E-Government Service Adoption in India: A Conceptual Model

Prerna Lal*

Abstract

Governments around the world are spending a lot of money on e-government projects for providing better services to citizens. Success of these e-government projects depend a lot on their adoption by citizens. There are a number of studies suggesting various adoption models. These adoption models differ from country to country based on their unique environments. The objective of this paper is to understand various factors which affect the adoption of e-government services in India. The proposed conceptual model for evaluating citizens' intention to adapt e-government services integrates constructs from Technology Acceptance Model (TAM), Diffusion of Innovation Theory, trust, awareness, and Information and Communication Technology (ICT) infrastructure availability literature. The model will help in understanding a citizen's perception about e-government services in India. The paper proposes a unique model of e-government service adoption which is applicable in Indian environment with an emphasis on ICT infrastructure availability and awareness about e-government services.

Keywords: E-government Services, TAM, DOI

1. Introduction

The adoption of information and communication technology (ICT) and related practices in the commercial sectors, such as e-commerce, and the diffusion of the internet among the general population have resulted in a rising level of comfort and familiarity with the technologies in many contexts (e.g. communicating with people, electronic marketing, and academic activities) [1]. Governments around the world are trying to provide similar kind of service to citizens that can be accessed 24/7 and where they can complete a transaction with government agencies without having to visit different departments in separate physical locations.

Nearly all countries across the globe, from poorest countries to the most advanced ones, have some sort of internet presence, or so called e-government [2]. Primary goal of e-government service is to facilitate citizens' interaction with government for services like issuing/ renewing passport, paying taxes (income tax, house tax, water tax), renewing licenses, registering cars etc.

Before going into detail of e-government we need to understand the term e-governance. E-governance can be defined as the application of information & communication technologies to transform the efficiency, effectiveness, transparency and

*International Management Institute, New Delhi, India

accountability of informational & transactional exchanges with in government, between govt. & govt. agencies of National, State, Municipal & Local levels, citizen & businesses, and to empower citizens through access & use of information [3].On the other hand, Moon [4] defines e-government as "the use of all information and communication technologies, from fax machines to wireless palm pilots, to facilitate the daily administration of government…". According to 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" [5].

The advantages of e-governance are indisputable. Governments can use online services and can save a lot of cost by decreasing expenses incurred in printing documents, posting letters etc. They also reduce travel and waiting time (from in-line to on-line), introduce more efficient payment methods, improve transparency of government's operations and allied activities, and improve poor governance [6]. Thus e-government services can serve a variety of different ends: better delivery of government services to citizens, improved interactions with business and industry, citizen empowerment through access to information, or more efficient government management. The resulting benefits can be less corruption, increased transparency, greater convenience, revenue growth, and/or cost reductions [7].

Since the emergence of the e-government concept, there have been many studies which have explored the challenges that influence e-government implementation in various different national contexts [8].Given the above background the rationale for this research is to attain better understanding about adoption and diffusion of e-government services from the Indian citizen's perspective.

E-Government Services in India

In 2006, Indian government approved National e-Governance Plan (NeGP) with an objective to "make all government services accessible to the common man in his locality, through common service delivery outlets, and ensure efficiency, transparency, and reliability of such services at affordable costs to realize the basic needs of the common man"[9].

National e-Governance Plan include providing online services for income tax department (http://www.incometaxindia.gov.in), passport department (http://www.passportindia.gov.in), company affairs, central excise, pensions, land records, road transport, property registration, agriculture, municipalities, gram panchayats (rural), police, employment exchange and e-courts [10]. Major e-government projects at state level include Gyandoot, Gram Smpark, Smart card in transportation department in Madhya Pardesh, e-Seva, e-cops, and Saukaryam in Andhra Pradesh, E-Khajana in Bihar, Automatic Vehicle Tracking System in Delhi, Bhoomi and Kaveri in Karnataka, SUWIDHA in Punjab, ASHA in Assam and many more.

Literature Review

The literature suggests several factors that contribute positively to an individual's decision to adopt e-government services and others that contribute negatively to the decision.

Various researchers and practitioners have attempted to offer insights into implementation, acceptance and diffusion of e-government services in different national contexts [8]. Most of the literature related to e-government service adoption applies and extends the well known Technology Acceptance Model (TAM) by Davis [11]. According to TAM perceived usefulness (PU) and perceived ease of use (PEOU) are two major constructs for identifying citizen's intention to use e-government service.

