Factors influencing perceptions on corruption in public service delivery via e-government platform

1. Introduction

For any society, corruption has been regarded as inimical (Foo, Wu and Chin, 2014). Ensuring transparency and accountability in government is important to combat corruption (Krishnan, Teo and Lim, 2013; Oye, 2013) given that corruption has been adversely impacting the growth of developing economies (Singh et al., 2010). E-government is one of the ways for facilitating the transition of a developing economy to a developed one (Ciborra, 2005). Therefore, governments have been adopting the information technology (IT) for providing better public services (Ndou, 2004) to ensure greater transparency and public accountability (Zhao and Xu, 2015). Furthermore, e-government initiatives help in checking corruption, red tape, bureaucratic inefficiency and ineffectiveness, nepotism and cronyism (Cullen, 2009; Fourie, 2010; Garcia-Murillo, 2013; Hasan, 2004; Mistry and Jalal, 2012; Naz et al., 2006; Neupane et al., 2014; Pathak et al., 2009; Singh et al., 2010). In India, e-government initiatives have been initiated in many government departments in order to bring about transparency in public services and build trust of the citizens. In this line, our study seeks to assess the extent to which India's latest e-government initiative- "Digital India"-has been successful in curbing corruption from the citizens' perspective.

For providing a theoretical base to our study, we use institutional theory which has been amply used in studies focused in the public sector (Currie, 2009). As an Information Systems' (IS) popular theory to study innovation-adoption-implementation-assimilation dimensions (DeVaujany et al., 2014), this theory has been used in research to appreciate the extent of ICT adoption (Zorn, Flanagin, and Shoham, 2011), social transformation (Barrett, Sahay and Walsham, 2001; Krell, Matook and Rohde, 2016), reforming administration (Walsham and Sahay, 1999), etc. Institutional theory rests on the premise that institutions adopt different practices and mechanisms for gaining legitimacy and acceptability among different stakeholders; however, such practices and mechanisms may or may not attain the desired results (DiMaggio and Powell, 1983; Scott, 2003). The theory is based on a multi-level and multi-stakeholder analysis where different actors and factors influence the planning and implementation processes of an institutional innovation (Thelen, 1999). For our study, we posit that "Digital India" programme of the Indian government is an "institutional" measure to gain legitimacy and trust of the citizens. To simplify, since "Digital India" is an e-government innovation, we consider deploying institutional theory to assess the extent to which the innovation has been favorably perceived by the users in attaining its principle aim (i.e., checking corruption in public services).

Our study's originality lies in the sense that while most of the studies assess the conceptual dimensions, quality or challenges of e-government (for instance, Anwer et al., 2016; Saxena, 2005; Sharma, Govindaluri and Gattoufi, 2015; Srivastava, Teo and Devaraj, 2016; Sutherland, 2014; Ziemba et al., 2016), there is negligible research to assess the linkage between e-government and corruption in the developing countries'

context (Singh et al., 2010; Sutherland, 2016). Furthermore, so far, no study has deployed an "institutional theory" framework while appreciating the successes and failures of e-government initiatives in a developing country. Our study seeks to plug these two research gaps.

The paper is organized as follows: Section 2 shall provide a brief overview of the related literature and list the main research aim underlining our study; Section 3 shall summarize the hypotheses for the study; Section 4 shall sketch the background of the study and research methodology; Section 5 shall discuss the findings of the study; Sections 6 and 7 would be demarcated as "Discussion" and "Conclusion"; Section 8 shall provide study limitations and future research directions; and Section 9 shall provide implications for practitioners.

2. Related literature

2.1 E-government research

Broadly, two streams of research may be identified where the role of e-government initiatives has been underlined with respect to checking corruption in public service delivery. The first stream pertains to the studies which are conceptual or theoretical in approach. For instance, a comprehensive review of literature on e-government has been attempted by Zhang et al. (2014) where the authors explore the diffusion of e-government. In another conceptual study, the notion of "excellence" in e-government has been underlined which is "citizen-centric" and aims at curbing corruption and reduction of operational cost (Saxena, 2005). In another study, a conceptual framework has been advanced to underline the skills and training required in public personnel manning e-government initiatives (Vasiu and Vasiu, 2006). Likewise, a model is developed to explain the "transition" of governments to e-governments where technology and infrastructure play a vital role in facilitating a smooth transition (Davison, Wagner and Ma, 2005; Schware and Deane, 2003). Foley and Alfonso (2009) discuss about the role of e-government in facilitating the transformation of governments by being more transparent and improving the quality of public services. In another study, the significance of building trust with the users has been underlined through e-government initiatives (Dehkordi and Dehkordi, 2014). The role of corruption in inhibiting the "moral and governance capabilities" of government has been underlined by Alaswani (2016) which leads to failures of e-government projects. Finally, Mutula and Mostert (2010) underline other challenges linked with e-government implementation have been related with the under-utilization of ICT infrastructure or the lack of commitment on the part of the government.

