase the degree of participation in policy making and development.

(Heeks, 2008) stated that because of the success of a few projects in improving delivery of services to citizens and businesses, an increasing number of governments are making ICT investments in the public sector. On the other hand, evidence of failed projects has drawn attention to the level of risk involved in implementation. A failure rate of more than 50% is widely cited in this context.

(Krishnaiah V.S.R., 2008) explained that ICT has become an indispensable and very effective tool not only for good governance and more accessible government but also for achieving the goals of poverty reduction and sustainable development. A citizen centric approach to service delivery is compulsory to reap the benefits of previous and future investment in ICT by Governments. By appropriate grounding and planning of ICT induction, and designing the technical solutions with citizen centricity, governments can become more responsive and accessible. It is not enough to induct ICT and deliver services efficiently by compressing the steps required to accomplish certain procedural requirements. What is more important is to simplify government processes altogether, change the concept of procedure oriented governance to citizen-centric governance, and thereby transform the relationship between government and citizens.

(Dawes S., 2008) has explained that over the past two decades, rapidly evolving information and communication technologies (ICTs) have penetrated nearly every aspect of government, business, and daily life. (Riley Thomas B., 2003) has explained that rapid evolution of new technologies has created challenges for all governments. (UNPAN, 2008) study explains that nowadays, e-government and e-governance are major issues on
the agenda of various governments across the world. (Belwal and Al-Zoubi, 2008) have explained the difference by stating that, e-governance is a technology mediated relationship between citizens and their government while e-government is the provision of routine government information and transactions using electronic means.

(Shin S. et al., 2008) conducted a survey on success factors of e-government, targeting 109 ICT experts and public officers from 53 developing countries who participated in e-government projects of their countries, and tried to identify core success factors of e-government in developing countries and find unique meanings and implications for developing countries in achieving successful e-government. By the factor analysis, 6 success factors are identified: changes in work process, technical/human resources, organizational culture/values, vision/strategy/internal leadership, external/financial support, and laws/regulations/policies. The multivariate regression analysis shows that ‘changes in work process’ and ‘technical/human resources’ are the important factors. ‘External/financial support’ and ‘organizational culture/values, GDP per capita and political stability are also determining factors recognized as unique challenges to developing countries. Conclusively it was found that developing countries need to satisfy certain unique requirements, while fulfilling some conditions that are similarly required for developed countries to achieve successful e-government.

(UNPAN, 2008) study has shown that as a matter of fact, all 191 UN member states are currently providing various e-government services, attempting to enhance public service delivery and improve government process. There have been recent efforts to initiate e-governments among developing countries that hope to leapfrog and catch up with more advanced countries. By providing timely information and facilitating cooperation among regions, the e-governments are believed to help public managers solve long-lingering problems such as poverty, corruption, and diseases. (Shin S. et al, 2008) have identified success factors of e-governments. It was found that resolving technical factors such as complexity and compatibility of the system is not sufficient for successful e-governments. (Njihia James Muranga, 2008) has said that successful e-government adoption and sustainability depends on multiple factors that vary across nations.
(Shah Neeta, 2008) has talked about various initiatives that have helped various states to gain a head start in e-readiness. However, using technology is not just a matter of installing hardware and buying relevant software. In order to reap its benefits, its users—government, businesses and citizens, must be e-ready i.e. be able to skillfully exploit the opportunities provided by technology. Since last decade, various islands of e-governance initiatives in the country are seen at the national, state, district, taluka and even village level. At village levels certain heads of villages have made websites of their villages and are using website for providing details about voter list and other facilities of the village to outside world. A snapshot of the website, of village Bibipur in Jind district, is such an example in Haryana state and is shown in the Figure 2.10.

(Rameshur T. S., 2009) explained that one of the central research questions emerging from the favorable and critical views on e-governance is how such a new mode of governance has impacted on service delivery in the public sector. This dimension is crucial, because what matters most is whether the adoption of e-governance has been able to improve service delivery, one of the core functions of Governments- based on quality,
processes and operations. Moreover due to the fact that service delivery in the public sector is increasingly being outsourced or subcontracted, it requires a complex governance structure. Also there are unequal structures of IT resulting from policies pursued under e-governance, thus, imply greater economic and geographical divides in India.

