Electronic Government and Electronic Participation
E. Tambouris et al. (Eds.)

doi:10.3233/978-1-61499-570-8-261

Adoption of Common Service Centre with presence of intermediary for delivery of e-Government services: A conceptual framework

Rajesh SHARMA[a,1] and Rajhans MISHRA [b]

[a] *Research Scholar, Indian Institute of Management Indore (India)*
[b] *Assistant Professor, Indian institute of Management Indore (India)*

Abstract. Government of India is making large investments for providing e-Government services to citizens under its National e-Governance Plan (NeGP) 2006. Common Service Centres (CSCs) are envisaged as one of the pillars of the delivery mechanism of e-Government services in rural areas where the availability of Internet, literacy levels of citizens and PC penetration is rather low. This channel of delivery is quite different from that of developed countries because citizens do not interact directly with technology. An intermediary called as the Village Level Entrepreneur (VLE) delivers the services to the citizens and technology is manifested to the citizens by results of his interactions at the CSC. The study aims to develop a conceptual framework for adoption of CSCs by the citizens in this unique context. A qualitative study is carried out to identify the factors that can augment the technology adoption constructs. The study reveals that quality of service delivered at CSC may be an important determinant for adoption of CSCs. The proposed conceptual framework is intended to form the basis of future empirical studies in similar context in India and in other developing countries.

Keywords. Common Service Centre, adoption, e-Government, intermediary, rural, India, quality of service

1. Introduction

The governments all over the world are adopting Information and Communication Technology (ICT) for transforming government administration [1] in the form of e-Government. Governments are looking at e-government as a mode of delivery that has the potential for reducing the governance costs by minimizing the wastage, eliminating corruption by improving transparency and promising a better future to the citizens by opening up opportunities for reduction in rural poverty and inequality [2]. Accordingly, huge investments are being made in promoting e-government with the objective of achieving effective delivery of government services.

[1] Corresponding Author.

The mode of delivery of e-government services in rural areas of developing countries needs to be quite different from that of developed countries to overcome the handicap of low Internet penetration and low computer literacy of these areas. For example, Government of India has introduced the concept of Common Service Centres (CSCs) which are ICT enabled front end service delivery points at the village level for delivery of government services (www.csc.gov.in). These CSCs are manned by a Village Level Entrepreneur (VLE) involved in delivering the service. As compared to developed countries, the important contextual differences are presence of intermediary, involvement of public-private partner and demographic differences in respect of education, income and computer literacy. These differences point to the possibility that the determinants of adoption of Common Service Centres for availing e-Government services may be quite different from developed countries where delivery of government services is directly a result of interaction of citizens with the e-Government websites.

Research initiatives in adoption of e-government services in the context of citizens of rural areas in developing countries have been rather sparse [3]. Recent meta-analysis of existing research on e-government adoption studies [4] reveals out of 63 relevant empirical studies in this field till 2013, only two studies were reported from India [5][6] and both were in urban context only. Role on intermediary in delivering e-Government service has been explored in only one study [7] which was carried out in urban context in the city of Madinnah in UAE. No study has specifically looked at the context involving rural population, presence of intermediary and role of public-private partnership for delivering e-Government service.

The above discussions point to a research gap in respect of empirical studies in the context where the services are delivered through intermediaries rather than directly being availed by citizens. Empirical studies based on such framework are likely to lead to new insights for stimulating adoption of e-government in rural areas. The findings can be put to use by the practicing managers for reducing the digital divide between rural and urban areas in developing countries.

Accordingly, the objective of this research is to develop a conceptual framework of acceptance of common service centres by the citizens of rural areas for availing e-government services. The research contributes to the existing body of knowledge on e-government adoption by proposing a framework that takes into account unique contextual factors of delivery of e-government services in rural India. The framework can be used for studying the phenomena of adoption of e-government in other developing countries too that have a similar delivery mechanism.

Mixed method approach has been adopted to ground the research in practical perspective [8][9]. For this purpose, the relevant determinants of adoption are obtained from the literature by looking at various theories of technology adoption. Based on theoretical foundation of literature and interpretive analysis of interview results [10], a framework is proposed to explain adoption of CSCs in Indian context.

