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Investigating the role of intermediaries in adoption of public access outlets for delivery of e-Government services in developing countries: An empirical study

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ABSTRACT

The study investigates the role of intermediaries in influencing the adoption of public access outlet that are being set up for delivery of e-Government services, especially in rural areas. In order to identify possible factors of adoption, an exploratory study is first carried out with stakeholders. Findings of the exploratory study, supported by extant literature on technology acceptance, service quality and trusting belief, form the basis for the proposed research model which is empirically tested with 328 respondents from 77 villages in 12 districts in India using Partial Least Square (PLS) technique with hierarchical modelling. Findings of the study suggest that the behaviour of the intermediaries manning these outlets, reliability of the outlet and facilities available at the outlet have significant effect on the service quality of the outlet, which in turn, has a positive effect on citizens' intention for availing e-Government services. Other factors of adoption that are identified to be significant are ease of obtaining service, usefulness of the outlet and positive word-of-mouth among the user community.

1. Introduction

Technology is being widely used by the governments to transform their way of working and improve their interactions with the citizens in the form of e-Governance with the objective of creating impact on society as a whole (Estevez & Janowski, 2013). In particular, Information and Communication technologies (ICT) are being widely used for delivery of government services in developed as well as developing countries (Dwivedi, Weerakkody, & Janssen, 2012; Ebrahim & Irani, 2005). This mode of delivery of Government services, with use of ICT tools, offers several benefits over traditional modes of service delivery such as elimination in corruption by increasing transparency (Krishnan, Teo, & Lim, 2013), cost reduction by elimination of the wastage of resources (Janssen, Kuk, & Wagenaar, 2008) and reducing the poverty and inequality by opening new avenues of development (Soriano, 2007). As a result of the advantages offered by e-Government, that lead to effective delivery of government services, developed as well as developing countries all over the globe are making huge investments in promoting e-Government.

However, these investments are not yielding desired results in the developing countries as indicated by reports that have been compiled by international bodies such as the United Nations and the World Bank [United Nations, 2011a, 2011b; World Bank, 2008] although the online national presence of developing countries have increased marginally in recent years (United Nations, 2016). It has been found that e-Government initiatives in developing countries are not as successful as they are in developed countries (Dada, 2006). For example, the United Nation e-Government Survey (United Nations, 2016) reports that several African and Latin American countries have experienced failure of their e-health projects. Some of the reasons that have been cited for these failures are lack of access to Internet and low computer literacy (Dwivedi, Sahu, Rana, Singh, & Chandwani, 2016). Wide disparity in access to Internet between developed and developing countries has been highlighted in the UN e-Government Survey 2016 (United Nations, 2016), which reports that while 82% of population in developed countries have access to Internet, the corresponding figure for developing countries is only 35%. This imbalance is a cause for concern as it can undermine sustainable development of these regions by limiting growth due to technological reasons (Adger & Jordan, 2009; Estevez & Janowski, 2013).

In such situation, there is a need for a different solution for enabling citizens' access to e-Government services in developing countries (Mofleh, Wanous, & Strachan, 2008). Such solutions fall under the emerging theme of e-Governance for Sustainable Development (EGOV4SD) proposed by Estevez and Janowski (2013) which looks at ways and means to promote sustainable development goals (SDG) by use of ICT to improve the process of governance. They can enable

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developing countries to improve the capacity of digital government and contribute in reducing their aspiration-capacity gap (Janowski, 2016).

A specific solution that has been deployed in several developing countries is the use of public access outlets where an intermediary provides access support to the users to complete the transactions (Rajalekshmi, 2007; Sein, 2011). This mode of providing e-Government services with the help of an intermediary is quite different from the conventional e-Government delivery system where citizens avail government services by directly interacting with the e-Government website. The primary aim of introducing these outlets is to improve the accessibility of e-Government services and increase their adoption by the citizens. For example, in India, ICT enabled kiosks called as the Common Service Centres (CSCs) are being set up in Public Private Partnership (PPP) mode in about 250,000 villages. (Dwivedi et al., 2016). An intermediary, named as the Village Level Entrepreneur (VLE) provide handholding functions to the users in rural areas for delivery of Government services such as land records, banking, identity cards, online applications etc. (http://csc.gov.in/). Similar public access outlets have been deployed at Malaysia (Meng, Samah, & Omar, 2013), United Arab Emirates (Weerakkody, El-Haddadeh, Al-Sobhi, Shareef, & Dwivedi, 2013), Africa (Etta & Parvyn, 2003), Bangladesh (Sein & Furuholt, 2012) and even in some developed countries like Greece (Voutinioti, 2013). In spite of widespread deployment of public access kiosks, very few studies (Voutinioti, 2013; Weerakkody et al., 2013) have looked at the role of intermediary, in adoption of e-Government services at these kiosks. Moreover, all these studies were based in urban context and, to best of our knowledge, no study has been undertaken specifically to understand the factors that influence use of these outlets in rural areas of developing countries.