According to (Kalsi N.S. et al., 2009), A citizen in a District is willing to pay forty percent extra for the service, while for that in village or tehsil, this is 24 per cent (shown in Figure2.11). There is a preference for English language for the ICT led e-services. Thirty two percent of the respondents want e-governance services in a time span of Six months. There are a lot of initiatives taken by state governments through various e-governance projects. Most of the projects are fulfilling limited needs properly, but they need a holistic approach to progress and transform these to make then self-sustainable in the long-term. There is a change in the mindsets of Indian citizens and free bies are losing their importance. The citizens are ready to pay a price for a good service (including e-services) and for it being available near home.

![Figure 2.11Citizen willingness for Extra Amount; Source: (Kalsi N.S. et al., 2009)](image)

Report of Department of Administrative Reforms and Public Grievances (DARPG) (available at www.darpg.nic.in) on BPR for e-governance projects, states that –
Government process re-engineering could be classified into four heads: namely

1) Clear assessment of citizens’ needs and analysis of the existing processes and identification of the weaknesses and redundancies.

2) Redesigning of processes.

3) Required changes to be made in the statues and regulations.

4) Bringing about changes – in forms, processes, structures and statutes.

(Bandyopadhyay and Sattarzadeh, 2010) pointed out that redesigning existing government processes is not an easy task. One of the key differences between private and a government organization is the latter’s requirement to adhere to a large number rules and regulations. However, these rules cannot be considered as a bad thing as these were implemented over a long period of time to support the specific nature of government services. Almost all government organisations follow a hierarchically organized bureaucratic system, which was implemented and evolved through decades or in some cases, centuries long processes. It points to the requirement to accurately identify which process needs to be computerized; without this, the aim to get rid of inefficiencies and redundancies rather than accentuating them may not materialize. Based on this, it could be argued that, what one needs for real transformation is a re-conceptualization of existing services than automation.

(Bhatnagar S. C., Singh Nupur, 2010) have presented assessment results from eight e-government projects of India which estimate the difference between client ratings of computerized and (earlier) manual systems. Clients/users indicated an overwhelming preference for computerized service delivery, with reports of fewer journeys, less waiting time, and some reduction in corruption (marginal in places). Overall impact showed wide variation across projects, highlighting the need to pay greater attention to process reform in the design of e-government projects. An assessment of incremental costs of processing a transaction can help evaluate the feasibility of a public-private partnership model. Government of India has adopted the framework used in this study to assess the impact of all mature projects implemented at the national, state, and local levels.
It is necessary to reengineer various processes of Governance before applying e-governance in various departments, states and countries. Conclusively (Bandyopadhyay and Sattarzadeh, 2010; Kraemer K.L. and King J.L., 2005) believe that, there is a clear need to have significant changes in existing processes and structural reforms before implementing e-governance projects to tackle the bureaucratic nature of government organisations. They argue that implementing e-governance projects without necessary reforms or process re-engineering will only result in automation of the existing inefficient ways of conducting government business. Another group of researchers and reports (The National Knowledge Commission, 2005; Welch E.W. and Pandey S.K., 2006) provide evidence for the need to have supporting legal framework in place, prior to the implementation of e-governance projects.

(Vaisla K S., Bisht M K., 2010) have explained that e-governance is now mainly seen as a key element of the country’s governance and administrative reform agenda. India has undertaken massive e-initiatives to introduce e-governance at the national, state and local levels. India’s experience in e-governance/ ICT initiatives has demonstrated significant success in improving accessibility, cutting down costs, reducing corruption, extending help and increased access to un-served groups. Improved access to information and services has provided economic and social development opportunities, facilitated participation and communication in policy and decision-making processes and empowerment of the weaker groups.

The Government of India now recognizes the requirement to provide a necessary legal framework for efficient delivery of government services. Electronic Service Delivery Bill, 2011 aims to cut red tape and corruption by delivering all public services to citizens through electronic mode. Evidence for this aspect is available from the Electronic Service Delivery Bill proposed by the Government of India. The main aim of this bill (Electronic Service Delivery Bill, 2011) under the consideration of the parliament is eliminating paperwork on a massive scale. Implementation of the bill will enhance transparency, efficiency, accountability, accessibility and reliability and by eliminating paperwork on a massive scale.

Governments around the world have pursued e-government programs and many governments have injected substantial investments, but most of the e-government
initiatives have not delivered the transformation environment. The recommended approach is an amalgamation of learning from various e-governments initiatives across the globe. The framework proposed, by (Al-Khoury, A.M., 2011), in research study was particularly designed to support decision makers and present them with key information and focus areas in e-government initiatives.