The second stream of research which assesses the link between e-government and corruption pertains to the studies which are contextualized in the developed and developing countries and are mostly qualitative case studies or use rigorous statistical techniques. These studies point out the challenges and successes in e-government implementation. In a study based in Greece, the successes of e-government initiatives were underlined in terms of improving citizen-government interaction (Koutrakou, 2006). The significance of e-government on reduction of corruption in Iran has been empirically

investigated with a conceptual model (Saghafi, Zarei and Fadaei, 2016). However, in a Nigerian context, it was found that despite the introduction of e-government services in land administration, nepotism and favoritism did not decrease (Akingbade, et al., 2012). In another study based in Kazakhstan, a preliminary assessment of e-government initiatives shows that corruption has reduced though challenges still remain (Sheryazdanova and Butterfield, 2017). Similarly, challenges for e-government implementation in Bangladesh have been pointed out in terms of the lack of IT infrastructure, rampant corruption, inadequate financial support, lack of skills and expertise and macro-constraints of poverty and illiteracy among the people (Faroqi and Siddiquee, 2011). In a Jordanian context, the challenges of e-government implementation were probed in terms of factors like lack of disclosure and clarity, favoritism, lack of management supervision, complicated systems besides other concerns with respect to the low motivation of public officials charged with e-government initiatives (Al-Madi, Al-Shraideh and Khrais, 2016). Finally, digital divide is considered as a major impediment in Egypt where users prefer personal visits besides tapping online portals for availing public services (Reddick, Abdelsalam and Elkadi, 2012).

In the Indian context, there are four major studies which hold direct relevance to our study. The first study pertains to a cross-country comparison of e-governance measures in India, Ethiopia and Fiji where the users' perception regarding corruption in e-governance is gauged (Singh, et al., 2010). Their study finds that corruption is still rife in India and there is lack of transparency in public service delivery. Besides, there are concerns related to cost, time and red-tapism in availing public services via e-government. However, the authors acknowledge that their study is purely empirical and lacks a theoretical framework. The second study is linked with identifying the e-governance success factors across ten Indian States (Kalsi and Kiran, 2013). Their study underscores many "critical policy gaps" in e-government initiatives in India which are linked with human resource policy, vision and objectives, administrative reforms, clarity of e-governance roadmap, infrastructure policy, policy regarding process re-engineering, mission mode project execution policy, definitive action plan with targets, policy regarding security and privacy, IT resource acquisition and disposal policy, outsourcing policy, institutional framework, funding policy, inter-departmental coordination policy, public-private partnership, etc. However, there is no theoretical framework on which the study rests and the views of public officials and experts (and not actual users) have been solicited in the study. The third reference study investigates the causes for failure of e-government projects in Tamil Nadu (Kumar and Best, 2006). Their study was conducted to assess the sustainability of the e-government initiatives in rural areas and they identified corruption as one of the challenges of e-government implementation apart from lack of training, sustained leadership and commitment, institutionalization and evaluation of e-government initiatives. However, neither did their study invoke a theoretical framework nor did they solicit perspectives from a substantial number of users (conceding that there were only 10 users who shared their views on e-government initiatives). To the best of our knowledge, there is only one study which studies the linkage between corruption and e-government initiatives using a theoretical framework where five e-government initiatives were probed using an agency theory and transactional cost theory and the study called for a more theory-driven research in e-

government (Ojha and Palvia, 2012). However, their study was conceptual and lacked validity.

To summarize, while extant literature on e-government has been either conceptual or dominated the Western settings, empirical studies in the Indian context are less. Besides, to the best of our knowledge, institutional theory has not been deployed to appreciate the linkage between e-government initiatives and corruption from the users' perspective in a developing country's context. Further, studies in the Indian context are dated and to the best of our knowledge, no study has been conducted to ascertain the perception of users on the impact of "Digital India" initiatives regarding the extent to which corruption has declined in India. In the next sub-section, we will provide a brief account of the research pertaining to institutional theory followed by a brief description of "Digital India" initiatives in Section 3. This substantiates the relevance to our research question, "What is the perception of users with regard to corruption post-launch of "Digital India" initiatives?"