Al-Shafi [8] proposed that Performance expectancy, Social influence, Effort efficiency, system expertise, perceived risk and facilitating conditions are important factors that influence the user intension to adopt e-government services. Al-adawi [6] studied citizens' intention to use e-government service from two points of views - getting information and conducting transactions. Trust has been identified as a major factor which influences citizen's intension to use e-government services [12, 13, 14, 15]. Financial security, information quality; time and money are also some of the factors citizens are looking for in an e-government services [14]. According to Lai [15], an e-government service portal also influences the behavior of citizen for example how easy or difficult it is to navigate the portal, how the information and data are provided, and what kind of help is available to the user to perform certain tasks etc.

The factors influencing the adoption vary with different environments of different countries. That is why we need unique adoption models to understand factors that makes the adoption of e-government services a success in India.

Research Framework

This paper proposes a conceptual model of adoption of e-government services in India, which is derived from the theoretical foundations of prior research in theories of Technology Acceptance Model (TAM) by Davis [11] and Diffusion of Innovation (DOI) by Rogers [16] and Web- based service adoption literature.

Original version of Technology Acceptance Model (TAM) was proposed by Davis [11]. TAM theorizes that an individual's behavioral intension to use a system is determined by two factors: perceived usefulness (PU), defined as the extent to which a person believes that using the system will enhance his or her performance, and perceived ease of use (PEOU), defined as the extent to which a person believes that using system will be free from effort [17]. Decision to adopt an e-government service, which is, basically a Web-based service, depends a lot on technology acceptance by user. Two constructs PU and PEOU play a very important role in shaping user attitudes and intention to adopt new technology.

According to Diffusion of Innovation (DOI) Rogers [16] theory, the adoption of innovation is modeled as a process of information gathering and uncertainty reduction with a view to evaluate the technology. The individual's decision on whether to use the technology is based on perceptions of the technology such as relative advantage, compatibility, complexity, trialability and obeservability [12]. In case of e-government

services relative advantage (RA) of using e-government services can be explained in terms of saving time of commutation, long queues, staff absenteeism, procedural complexities etc.

Based on extensive literature this paper suggest that in addition to PU, PEOU, and RA four more constructs namely ICT infrastructure availability (ICTA), awareness (A), and trust (T) also influence the decision to adopt e-government services in India.

Perceived Usefulness (PU)
Perceived usefulness is the degree to which a person believes that using a particular system would enhance his or her job performance [11]. Perceived usefulness of a Web-based service can be judged based on improvement in performance, productivity, and service usefulness. Customers who perceive that e-government services will help them in achieving all these benefits are more likely to adopt e-government services. Thus:

H1: Perceived Usefulness will positively affect the likelihood of e-government service adoption.

Perceived Ease of Use (PEOU)
Perceived Ease of Use refers to the degree to which a person believes that using a particular system would be free of effort [11]. Extensive research in the past provides evidence of the significant effect of perceived ease of use on usage intention, either directly or indirectly [18, 19, 20]. According to Venkatesh [17], constructs related to control, intrinsic motivation, and emotions are anchors for the formation of perceived ease of use regarding a new system. In terms of e-government services perceived ease of use will mean clear interaction and easy to understand service, less mental effort in using service and able to perform tasks according to citizens' requirements. Thus:

H2: Perceived Ease of Use will positively affect the likelihood of e-government service adoption.

Relative Advantage (RA)
Relative advantage is the degree to which a technological factor is perceived as providing greater benefit to an organization or an individual. E-government services allow operations to be generalized and mobilized through internet transactions Rogers [16]. The expected benefits of embedded e-government services include speed of transactions, efficient coordination among government departments, better customer communications, and access to government services information mobilization. In sum, citizens who perceive higher relative advantage in online services tend to be more likely to adopt e-government services. Thus:

H3: Relative advantage will positively affect the likelihood of e-government service adoption.