(Swamy R. N., 2011) has explained that stakeholders for any e-governance project are the citizens, the government officials and the entrepreneurs. Lack of planning and contribution from the government officials can slow-down the schemes. The bureaucratic inefficiencies and indifferent attitude of the government department further intensify the problem. If the projects are top-down driven the local stakeholders are neither involved nor have satisfaction. To make a self sustaining project it is important to identify and manage the stakeholders’ involvement and a scalable framework of working is laid down followed by appropriate technology provided to take forward.

(Farooque Jamal A, 2011) have investigated the e-government readiness scenario in India and UAE vis-à-vis other countries in Asia. It is based on the e-government surveys conducted by the United Nations. Despite its various projects and policies concentrating on implementation of the information and communication technology, the Indian scenario of e-governance has not been up to the mark when compared with other countries in the region. It was found that the economic structure of a country also matters in its e-government readiness. E-government at the national level makes a governmental system interactive, cost-effective, quicker, and provides quality service. It is basically a system that deals with information and knowledge sharing among the stakeholders through information and communication technologies.

(Alryalat M. et al., 2012) have systematically analysed the existing body of knowledge on e-government related issues in developing and under-developed countries. For this study data relating to e-government research was collected from 158 research articles identified from the ISI web of knowledge database, and by manually identifying relevant articles from journals dedicated to electronic government research such as Transforming Government: People, Process, and Policy (TGPPP), Electronic Government, an International Journal (EGIJ), and International Journal of Electronic Government Research (IJEGR). Based on investigation it was found that generic e-
government applications were explored more than any specific applications and the Technology Acceptance Model (TAM) was, the theory most often, utilized to explain research models? It was also found that ‘adoption’ and ‘diffusion’ were the most commonly explored themes; the survey was the most frequently applied research method, and access to only one case study, website content, community, organisation, culture, or country were the highly accepted limitations across all the studies.

(Nkwe n., 2012) examined the challenges encountered in e-government implementation, as well as the potential opportunities available in the context of Botswana society. Findings and implications of this study reveal that Botswana is still lagging behind in utilizing information and communication technologies for delivering government services online. Understanding the current status of e-government in Botswana can help policy makers in the country to pursue development of the public sector organizations on the one hand, and would be of importance for Botswana’s economic future success on the other.

(United Nations, 2012) survey has stressed that challenge of e-governance in populous and developing countries have its own problems related with the infrastructure and have to spend a lot on providing basic facilities related to governance, education, health, telecommunication facilities. A large country by land area, will have to lay many more miles of fibre-optic cable than a small country to provide broadband connectivity to its citizens. Likewise, a country with a very large population must provide many online access points – via kiosks, mobile phones, or other means – to its citizens than a country with a small population. On the other side, a country with a high income has more resources to apply in e-government development than a country with a low income. For example, India has about 4000 times the population and about 130 times the area of Belize. Moreover, it has only about one quarter of the Gross National Income of Belize. In such circumstances India will have to invest and effort more for providing e-government services than that of Belize. Similar is the case with the China and Viet Nam.

(Swapna N., 2012) revealed the performance of e-governance in India in the context of its role in Agriculture sector, rural development and promoting social welfare. e-government offers an increased portfolio of public services to citizens in an efficient and cost effective manner. E-government allows transparency in government functioning.
In democratic Governments transparency is important as it allows the public to be informed about what the government is working on regarding various policies and their implementation. Various tasks may be easier to perform through electronic government access for citizens and Governments both. E-government allows these tasks to be performed efficiently with more convenience to individuals. E-government is an easy way for the public to be more involved in political campaigns. It could increase voter awareness, which could lead to an increase in citizen participation in elections.

(Singla S. K., Aggarwal H., 2012[a]) have looked the impact of e-governance projects implemented in the state of Punjab and analyzed the views of citizens to find out the scope of e-governance and effective implementation of e-governance for better results. Authors have presented the role of e-governance in improving service delivery and its impact on citizens’ life style. The research reveals that e-governance has the potential to control corruption and provide quality service. But due to lack of internet knowledge and computer education among the citizens, e-governance has not been properly implemented so computer education is required to create awareness regarding e-governance projects. Proper implementation of e-governance is the only way to bridge the gap between rural and urban areas. In other words digital divide can be minimized through e-governance implementation.