2.2 Institutional theory research

The use of institutional theory in Information Systems (IS) research helps to understand the complexity of social phenomena (Currie, 2009). Institutional theory rests on the premise that symbolic, material and cultural considerations guide the process of institutionalization wherein a particular practice or set of practices get accepted, stabilized and sustained by an organization over a period of time (Scott, 2001; Zucker, 1977). Further, the theory holds that institutions are flexible and dynamic which interact with other institutions. While deploying institutional theory in IS research, either an entity or a process may be treated as an institution (Currie, 2009). According to King et al. (1994), institutional theory may be used for studying innovation. This theory may be used to evaluate the manner in which technologies are designed, used and implemented by the organizations (Orlikowski and Barley, 2001). In this line, we consider e-government as an administrative innovation and deploy the theory for our study. Specifically, "Digital India" is an e-government innovation in India and our study underlines the perception of users in terms of the extent to which this innovation has been successful in curbing corruption.

Three reference points for our research emerge from the studies where institutional theory has been invoked to investigate e-government initiatives. The first study relates to the challenges (viz. political, social, organizational and technological) encountered in implementing e-government platform in Qatar (El-Haddadeh, Weerakkody and Al-Shafi, 2013). For instance, political challenges relate to lack of government support, financial support, strong leadership and legal and regulatory issues; social challenges are linked with user satisfaction with the quality of services received; organizational challenges are associated with the planning and implementation roadmap; and finally, technological challenges signify the technological readiness and ease of technology use among the users and those responsible with the implementation of e-government initiatives. However, their study did not focus on how corruption may be counted as a challenge to e-government's success. The second study uses institutional theory to probe the

interaction of technology, people and processes in ICT projects in India, South Africa and Brazil to assess the challenges encountered in achieving the overarching aim of digital inclusion (Madon, Reinhard, Roode and Walsham, 2009). Specifically, the study concluded that there are four main concerns with regard to ICT projects' implementation: adoption of innovation by the users; cultural support among groups; government support and leadership and innovation's sustainability and scalability. While the study was significant in terms of assessing the challenges of securing digital inclusion through ICT projects' implementation, there was no linkage with the concomitant decrease or increase of corruption on account of these projects' implementation. Finally, our third point of reference is a Nigerian-based study elaborating upon the challenges and subsequent causes of failure of the government's e-government initiative of electronic voters' registration (EVR) system (McGrath and Maiye, 2010). However, the sample included only 12 users apart from public representatives. Besides, their study did not leave implications for corruption or institutional theory. Overall, we find that none of the studies so far has applied institutional theory to probe the linkage between e-government initiatives and corruption; therein lays the novelty of our study.

3. Hypotheses

Red-tapism has been defined in terms of internal and external environment of the public sector and this environment includes aspects like complex regulations, lack of public accountability, detailed procedures and too many forms (Brynard, 1995). Red-tapism is one of the major factors which impacts e-government initiatives adversely (Al-Madi, Al-Shraideh and Khrais, 2016; Kalsi and Kiran, 2013; Singh et al., 2010) and research has underscored that users perceive red-tapism as one of the determinants of increased corruption in public services (Garcia-Murillo, 2010). Therefore, apart from the tendency of official secrecy and stringent disclosure norms, lengthy and descriptive procedures are provided for availing public services and these procedures lack clarity. As a result of red-tapism, there is delay in availing public services. Therefore, it is hypothesized that:

H1: Red-tapism will increase user perception of corruption in e-government services.

E-government benefits the users in terms of saving their time and energy (Alshawi and Alalwany, 2009; Hiller and Belanger, 2001). However, where inadequate e-government initiatives exist alongside corrupt practices in administration, users have to spend a lot of their time and money in getting the tasks done (Asogwa, 2013). Therefore, we hypothesize that:

H2: Time consumption for securing public services will increase user perception of corruption in e-government services.