A probable reason for this research gap is the fact that, in general, adoption of e-Government in developing countries has been slow (Rana, Dwivedi, Lal, Williams, & Clement, 2017; Schuppan, 2009), perhaps due to lack of ICT infrastructure in rural areas of developing countries. In order to overcome this handicap, the idea of delivering e-Government services through ICT enabled kiosks has taken off recently. For example, in India, although setting up of such intermediary manned outlets was initiated in a systematic way in 2006 after the National e-Governance Policy (NeGP) came into existence (Chauhan, 2009), the project could not take off properly with many of the outlets closing down (Naik, Joshi, & Basavaraj, 2012). It was only after implementation of the Digital India program in 2015 (www.digitalindia.gov.in accessed on 4.4.2017) that this mode of delivery was strengthened. Therefore, research in this field has recently started. In a recent paper, Dwivedi et al. (2016) examined the issues being faced in this mode of delivery and provided recommendations for its effective implementation and sustainable operations in India. Focussed research in this domain can contribute to the body of knowledge by identifying factors that may enable transition of e-Government in these countries from transformation stage (improving internal government processes) to engagement stage (increasing access to government services) and finally to contextualization stage (meeting needs of vulnerable groups e.g. underprivileged users in rural areas), as envisaged in the digital government evolution model proposed by Janowski (2015).

It is important to carry out the study in rural areas due to two reasons. First, the magnitude of digital divide in terms of computer literacy, Internet users, PC penetration and teledensity is much more in rural areas as compared to urban areas as can be seen from Table 1. Since the primary objective of these outlets is to overcome the handicap of digital divide and provide e-Government services to the citizens not having access to Internet and computers, focussed research on adoption of these outlets in rural areas can contribute towards meeting this objective.

Second reason for carrying out the study in rural area stems from prior literature, which points to the fact that attitude, beliefs and perception of citizens in rural areas, are generally different from their counterparts in urban areas (Bogner & Wiseman, 1997; Glenn & Hill, 1977). Therefore, it is reasonable to infer that attitude of rural population towards such outlets may be different from that of urban areas. Focussed study on role of intermediary in adoption of these outlets is likely to provide insights that can be of immense value in India as well as in other emerging economies that are planning to use such public access outlets for delivery of e-Government services.

Table 1
Rural-urban computer literacy, PC penetration and tele-density in India.

	Rural	Urban	Total
Computer literacy[a]			
Total population (millions)	889	381	1270
Computer literate population (millions)	125	185	310
As % of rural and urban population	14.06%	48.56%	24.41%
Active Internet users[a]			
Number of active Internet users (millions)	41	108	149
As % of rural and urban population	4.61%	28.35%	11.73%
PC penetration (in terms of households)[c]			
Number of households (million)	168	78	246
Number of households with PC (million)	9	15	24
% PC penetration (in terms of households)	5.36	19.23	9.76
Teledensity (30 June 2013)[b]	42%	145%	73%

[a] IAMAI-IMRB report (2013).
[b] Service area-wise teledensity report (2013).
[c] MAIT-KPMG report (2013)

It is proposed to base the study in context of India because huge investment (to the tune of US$ 1.2 billion) is being made by the government (Dass & Bhattacherjee, 2011) for rolling out nearly 250,000 such intermediary-manned outlets named as Common Service Centres (CSC). Most of these outlets are planned in rural areas with each outlet covering 4–5 villages in the vicinity. This investment will bear fruit only if users are ready to adopt these outlets for availing e-Government services. The study may reveal factors of adoption that can lead to better understanding of e-Government paradox identified by Savoldelli, Codagnone, and Misuraca (2014) and defined as the contrast between high level of investment and low adoption of e-Government. The findings of the study can provide important policy inputs for promoting citizen adoption of similar intermediary manned outlets in other countries, such as Malaysia (Meng et al., 2013), United Arab Emirates (Weerakkody et al., 2013), Africa (Etta & Parvyn 2003), Bangladesh (Sein & Furuholt, 2012) & Greece (Voutinioti, 2013). Lessons from the present study, which is based in India, can easily be replicated in these countries as the context of delivery of e-Government service in these countries is quite similar to that in India.

Accordingly, the objective of the study is to identify the determinants of adoption of such outlets in rural areas in India with focus on the role of intermediary in the delivery process. The findings of such study can provide useful guidance for appropriate policy decisions for maximizing the utilization of these outlets. Since prior research in this domain is sparse, an exploratory study is first carried out for identifying possible determinants of adoption of CSCs by citizens of rural areas. Support for findings of the exploratory study is obtained from theories and extant literature in technology acceptance, service quality and trusting belief domains for proposing a theoretical research model for the study. The model is empirically tested by collecting data from 328 respondents in 77 villages in 12 districts in India. The results from the study form the basis for recommendations to policy makers and implementers of e-Government in India.

The paper is organized as follows. In Section 2, review of prior research is presented in respect of role of intermediaries in e-Government along with results of the exploratory study for identifying the probable determinants of adoption in the present context. Section 3 contains the details of the proposed conceptual model and the hypotheses proposed. Research methodology for the study is described in Section 4 while details of questionnaire development, pilot study, data collection and data analysis are presented in Section 5. Theoretical and managerial