(Singla S. K., Aggarwal H., 2012[b]), stated that responsiveness, transparency and accountability in government operations need effective implementation of e-governance. For this active participation of citizens is essential in design and implementation of e-governance framework. It will increase the interaction between government and citizens and is must for the success of such citizen related projects. It will enable government to achieve best satisfaction level among citizen. SUWIDHA has been conceived to facilitate citizens by capturing input at a single point and provide specifies delivery date depending on the type of service. Various studies and collection of citizen view have been critically explored, examined and analysed by researchers in order to suggest suitable e-governance framework for effective implementation of SUWIDHA in the state of Punjab. An effective e-governance framework is presented so that performance of existing e-governance system can be increased by its successful implementation.
To implement e-governance in large developing countries like India, it is important that optimum usage of resources is made and expenditure made on technology infrastructure is efficiently used. Regarding use of cloud computing for e-governance implementation, (Goel S. et al., 2012), have stressed that cloud computing has offered a lot of opportunities to corporates as well as governments across the globe. E-governance implemented on a cloud offers enormous opportunities to the government as well as end users i.e. citizens. In nutshell, cloud is the future of e-governance model which is scalable, easy to operate and maintain. One of the most accepted and popular ways of offering e-governance services is to launch one-stop unified portal which can be accessed by the people for various governmental services. In India such services are provided by National Portal of India (NPI) and various state government portals.

India, the growing economic super-power proceeded with lightning speed towards the adoption and successful implementation of e-governance. (Mithun Barua, 2012[b]) used the Technology Acceptance Model (TAM) and Trust to build a conceptual model. The purpose of the study is to analyze the adoption of e-governance by the government employees who are acting as facilitator of the services to the people and main players in the inter-governmental operations. This study of Pension Management System (PMS) shows that the application system of the directorate is free from the deficiencies of faulty design, inadequate security controls, improper connectivity and infrastructure, non-integration of modules etc. This application system of West Bengal can be adopted and replicated by the Directorates of other States of India.

In the review article (Magro M. J., 2012) reviewed the recent literature concerning Web 2.0, social media, social networking, and how it has been used in the public sector. Key observations include literature themes such as the evolution of social media case studies in the literature, the progress of social media policies and strategies over time, and social media use in disaster management as an important role for government. Other observations include the lack of a tangible goal for e-government, and the idea that significant change is still needed in government culture, philosophy of control, and resource management before broad sustainable success can be achieved in the use of social media.
(Mishra D. S., 2013), have clarified in their survey that welfare schemes in various states are riddled with corruption. Based on a detailed field study state government of Uttar Pradesh, India studies have shown prevalence of high level of corruption in the Indian Administrative System, which adversely affects the day-to-day lives of common citizens. Role of e-governance was examined in combating corruption in delivering public services. E-governance, if successfully implemented, will certainly help in removing corruption from the society. But for it people will have to have knowledge of ICT technologies certain basic knowledge of computers otherwise people sitting on computers in government offices will search options for getting bribe from the general public( without basic knowledge of ICT). It has been found that technology assists in instituting a transparent, accountable, consistent, reliable, and efficient system for delivery services and cannot overcome corruption by itself. It requires political will, focused administrative strategy, business process reengineering for simplifying and opening up the system, and persistent efforts to ensure that corruption entrepreneurs do not subvert the gains of the technology.

One important step towards this end is the development of a national strategic framework that articulates the government’s vision, objectives and milestones, as well as basic roles, technical standards and constraints for realizing a one-stop e-government system. Such a framework also addresses issues of privacy and security, maintenance, and interface standards. The strategy should help departments and agencies in both central and sub-national government to cooperate in new partnerships that will enable them to offer their services in ways that make sense to the customer. Such a strategy can usefully point to partnerships with innovators in the private sector who can find new ways of meeting changing patterns of demand. To realize the national strategy, a high level of initial investment may be needed, which must be embodied in long-term vision and strategic planning in order for an integrated and sustainable e-government solution to be successfully implemented.

The rapid development, deployment and proliferation of the new and emerging ICTs herald new opportunities for growth and development in countries around the world. Governments worldwide are seeking to harness the potential offered by these new technologies to create new dimensions of economic and social progress. E-government
will transform how public servants work, relate to each other, do business, and engage citizens and others. E-government is a process that requires a sustained commitment of political will, resources and engagement among the government, private and public sectors.