Invoking ICT in government helps in saving costs for the user and for the government too (Singh et al., 2010). E-government initiatives are regarded as cost-effective means of promoting openness and transparency in administration (Bertot, Jaeger and Grimes, 2010). Therefore, users find it convenient to tap e-government services owing to savings in costs (Alshawi and Alalwany, 2009; Belwal and Al-Zoubi, 2008) which would have

otherwise been incurred by them on account of personal visits and re-visits, documentation and filing, personal calls, etc. Therefore, we hypothesize that:

H3: Costs entailed in availing public services will increase user perception of corruption in e-government services.

Users' perception about government transparency is built when e-government platforms facilitate interaction (Lollar, 2006) and provide clear and detailed information on the websites (Davison et al., 2005; Jun, Wang and Wang, 2014). Therefore, by providing a single portal for availing e-government services, users are liable to have a favorable perception about e-government services in terms of transparency and absence of corruption (Chatfield and Alhujran, 2009; Kalsi and Kiran, 2013). Therefore, we posit that:

H4: Provision of a single portal for securing public services will decrease user perception of corruption in e-government services.

Corruption is a measure of government inefficiency (Asogwa, 2013; Belwal and Al-Zoubi, 2008; Ciborra, 2005; Valle-Cruz, Sandoval-Almazan and Gil-Garcia, 2016) and while e-government reforms facilitate governments to promote good governance (Ciborra and Navarra, 2005; Shim and Eom, 2008) by delivering timely, economic, efficient, effective and consistent services (Bussell, 2011; Dominguez, Sanchez, and Alvarez, 2011); corruption in e-government services may fail to achieve such aims. Furthermore, because user satisfaction is contingent upon systematic e-government services (Yang and Rho, 2007); corruption in e-government services might dampen user satisfaction. Therefore, we propose that:

H5: Government inefficiency will increase user perception of corruption in e-government services.

Robust e-government platforms using sophisticated information systems are known to check corruption as well as the ramifications of corruption like nepotism, bribery, fraud, forgery and favoritism (Akingbade, et al., 2012). For instance, public officials may find it difficult to grant favors to a chosen few where the bidding price of a particular contract is comparable via e-government platforms (Shim and Eom, 2008). In this regard, we propose that:

H6: Nepotism and favoritism will increase user perception of corruption in e-government services.

E-government provides flexibility and convenience for users to access and avail information and services (Susanto & Goodwin 2010; Tolbert & Mossberger, 2006). Also, it makes processes easier and simplified, reduces documentation and eliminates queues (Kalsi and Kiran, 2013; Sheryazdanova and Butterfield, 2017). Therefore, we deduce that:

H7: Easier processes in availing public services will decrease user perception of corruption in e-government services.

Information technology in government is known to leave positive user perceptions about transparency (Valle-Cruz, et al., 2016). Therefore, transparency in e-government initiatives would build trust of the users in the government (Abu-Shanab, Harb and Al-Zoubi, 2013; Bertot, Jaeger and Grimes, 2012). In this line, we hypothesize that:

H8: Transparency will decrease user perception of corruption in e-government services.

For handling any grievances and complaints of users with respect to e-government services, an online public grievance redressal platform should be in place which would serve as a useful tool for ensuring a corruption-free government (Alathur et al., 2012; Kumar and Best, 2006; Rana and Dwivedi, 2015; Rana, et al., 2015). Grievance handling forms should be provided via e-government portals and these should be easily accessible and understandable by the users. Therefore, we posit that:

H9: Sound grievance redressal procedures will decrease user perception of corruption in e-government services.

4. Research design

4.1 Research methodology

In the Good Governance Week report published in December 2015, "Best Performing Districts Per State/UT" in terms of successfully utilizing e-government initiatives were identified. The report is available at the "Digital India" website (www.digitalindia.gov.in). The top ranked districts from each of these States/Union Territories may be read in this report (Good Governance Week Report, 2015). Four our research, we conducted an email survey to ascertain the impact of e-government initiatives in combating corruption in some of the "Best Performing districts in States/Union Territories". Convenience sampling techniques were used to capture the perceptions of the respondents in three districts, namely West Delhi, Chandigarh and Panchkula. The target respondents were those who had used e-government services. Prior to emailing the questionnaire, a few questions were posed to the respondents to ascertain their usage of the e-government services. For instance, questions were posed as to whether they were aware of "Digital India", what services did they avail under the aegis of "Digital India" and how frequently did they avail the services provided under the "Digital India".

4.2 Digital India programme: An integration of e-government measures to combat corruption

"Digital India" (http://www.digitalindia.gov.in/) rests on e-government initiatives taken by the government in providing public services. There are about 2400 services being covered under the "Digital India" (http://www.digitalindia.gov.in/service-

directory). These services pertain to benefits related to employment, ration card, election rolls, marriages, etc. It may be mentioned that not all of these are operational at present.