2. Literature Review

The literature review is carried out in two parts. In the first part, prior research in e-Government adoption is reviewed to identify the theories of technology adoption that

have been used in various studies. In the second part, delivery mechanism of e-Government services in rural India is reviewed.

2.1 Prior research in e-Government adoption

Several adoption models such as Diffusion of Innovation, Theory of Planned Behaviour, TPB[11], Technology Adoption Model, TAM[12], Perceived characteristics of innovation, PCI [13], D&M IS Success Model, Unified Theory of Acceptance and Use of Technology, UTAUT [14] etc. have been empirically tested in different contexts. Survey papers [15] [16] provide a gist of studies related to technology adoption studies in various contexts. Some other models and theories that have been used in these studies are SERVQUAL model [17], big five personality model [18] and actor network theory [19].

Review of existing literature specifically on e-Government adoption has been carried out which reveals that TAM have been extended with constructs from other theories such as TPB, DOI, PCI, web trust model [20] etc depending upon the context of service delivery.

Another widely used theory of adoption is the UTAUT model which has integrated eight earlier adoption models and theories. It has been used in several empirical studies by extending it with constructs that are not part of UTAUT such as trust [21], perceived security control [22], perceived risk and optimism bias [23].

Apart from extensive use of TAM and UTAUT as the base model for studying e-Government adoption, some authors have based their research on other theories such as Big Five Model [24], DOI [25], DeLone & McLean IS Success Model [26], Theory of Planned Behaviour [27] and SERVQUAL model [28].

2.2 e-GOVERNMENT DELIVERY MECHANISM IN INDIA

National e-Governance Policy: To realize the potential of use of IT in governance, National e-Governance Policy (NeGP) was unveiled in 2006 with the vision 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 cost"* (www.negp.gov.in). The policy emphasized on process re-engineering with centralized initiative and decentralized implementation with emphasis on Public Private Partnership (PPP) for ensuring fully electronic delivery of services. Expenditure of nearly Rs 40,000 crores was envisaged by the government for the initiatives under NeGP.

Role of Common Service Centres: As per NeGP, Common Service Centres (CSC) was envisioned as the primary delivery channel of e-government in India in order to alleviate the difficulties of low Internet penetration and poor infrastructure in rural areas. They were envisaged to provide shared ICT facility having computers and Internet connectivity for public access of various information services. The CSC operator (called as the Village Level Entrepreneur or VLE) is expected to provide hand-holding functions and act as an interface between the citizens and the e-Government portals.

The CSC scheme is based on the Public Private Partnership (PPP) model that envisages a 3-tier structure consisting of the VLE catering to a cluster of 3-4 villages; the Service Centre Agency (SCA), that will be responsible for a division of 500-1000 CSCs; and a State Designated Agency (SDA) identified by the State Government responsible for managing the implementation in the entire State (Website www.deity.gov.in).

3. Qualitative study to identify additional constructs

Literature review in preceding section reveals that there are several unique features in rural India such as presence of intermediary at Common Service Centre (CSC), lack of reliable ICT infrastructure, lack of computer literacy among the citizens and dependence on PPP partner for providing government services. The model for explaining adoption behaviour needs to take into account these salient features in addition to the constructs explored in technology adoption research.

In order to ground the research in practical perspectives, in-depth interviews were held with stakeholders such as citizens, VLEs, SCA and government officers to elicit their views on factors that may influence intention to use CSC. . The responses were recorded and common themes were generated by the interpretive approach which combines the perspectives of different stakeholders into a common set of beliefs. According to [29], theoretical saturation is generally achieved after sample size of 12. However, in this case we collected responses of 15 stakeholders and stopped when no new information was forthcoming [30]. The responses were coded and segregated into common themes as summarized in Table1:

Table 1: Themes of determinants of CSC adoption

S. No.	Statement related to adoption of CSC	Underlying Theme
1	Accessibility of CSC location from villages	Ease with which services at CSC can be used
2	Distance of CSC from village	
3	Flexible timing of CSC (i.e., no strict office hours)	
4	Simplicity of processes at CSC	
5	Accuracy of information made available by the CSC	Usefulness of CSC
6	Instant completion of work without the need for follow-up visits	
7	No requirement to pay bribes	
8	Number of services available at CSC	
9	Whether the information/certificate made available by CSC is accepted by other organizations	
10	Behavior of VLE	Service quality at CSC
11	Comfortable environment at CSC such as fan, light, water etc.	
12	CSC should not have long queues	

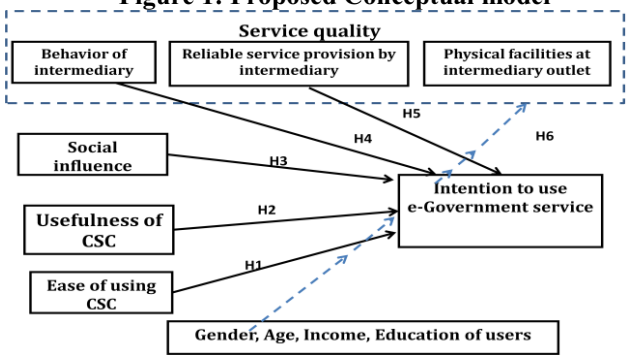
13	Timely completion of service as per promise	
14	VLE should be helpful	
15	VLE should be knowledgeable	
16	Whether proper feedback is given regarding likely date of fulfillment	
17	Positive word of mouth about the CSC	Influence of opinion of society on intention for using CSC
18	Reputation of the CSC in the village	
19	Reputation of the VLE in the village	

4. Proposed Conceptual Model

Most of prior research in technology adoption has involved direct interface of technology with the users. The situation in present context is different because citizens at CSCs do not directly handle the technology. It can be a matter of debate whether the constructs of technology adoption should apply in this context. According to [31] [32], *"technology is a design for instrumental action that reduces the uncertainty in the cause-effect relationships involved in achieving a desired outcome"*. Therefore any action that helps in achieving the objective with less ambiguity can be termed as a technology. In the present context, CSC enables service delivery in rural areas without the requirement of citizens to visit headquarters located far away from their village. The new system of CSC (consisting of technology and the intermediary) reduces the uncertainty in achieving a desired outcome (availing government service) and therefore can be viewed as a technology even though the citizens do not interact with the website themselves. This scenario clearly indicates that the technology adoption constructs should form the basis for the conceptual model.

It is necessary to include other constructs in the framework that emerge from the qualitative study. First is the behaviour of VLE with the users, second is timely provision of the services and third relates to physical facilities at the CSC. These dimensions relate to quality of service delivered at the CSCs. Accordingly the conceptual model proposed in Figure 1 includes these important constructs apart from the technology adoption constructs, namely, ease of use of CSC, usefulness of CSC and social influence.

Figure 1: Proposed Conceptual model



These constructs are described as follows:

Ease of use of CSC: In our context it is defined it as *"the degree of ease associated with obtaining government services through CSCs"* and this leads to the hypothesis H1: *Ease of using CSC is positively related to the behaviour intention for using CSC to avail e-Government services.*
Usefulness of CSC: In our context, it is defined as '*the degree of ease associated with obtaining government services through CSCs'* and leads to hypothesis ***H2:*** *Usefulness of CSC is positively related to the behaviour intention for using CSCs.*
Social Influence: In our context it is defined as *"the degree to which an individual perceives that it is important for others to believe that he or she should obtain government services through the CSC"* and leads to hypothesis ***H3:*** *Social influence is positively related to the behaviour intention for using CSCs .*
Behaviour of intermediary: It is defined as *"the empathy and responsiveness that is displayed by the intermediary towards the users approaching CSC for availing e-Government services"* and this leads to hypothesis ***H4:*** *Greater empathy and responsiveness shown by the intermediary to the users is positively related to the behaviour intention for using CSCs.*
Reliability of services provided by intermediary: It is defined as *"the extent to which reliable services are provided by the intermediary to the users"* and this leads to hypothesis ***H5:*** *Reliability of services provided by intermediary is positively related to the behaviour intention for using CSCs.*
Physical facilities at intermediary outlets: It is defined as *"the extent to which the equipments and ambience at the CSC are perceived to be attractive by the users"* and this leads to hypothesis ***H6:*** *Physical facilities at intermediary outlet are positively related to the behaviour intention for using CSCs.*