2.5.2 Security related literature survey

(Rao T.M., 2005) has stressed that there is a need of a new approach to standards based e-governance that provides security and availability of network resources. Network and information security standards need to be put in place for prevention of intrusion, detecting and removing malicious code and manage the system security systems properly. Certain areas of network and information security need standards for e-governance. These areas are e-mail, antivirus, password selection, spam prevention, Intrusion prevention, computer emergency response teams (CERT), digital signature, electronic commerce, data protection and retention, backup and recovery, security appliances like firewalls, VPN gateways, content filtering and wi-fi etc.

(Verma Ram Mohan, 2005) has explained that privacy is foundation of value in every democratic society. It plays pivotal role in the exercise of other democratic rights, privacy is also a right intimately connected to human autonomy and dignity. Therefore citizen emphasizes on this scarce commodity. E-governance systems must place particular emphasis on building privacy into the architecture of the technology itself and it requires forethought planning both technical and political. To fully meet citizen expectations regarding trust, e-government must place high priority on the privacy and security.

(Mcclure S. et al., 2005) have explained that vulnerability mapping is a process of mapping specific security attributes of a system to an associated vulnerability. It is a critical phase for the exploitation of a target system and should not be overlooked. Attackers map attributes like listening services, specific version numbers of running servers, system architecture and username information to potential security holes. (Maheta Kunjan, et al., 2012) have explained vulnerability as a weakness, a hole in the
application, OS or Protocol. Vulnerabilities are flaws generated by bugs in the code of the system.

(Mnjama Nathan and Wamukoya Justus, 2007) have explained that new technologies have great potential for improving efficiency and provision of services, but e-records, upon which governments depend, must continue to be protected and preserved. For initiatives such as e-government and e-commerce to be successful, governments must have access to information that possesses certain crucial characteristics: accuracy, relevancy, authoritativeness, completeness, authenticity and security. In assessing e-readiness in government, two issues need to be critically examined. These relate to the integrity, security, authenticity and accessibility of e-records. Moreover, the trustworthiness of an e-record depends on establishing that it has been stored in a secure environment.

(Baligri Abhishek M., Dongre Aditya K., 2007) have stressed that digital signatures provide an enormously safe way of authentication for the security of all online bank transactions. Digital signature can be implemented using core cryptographic techniques. Each customer is going to have its own unique (like aadhar card in India) and confidential key assigned by a common and reliable central authority which can be used for authentication of the customer. Biometrics is one more efficient tool for authentication and body features like fingerprints, iris, face can be used to identify particular authorized person.

(Rabaiah A. and Vandijck E., 2009) have studied the strategies of (21) countries in addition to the European Union to put together a generic strategic framework of e-government. There is a lack of strategic framework - a framework that stems from the e-government strategy itself. The proposed framework incorporates important elements and principles and offers a comprehensive view of the e-government programme. It has desirable characteristics and features that can add value to the e-government strategy. It incorporates very important components of front office and back office views. Proposed strategic framework possesses modular design that is flexible, customizable and extensible. The major components studied in the study are electronic access to government, electronic authentication, unique identification numbers for citizens and
businesses, key registers/authentic sources, electronic personal identification (chip cards),
electronic information exchange and fast connections among government organisations.

(Kaushik A. K. et al., 2009) presented a methodology to formulate the security
architecture of the different G2C applications from their identified models. The
methodology and the resulting security architectures can be used for the development,
upgrade and audit of the G2C applications in a model-driven manner. Further work in
this direction is the development of model policies, infrastructure advisories and auditing
requirements as per the accepted ISO 27001 standards.

(Kefallinos D. et al., 2009) has proposed a model for a risk assessment tool
tailored specifically for e-government projects. Major goal here is to cover the particular
threats to the e-government project context. It also provides an interface between the
broader philosophy of IT governance frameworks and the technical risk assessment
methodologies helping in the successful and secure implementation and operation of e-
government infrastructures. The model incorporates a wide range of applicable risk
factors and seven accompanying dimensions, assembled into a checklist-like matrix,
along with an application algorithm and associated indices, which an evaluator can use to
calculate risk.