"Digital India" takes its roots in the National e-Government Plan (NeGP) which was launched in 2006. "Digital India" runs under the aegis of the Ministry of Electronics & Information Technology (www.meity.gov.in). There are three "vision areas" of "Digital India", viz. digital infrastructure as a utility to every citizen, on-demand governance and services, and digital empowerment of citizens. These three "vision areas" seek to enhance citizen participation in governance, ensure integration and coordination among the government departments and provide public services in an efficient and transparent manner. Furthermore, "Digital India" has nine "programme pillars", viz. Broadband Highways, Universal Access to Mobile Connectivity, Public Internet Access Programme, e-Governance-Reforming Government Through Technology, e-Kranti-Electronic delivery of services, Information for All, Electronics Manufacturing, IT for Jobs, Early Harvest Programmes. A brief description about these nine "programme pillars" is provided in Table 1.

"Programme Pillar"	**Nature and Scope**
Broadband Highways	Ensuring broadband connectivity in rural and urban areas and integrating ICT infrastructure to facilitate e-government initiatives in the country in spheres like rural administration, education, banking, agriculture, health, commerce, etc.
Universal Access to Mobile Connectivity	Ensuring network connectivity in remote areas.
Public Internet Access Programme	Providing internet connectivity and access to public services through post offices and Common Services Centres (CSCs) (http://csc.gov.in/).
e-governance-Reforming Government through Technology	Providing online services to citizens in multiple areas of public services.
e-Kranti-Electronic delivery of services	Providing public services through 44 Mission Mode Projects.
Information for All	Facilitating Open Data and furthering citizen participation through social media.
Electronics Manufacturing	Focusing on promoting innovation in electronics manufacturing in the country.
IT for Jobs	Promoting ICT across the country to provide the necessary skills in youth for facilitating better job prospects.
Early Harvest Programmes	Covers short-term programmes like ensuring wi-fi in all universities, digitalization of school books, biometric attendance in government offices, national portal for lost and found children, public wi-fi hotspots, etc.

Table 1: "Programme Pillars" of Digital India

4.3 Data collection

A total of 383 questionnaires were administered via email. Respondents were contacted on account of informal and formal contacts with the researchers. The response rate was 67% out of which the usable questionnaires reduced to 56.65%. Table 2 presents the demographic profile of the 217 respondents involved in the

research survey whose perceptions were gauged with the help of a structured questionnaire using a 5-point Likert scale. The questionnaire has items pertaining to demographic indicators such as job status, educational status, marital status, gender and age besides 10 items for gauging the perception of the respondents regarding corruption. These 10 items were identified on the basis of literature review. Items included perception regarding corruption in public services, extent of red-tapism in public services, time taken for securing public services, cost incurred in procuring public services, provision of a single portal for procuring public services, increased government inefficiency, extent of favoritism in public services, easier procedures to secure public services, extent of transparency in public services and grievance resolution procedures. Items included in the questionnaire are provided in Appendix I.

Demographics	Percentage
Age	
Under 25	1.8
26-39	40.5
Over 40	57.7
Marital status	
Married	50.2
Single	49.8
Gender	
Female	24.9
Male	75.1
Education	
Secondary	4.1
University	12.9
Professional (Specialized diploma and degree courses)	73.7
Others	9.2
Job status	
Business	32.3
Housewife	16.6
Others	0.5
Service	26.3
Students	13.8
Unemployed	10.6

Table 2: Summary demographic profile of respondents

4.4 Scale reliability

To assess the reliability and internal consistency of items, Cronbach's alpha was computed. Since Cronbach's alpha is 0.96 which is greater than the recommended value of 0.7 (Hair et al., 2010), we infer that our scale is reliable. Again, item-wise Cronbach's alpha (Table 3) supported the internal consistency in the sample in line with the general recommendations that the Cronbach's alpha should be greater than 0.7 (Hair et al., 2010).