ICT Infrastructure Availability (ICTA)
Implementation of e-government services vary from country to country due to various reasons. Availability of ICT infrastructure is one of the major concerns. ICT are being increasingly used by governments to deliver its services at locations convenient to citizens. The ICT infrastructure including networks and servers is an essential part of e-government implementation and diffusion [21]. It must be in place before e-government services can be offered reliably and effectively to the public [22].The rural ICT applications attempts to offer the services of central agencies (like district administration, cooperative unions, and state and central government departments) to citizens at their village door steps. These applications utilize the ICT in offering improved and affordable connectivity and processing solutions. Several Government-Citizen (G-C) e-Government pilot projects have attempted to adopt these technologies to improve the reach, enhance the base, minimize the processing costs, increase transparency, and reduce the cycle times [23]. In India providing adequate ICT infrastructure to most of the rural locations is still a challenge either due to unstable power supply (load-shedding) or due to poor connectivity. Thus:

H4: ICT infrastructure availability will positively affect the likelihood of e-government service adoption.

Awareness (AW)
Indian government is investing a lot on number of e-government projects. But the success of these projects will depend a lot on what kind of information citizens have regarding these projects. Creating awareness not only about e-government projects but also how to access and use these services is very essential. According to a study conducted by Bharti [24], citizens' awareness regarding e-governance initiatives by Uttar Pradesh State Road Transport Corporation (UPSRTC), it was found that more than 50 percent of commuters were not aware about the website as well as the other e-government projects. Thus :

H5: Awareness regarding e-government services will positively affect the likelihood of e-government service adoption.

Trust (T)
Previous research in the area of e-government service adoption indicates that trust is a very important factor in adoption of e-government services by citizens [25, 27]. In developing countries, people in general have low trust in their governments. This is because of the gap between public expectation and perceived governmental performance, economic performance, the role of mass media, political scandal, changes in social capital and culture, and perceived policy failures [26]. According to AlAwadhi [27], security and privacy are major factors that might prevent them from trusting, and therefore using, e-government services.

H6: Trust will positively affect the likelihood of e-government service adoption.

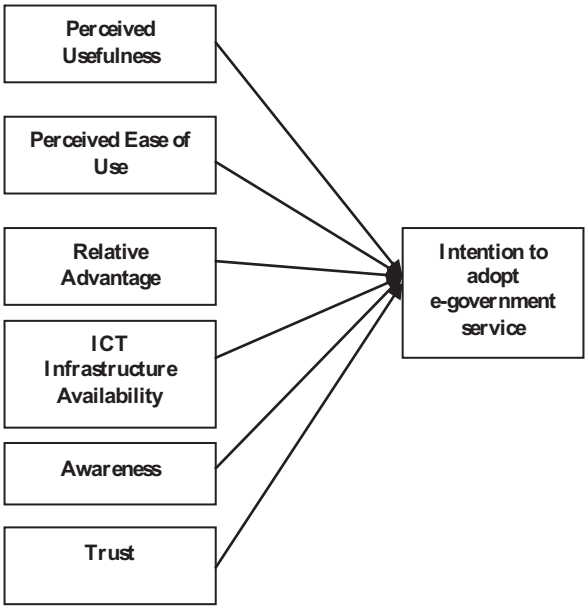

Figure 1: Proposed Model for e-government service adoption

Conclusion

E-government services act as an instrument of reform and a tool to transform government operations. The primary objective of this paper is to provide a conceptual model that identifies the factors influencing the citizens' intention to use e-government services in India. The model proposed in the paper extends the TAM model by including constructs from DOI theory and literature review for Indian context. The research attempts to provide insights into issues involved in ICT infrastructure availability, building trust and awareness among citizens' regarding Web based services and accessing their importance in acceptance of e-government services. Empirical testing of hypotheses generated from the model will lead to better understanding of these constructs and will help e-government practitioners in improving their services in terms of reach and acceptance.