(Kalsi N. S. et al., 2009) have recognised ICT as the engine for growth and a
source of energy for the social and economic empowerment of any country, specially a
third world country. Today, governments are empowering masses through IT as it can
prove to be effective short-cut to higher levels of equity in the emerging global digital
networked information economy. Framing ICT strategies and policies are complex
exercises which encompass a variety of issues covering areas such as infrastructure,
human challenges, technology, architecture, standards, administrative, information,
security, financial, legal, privacy, quality of service etc.

(Headayetullah M. and Pradhan G.K., 2010) have developed original, expert and
trust-based security protocol for confidential sharing of secret information amid
government intelligence agencies. The designed trust-based security protocol has offered
confidentiality, authentication, integrity, agency verification and a restricted privacy by
utilizing public key infrastructure, MD5 Algorithm, a unique mapping function and
predefined trust level respectively. Proposed work will improve the interoperability and
security of digital government by making use of trust based protocol to share the top secret information among the government intelligence agencies to protect any threatening or unsocial activities.

(Srivastava Dimpi, Sharma B.K., 2010) have explained the way to transform citizen to e-citizens through minimizing digital divide and providing multi-delivery channels to access e-government services. Fostering transparency, education, maintaining privacy and security will help greatly in converting normal citizens to E-citizens. Transparency measures the accountability, legitimacy, and trust of the web site and characterizes a government's web culture.

(Navale Geeta S. et al., 2010) have explained that technology development has raised new needs during the last few decades. Banking and financial sector (needed for e-governance transactions) has no exception. In order to satisfy financial need for customer banks are taking help of new technology like Internet. But security problem is very important. To improve security steganography technique has been used. The security enhancing task includes construction of formula for both data encryption and also for hiding pattern. Server should not process any fake request hence concept of custom session id and request id is introduced. Implementation of such a security constraints in banking sector will not only help to serve customer in better way but also make customer confident and satisfied.

(Elssied et al., 2011) have investigated and reviewed the application of fuzzy algorithms in the field of e-government security. A comparison between five approaches based on fuzzy has been described. There is need for new evaluation methods to obtain the good performance particularly in the evaluation of effectiveness and efficiency. Fuzzy logic has been widely used in real world especially in automation and process control, fuzzy logic is best solution and much appropriate for work with indefinite information. In context of evaluation the security of e-government and according to the criteria used, it was obviously observed that, policy makers require assessing the information on the security strategy to produce reliable e-government services.

(Kadam A.W., 2011) has explained that the security of database could be compromised if the database implementer violates any of the specifications provided by the database vendor. The database itself being a large application would have
vulnerabilities which are detected and corrected by the vendor through the issue of patches as well as new versions. It will be wise to use the latest version to avoid any security vulnerabilities. By using database approach the problem of duplication and inconsistency of data has been removed but another problem of data centralization is introduced. This gives rise to the obvious danger of single point of failure. There are a few more security concerns while using the database.

In 2012, a greater number of countries were providing transactional services online than before. Now governments are aware of the role technology can play in revenue generation online, tax payments became available in 40 per cent of the countries in 2012. With greater back-office integration, other forms of transactions such as payment for utilities and birth and car registrations were the ability of agencies to work together and citizens to engage in wide-ranging dialogue with government become especially important in the context of putting e-government to the service of inclusive and people-centred sustainable development. For transactional services security is most important factor for its success.

(Izhar Mohd. et al., 2012) have explained that there must be various authentication, encryption and data management policies so that data available on the portals can be managed properly. Portal is more secure if it is having less number of threats and vulnerabilities. Certain portals have also enabled the debugging facility which is not good for security purposes. Due to increase in the wireless network many security threats have been raised that does not require any expertise and expensive equipment to launch an attack against an organization.

(United Nations, 2012) survey has explained that creating a trusted framework for digital authentication is a crucial and important factor in assuring the integrity of online and mobile financial transactions. Digital signature is just only a beginning. Concrete applications have to be developed, and they require a lot more legal changes. A key concept with security issues is scalability. At the same time, the security framework should take into consideration the fact that a majority of administrative transactions do not need high levels of protection and that secure procedures are expensive, difficult to implement and not always well accepted by the end user. Given the complexities, implementation of trusted security and privacy measures constitute a major challenge to
one-stop-shops, which many governments have yet to tackle. Only about one fifth of national portals clearly indicate the presence of security features with significant regional variation. According to the 2012 survey by United Nations, almost half of the countries in Europe display secure links on their national websites, while only one in Africa appears to do so, underscoring the continuing difficulty that African governments face in moving to the transactional and connected stages of e-government development.