Item	Cronbach's alpha is variable is removed

Perception of corruption in public services	0.952
Extent of red tapism in public services	0.967
Time taken for securing public services	0.956
Cost incurred in procuring public services	0.955
Single portal for procuring public services	0.967
Increased government inefficiency	0.952
Extent of favoritism in public services	0.952
Easier procedures to secure public services	0.951
Extent of transparency in public services	0.951
Grievance resolution is taxing	0.951

Table 3: Item-wise Cronbach's alpha

5. Results and analysis

5.1 Perception regarding corruption post-launch of Digital India programmes: Correlation results

Pearson's correlation coefficient was calculated as a measure of linear association between the following 15 variables: age; marital status, gender, educational status, job status, perception of corruption in public services; increased government inefficiency; extent of transparency in public services; time taken for securing public services; cost incurred in procuring public services; easier procedures to secure public services; extent of red-tapism in public services; grievance handling procedures; extent of favoritism and nepotism and single portal for procuring public services. Results are shown in Table 4.

Correlation results are mixed. Among the demographic variables, gender is negatively correlated with the perception of corruption in public services ($r=-0.182$, $p<0.01$). Implicitly, men perceive a decrease in corruption in public services but not women. In our sample, women constitute a far less number than men and we may not be conclusive about females' perceptions. A positive correlation between user perception of red-tapism and corruption in public services ($r=0.385$, $p<0.01$) is suggestive of the delays in securing public services. There is a positive correlation between user perception of increased inefficiency and corruption in government ($r=0.955$, $p<0.01$). Implicitly, "Digital India" has not been successful in promoting efficiency in government. A positive correlation between user perception of low transparency and corruption in government ($r=0.928$, $p<0.01$) implies that transparency in government has reduced in government. Likewise, users perceive that e-government services are time-consuming ($r=0.813$; $p<0.01$) and costly ($r=0.788$, $p<0.01$) which is also implicit of increased corruption in e-government services. Furthermore, users perceive that there is favoritism and nepotism post-launch of "Digital India" ($r=0.847$, $p<0.01$) which implies prevalence of corruption in e-government services. However, users agree that using internet to avail e-government services is easy ($r=0.865$; $p<0.01$). Also, users perceive that they can avail e-government services via a single portal ($r=0.326$, $p<0.01$). However, not many e-government services many be availed through the single portal as of now and there are different websites and portals for specific departments. Finally, grievance handling procedures are not sound enough

($r=0.934$, $p<0.01$) which gives the impression that corruption is pervasive in e-government services.

Overall, it is apparent that post-launch of "Digital India" programme, users perceive that corruption is still rife in government and it is indicative of the need for institutionalization and adoption of a focused approach to ensure the success of the programme.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Age (1)	1														
Marital status (2)	-0.03	1													
Gender (3)	0.058	-.152*	1												
Educational status (4)	-0.07	-.152*	.236**	1											
Job status (5)	.385**	0.041	0.05	0.047	1										
Perception of corruption in public services (6)	0.02	0.095	-.182**	-0.069	0.052	1									
Increased government inefficiency (7)	0.016	0.106	-.158*	-0.07	0.012	.955**	1								
Extent of transparency in public services (8)	-0.04	0.08	-.164*	-0.089	0.022	.928**	.208	1							
Time taken for securing public services (9)	0.038	0.084	-.136*	-0.029	0.02	.813**	.375	.042	1						
Grievance resolution is taxing (10)	-0.04	0.101	-.169*	-0.056	0.007	.934**	.361	.012	.014	1					
Cost incurred in procuring public services (11)	0.047	0.034	-.146*	-0.057	.155*	.788**	.052	.132	.527	.146	1				
Extent of favoritism in public services (12)	-0.02	0.048	-.148*	-0.113	0.026	.847**	.031	.052	.027	.075	.022	1			
Easier procedures to secure public services (13)	-0.06	0.066	-.172*	-0.123	0.001	.865**	.185	.631	.142	.631	.175	.163	1		
Extent of red tapism in public services (14)	-0.03	0.005	-0.059	-0.075	-0.02	.385**	.378	.462	.336	.373	.463	.418	.433	1	
Single portal for procuring public services (15)	-0.08	0.014	-0.133	-.179**	-0.12	.326**	.353	.403	.358	.348	.380	.426	.449	.797	1

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Table 4: Correlation matrix

5.2 Gauging perception of corruption in public services post-launch of "Digital India" programme: Hierarchical regression results

Taking user "perception of corruption in public services" as dependent variable and other items as independent variables, we deploy hierarchical regression to understand the relationship between dependent and independent variables. This would ascertain the extent to which the independent variables (all 14 items) will significantly explain the variance in the dependent variable ("perception of corruption in public services"). Also, the influence of demographic variables would be captured in the analysis. However, hierarchical models have limitations in the sense that in social science research where individual responses (averages) are used as group-level predictors, misleading conclusions may emerge when one interprets them as "contextual effects" (Gelman and Hill, 2007). Therefore, hierarchical models do not imply causation and herein lays the limitation of this method.