References

1. *Ebrahim E, Irani Z, "E-government adoption: architecture and barriers", Business Process Management Journal,11(5), 2005, pp 589-611.*
2. *Davidrajuh, R., "Planning e-government start-up: a case study on e-Sri Lanka", Electronic Government, 1:1, (2004),*
3. *www.egovindia.org/egovernancepaper.doc*
4. *Moon, M. "The evolution of E-Government among municipalities: Rhetoric or Reality". Public Administration Review. 62:4, (2002).*
5. *The world Bank," How E-government interacts With Its Citizens", (2001)*
6. *Al-adawi, Z., Yousafzai, S. & Pallister, J., "Conceptual model of citizen adoption of egovernment", The Second International conference on Innovation Technology (IIT05), 2005, pp 1-10.*
7. *http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/EXTINFORMATIONANDCOMMUNICATIONANDTECHNOLOGIES/EXTEGOVERNMENT/0,,contentMDK:20507153~menuPK:702592~pagePK:148956~piPK:216618~theSitePK:702586,00.html*
8. *Al-Shafi S. and Weerakkody V., 'Factors Affecting E-Government Adoption in the State of Qatar'. Proceedings of the European and Mediterranean Conference on Information Systems, 2010, 1-23.*
9. *http://india.gov.in/outerwin.php?id=http://mit.gov.in/content/national-e-governance-plan*
10. *http://india.gov.in/govt/national_egov_plan.php*
11. *Davis, F. D., A technology acceptance model for empirically testing new end-user information systems: Theory and results.(Doctoral dissertation, Sloan School of Management, Massachusetts Institute of Technology), (1986).*
13. *Shajari Maziar, Ismail Zuraini, "Trustworthiness: A key factor for adoption Models of e-government Services in Developing countries", international Conference on Education and Management Innovation, IPEDR, Vol (30), 2012, pp. 22- 26.*
13. *Israel Duraipandian, Tiwari Rakesh," Empirical study of factors influencing acceptance of e-government services in India", ICEGOV '11 Proceedings of the 5th International Conference on Theory and Practice of Electronic Governance, Sep 26-28, 2011.*
14. *Warkentin, M., Gefen, D., Pavlou, P., & Rose, G. (2002). Encouraging Citizen Adoption of e-Government by Building Trust, Electronic Markets, Volume. 12:3.*
15. *Melitski, J. (2003). Capacity and E-Government Performance: An Analysis based on early adopters of internet technologies in New Jercy, Public Performance and Management Review. 26:4*
16. *Rogers, Everett M., Diffusion of Innovations. 4thed. New York: Free Press,1995.*
17. *Venkatesh, V. and Davis, F.D. "A Theoretical Extension of the Technology Acceptance Model: Four Longitudinal Field Studies," Management Science (46:2), 2000, 186-204.*
18. *Hernandez JMC, Mazzon JA (2007). Adoption of internet banking: proposition and implementation of an integrated methodology approach, International J. Bank Mark. 25 (2): 72-88.*
19. *Guriting P, Ndubisi NO (2006). Borneo online banking: evaluating customer perceptions and behavioural intention. Manage. Res. News. 29 (1/2), 6-15.*
20. *Eriksson K, Kerem K, Nilsson D (2005). Customer acceptance of internet banking in Estonia, Int. J. Bank Mark. 23 (2), 200-216.*
21. *Ndou, V., E-government for developing countries: opportunities and challenges. The Electronic Journal on Information Systems in Developing Countries 18, 1, 1-24, (2004).*
22. *McClure, D. Electronic Government: Challenges Must Be Addressed with Effective Leadership and Management. GAO-01-959T, Testimony before the Senate Committee on Governmental Affairs, on behalf of the U.S. General Accounting Office, (2001) http://www.gao.gov/new.items/d01959t.pdf.*
23. *Rama Rao, T.P. "ICT and e-Governance for Rural Development", Symposium on "Governance in Development: Issues, Challenges and Strategies" organized byInstitute of Rural Management, Anand, Gujarat, December, 2004.*
24. *Ajay Kumar Bharti; Sanjay K. Dwivedi, E-Governance in Public Transportation: U.P.S.R.T.C. -A Case Study [A]; Proceedings of International Conference on Software and Computer Applications, ICSCA 2011 .*
25. *Mofleh, S.I. & Wanous, M. (2008). Understanding factors influencing citizens' adoption of e-government services in the developing world: Jordan as a case study. INFOCOM-Journal of Computer Science, 7(2), 1-11.*
26. *Peters, B.G. American public policy: Promise and performance. 5th ed. New York: Chatham House Publishers, 1999.*
27. *Suha AlAwadhi, Anne Morris: The Use of the UTAUT Model in the Adoption of E-Government Services in Kuwait. HICSS 2008: 219*