(Mithun Barua, 2012) has provided many suggestions for proper implementation of e-governance in treasuries. Policy procedure regarding data security, documentation of data, backup and restoration should be prepared and implemented accordingly. Security of data and anti-virus measures should be immediately implemented to prevent data loss and corruption. The employees of the treasuries should be technically trained for project management and data management instead of fully depending on the private vendors and developers. The password controls may be strengthened and appropriate activity logs should be introduced. Development of a comprehensive database of employees, DDOs and pensioners for utilization, across applications should be considered. A mechanism to oversee implementation of logical and physical access controls, and authorization levels, should be put in place. Compliance to various financial plans and regulations and other manual provisions should be ensured and provisions be made in the software. Detailed user manuals, system data flow diagrams and system maintenance manuals should be prepared in respect of the duties to be performed at the treasuries and sub-treasuries. Purpose of the study is to highlight the shortcomings of the e-governance initiatives or computerization of treasuries in different States of India through the lens of the information technology audit reports prepared by the Comptroller and Auditor General (CAG) of India.

Legal framework is a basic requirement for successful implementation of e-governance in any country. Switching over to a electronic government requires supporting laws; for example, governments need to make proper use of digital authentication and digital signatures as legally valid. However, it is not an easy job and also framing laws only is not sufficient. Implementation of such a plan is also a great challenge. In a country like India it is a challenging job to implement such laws effectively. It can be confirmed because there are many laws, rules and regulations that
have not been implemented strictly as per law. Implementing a Public Key Infrastructure (PKI) for issuing digital signatures for all citizens is difficult task for country like India having a huge population and limited resources being a developing country.

Bureaucratic organisations have unique capability to address continuous demands induced by social, economical and technical changes and having this competence is unavoidable for any government. But general public points red-tape as the one of the major barrier in proper functioning of the bureaucratic organisations. Many researchers suggest red tape as one of the major barrier to administrative reforms and improving government efficiency. Government administrative systems tend to be enormously complex with a large number of multi-level departments and interconnected organisations. Information and Communication Technology has unparalleled ability to simplify these complex inter and intra-organizational communications.

There are a number of scholarly journal articles, available today in journals, websites, magazines and books that describe e-government initiatives in the context of various developing countries. Such type of studies will prove useful to identify the ongoing and emerging trends of e-government among developing nations. Such studies and analysis can also be useful in providing a pragmatic lens for the observation of e-government developments in other developing countries which share social, cultural, economic and technological perspectives (such as India, Pakistan and Bangladesh), and help in identifying the opportunities and challenges faced by these countries in general.

Literature review has provided impact of ICT and e-governance and several reasons for the bad performance of governance projects. While some of these reasons are common for e-governance projects around the world others are unique to the Indian context. This includes but not limited to internal process reforms, an introduction or overhauling of workflow, process re-engineering and removal of unnecessary red tapes etc.

Summary

In this chapter various e-governance models, frameworks, e-governance in Asian countries including India and detailed literature survey on e-governance and its security
has been conducted. It is good for managing security of e-governance and provides a background of e-governance initiatives in various states of India.

From the above review of literature, it can be concluded that though some pioneer work has been done by various researchers on components of good governance in developing countries and even on India as well, yet there is a need to have a comprehensive, integrated strategic framework for good governance with Indian perspective.

This type of research has a theoretical contribution in terms of accumulating the scattered information about the e-government research in the developing and under-developed countries and explains the researchers to know the various trends through exploring the existing research studies in this area. Such literature review or analysis explain the gap (lack of knowledge) and draw other new researchers’ attention to fulfill such gaps with the appropriate work in such areas. There is a need for specific e-government research to be carried out in these countries to know more details about their ongoing e-government development and growth. The researchers from the developed and developing countries’ community can look forward to undertake more research studies to help the whole research community regarding developments in e-government, as well as help the government of these countries to manage their governance in particular.

This literature survey has shown that many studies have been done in the area of e-governance but no study has been seen regarding assessment of security and vulnerability of various e-governance websites and web portals. In this study various metrics for analysis of web portals and their vulnerability have been checked and certain ways to mitigate the risk involved while using such portals has also been explained. It is hoped that the study will help in improving security related flaws on the various e-governance portals in the coming days. The next chapter explains about the design of research methodology adopted for the study.