We posit that H4, H5 and H6 are captured by dimensions of service quality, namely, tangibles, reliability, responsiveness, assurance and empathy that are proposed in the SERVQUAL scale. Dimensions of empathy and responsiveness can measure perception of users about behaviour of VLE while timely provision of service without uncertainty is captured by dimensions of reliability and assurance in the SERVQUAL scale. Similarly, extent to which equipment and ambience are perceived to be attractive by the users is captured by the dimension of tabgibles in SERQUAL. In accordance to the findings in prior research, it is felt that SERVPERF scale will be appropriate in the present context where the respondents are not much educated.

Age, sex, income and education: Based of prior literature, it is proposed that the demographic factors such as age, sex, income and education will have moderating relation with ease of use, usefulness of CSC and social influence.

5 Conclusions and implications for research and practice

In the paper, we have presented a conceptual model for identifying the determinants for adoption of common service centres for delivery of e-Government services in rural areas. The conceptual model presented in Figure 1 takes into account the unique e-Government delivery context where technology is manifested to the citizens by success of the transactions at the CSC and the intermediary plays a crucial role in determining the quality of service. The study extends the body of knowledge in the domain of

technology adoption by providing a framework for assessing intent to use a different kind of delivery channel of e-Government services, namely the common service centres. Apart from the CSC, there are other innovative upcoming technology-based channels such as SMS and mobile apps on smart phones which are expected to dominate the service delivery in future. The research process by which the model in this paper has been developed can be replicated for further research in adoption of services delivered through these new delivery channels.

References

[1] Abramson, M. A., & Means, G. (2001). E-government 2001, The Price water house Coopers endowment series on the business of government.

[2] Schware, R. (2000). Information technology and public sector management in developing countries: present status and future prospects. Indian Journal of Public Administration, 46(3), 411-16.

[3] Imran, A., & Gregor, S. (2007). A comparative analysis of strategies for egovernment in developing countries. Journal of Business Systems, Governance and Ethics, 2(3), 89-99.

[4] Rana, N. P., Dwivedi, Y. K., & Williams, M. D. (2013). A meta-analysis of existing research on citizen adoption of e-government. Information Systems Frontiers, 1-17.

[5] Sahu, G. P., & Gupta, M. P. (2007). Users' acceptance of e-government: A study of Indian central excise. International Journal of Electronic Government Research (IJEGR), 3(3), 1-21.

[6] Ojha, A., Sahu, G. P., & Gupta, M. P. (2009). Antecedents of paperless income tax filing by young professionals in India: An exploratory study. Transforming Government: People, Process, and Policy, 3(1), 65–90.

[7] Al-Sobhi, F., Weerakkody, V., & El-Haddadeh, R. (2011). The Relative Importance of Intermediaries in eGovernment Adoption: A study of Saudi Arabia. In M. Janssen, H.J. Scholl, M.A. Wimmer, and Y-H. Tan (Eds.): EGOV 2011, LNCS 6846, 62–74."

[8] Johnson, R. B., & Onwuegbuzie, A. J. (2004). Mixed methods research: A research paradigm whose time has come. Educational researcher, 33(7), 14-26.

[9] Mingers, J. (2001). Combining IS research methods: towards a pluralist methodology. Information systems research, 12(3), 240-259.

[10] Lin, F., Fofanah, S. S., & Liang, D. (2011). Assessing citizen adoption of e-Government initiatives in Gambia: A validation of the technology acceptance model in information systems success. Government Information Quarterly, 28(2), 271-279.

[11] Ajzen, I. (1985), ``From intentions to actions: a theory of planned behaviour'', in Kuhl, J. and Beckmann, J. (Eds), Action-Control:From Cognition to Behaviour, Springer-Verlag, Heidelberg, pp. 11-39.

[12] Davis F. A., Perceived usefulness perceived ease of use and user acceptance of information technology, MIS Quarterly 8 (1989) 318–339.

[13] Moore, G. C., & Benbasat, I. (1991). Development of an instrument to measure the perceptions of adopting an information technology innovation. Information systems research, 2(3), 192-222.

[14] Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. MIS quarterly, 27(3).

[15] Sarkar, J. (1998). Technological diffusion: alternative theories and historical evidence. Journal of economic surveys, 12(2), 131-176.

[16] Chuttur M.Y. (2009). "Overview of the Technology Acceptance Model: Origins, Developments and Future Directions," Indiana University, USA . Sprouts: Working Papers on Information Systems, 9(37). http://sprouts.aisnet.org/9-37

[17] Parasuraman, A., Zeithaml, V. A., & Berry, L. L. (1985). A conceptual model of service quality and its implications for future research. the Journal of Marketing, 41-50.

[18] Costa, P. T., & McCrae, R. R. (1992). Four ways five factors are basic. Personality and individual differences, 13(6), 653-665.

[19] Latour, B. (2005). Reassembling the social-an introduction to actor-network-theory. Reassembling the Social-An Introduction to Actor-Network-Theory, by Bruno Latour, pp. 316. Foreword by Bruno Latour. Oxford University Press, Sep 2005. ISBN-10: 0199256047. ISBN-13: 9780199256044, 1.

[20] McKnight, D. H., Choudhury, V., & Kacmar, C. (2002). Developing and validating trust measures for e-commerce: an integrative typology. Information systems research, 13(3), 334-359.

[21] Barua, M. (2012). E-governance adoption in government organization of India. International Journal of Managing Public Sector Information and Communication Technologies, 3(1), 1-20.

[22] Carter, L., Shaupp, L. C., Hobbs, J., & Campbell, R. (2011). The role of security and trust in the adoption of online tax filing. Transforming Government: People, Process and Policy, 5(4), 303-318.
[23] Carter, L., Shaupp, L. C., Hobbs, J., & Campbell, R. (2011). The role of security and trust in the adoption of online tax filing. Transforming Government: People, Process and Policy, 5(4), 303-318.
[24] Venkatesh, V., Sykes, T. A., & Venkatraman, S. (2014). Understanding e‐Government portal use in rural India: role of demographic and personality characteristics. Information Systems Journal, 24(3), 249-269.
[25] Rokhman, A. (2011). e-Government adoption in developing countries; the case of Indonesia. Journal of Emerging Trends in Computing and Information Sciences, 2(5), 228-236.
[26] Floropoulos, J., Spathis, C., Halvatzis, D., & Tsipouridou, M. (2010). Measuring the success of the Greek Taxation information system. International Journal of Information Management, 30(1), 47–56
[27] Hung, S. Y., Tang, K. Z., Chang, C. M., & Ke, C. D. (2009). User acceptance of intergovernmental services: An example of electronic document management system. Government Information Quarterly, 26(2), 387-397.
[28] Chee-Wee, T., Benbasat, I., & Cenfetelli, R. T. (2008, January). Building citizen trust towards e-government services: do high quality websites matter?. In Hawaii International Conference on System Sciences, Proceedings of the 41st Annual (pp. 217-217). IEEE.
[29] Guest, G., Bunce, A., & Johnson, L. (2006). How many interviews are enough? An experiment with data saturation and variability. Field methods, 18(1), 59-82.
[30] Mason, M. (2010, August). Sample size and saturation in PhD studies using qualitative interviews. In Forum Qualitative Sozialforschung/Forum: Qualitative Social Research (Vol. 11, No. 3).
[31] Eveland, J. D. (1986). Diffusion, technology transfer, and implementation thinking and talking about change. Science Communication, 8(2), 303-322.
[32] Thompson, E. P. (1967). Time, work-discipline, and industrial capitalism. Past and present, 56-97.