For the present purpose, the overall model looks like:

Perception of corruption in public services = β_0+ β_1 * Job status + β_2 * Educational status + β_3 * Gender + β_4 * Marital status + β_5 * Age + β_6 * Extent of red tapism in public services + β_7 * Time taken for securing public services + β_8 * Cost incurred in procuring public services + β_9 * Single portal for securing public services + β_{10} * Increased government inefficiency + β_{11} * Extent of favoritism in public services + β_{12} * Easier procedures to secure public services + β_{13} * Extent of transparency in public services + β_{14} * Grievance resolution is taxing

In the first step, the effect of demographic variables on the perception of corruption was studied. In the second step, the remaining variables were added to assess the explained variance in excess of that contributed by the demographic variables (Teo, 2001).The results obtained by hierarchical regression are depicted in Table 5. In the first step, R^2 is 0.042 which increases to 0.949 when the remaining variables are entered thereby contributing to the variance of the model. In addition, variables other than demographic ones contribute 94.6% to the variation of perception of corruption in e-government services. Secondly, the Durbin-Watson statistic (1.918) is close to 2 which strongly supports the assumption of independent errors implicit in hierarchical regression procedure.

Explanatory variable	**(Step I) Dependent variable: Perception of corruption in public services**	**(Step II) Dependent variable: Perception of corruption in public services**
Age	0 (0.01)[a] (0.12)[b]	0 (0.02)[a] (1.35)[b]
Marital status	0.12 (0.06) (0.93)	-0.01 (-0.01) (-0.32)
Gender	-0.36* (-0.17) (-2.44)	-0.05 (-0.03) (-1.53)
Educational status	-0.03 (-0.02) (-0.29)	0.01 (0) (0.21)
Job status	0.03 (0.06) (0.76)	0.01 (0.01) (0.75)
Extent of red-tapism in public services		-0.03 (-0.02) (-0.61)

Time taken for securing public services		-0.11 (-0.08) (-1.99)
Cost incurred in procuring public services		0.08* (0.08) (2.13)
Single portal for procuring public services		-0.04 (-0.03) (-0.81)
Increased government inefficiency		0.57*** (0.54) (10.13)
Extent of favoritism in public services		-0.11* (-0.11) (-2.13)
Easier procedures to secure public services		-0.06 (-0.06) (-0.95)
Extent of transparency in public services		0.53*** (0.49) (8.38)
Grievance resolution is taxing		0.15 (0.14) (1.73)
Constant	4.21*** (9.48)	0.06 (0.3)
Observations	217	217
R^2	0.042	0.949
Adjusted R^2	0.019	0.946
F-Statistic	1.833*	401.821***

[a] Beta weights in parentheses
[b] t-statistics in parentheses
* Significant at 0.10 by the standard criteria.
** Significant at 0.05 by the standard criteria
*** Significant at 0.01 by the standard criteria

Table 5: Hierarchical regression results for user perception on corruption post-launch of "Digital India" initiatives

Table 5 shows that demographic variables, apart from gender, have no statistically significant relationship with the perception regarding corruption in public services. While the previous research finding states that males are more prone to use e-government services than females (Venkatesh, Sykes and Venkatraman, 2014), our study shows that females, in comparison to males, perceive more corruption in government services post-launch of "Digital India" initiatives. This may be on account of the smaller percentage of females in our survey. What is important, therefore, is to note that males perceive increased corruption in e-government services. Besides, the impact of other variables is clear in the second step of the regression analysis where cost incurred for availing services; increased inefficiency; low transparency and increased nepotism and favoritism are found to have statistically significant relationship with the perception of corruption in e-government services. Therefore, it is evident that with increased cost incurred for availing government services, the perception of corruption has increased in the country. Furthermore, users perceive an increase in government inefficiency which is linked with increased corruption. Users feel that nepotism and favoritism have not been curbed post-launch of "Digital India" initiatives. There is low transparency in availing government services. These results are suggestive of the fact that users' perception regarding corruption has not decreased even after the "Digital India" initiatives. Table 6 summarizes the results of hypotheses testing.

Hypothesis	Sustained	Not supported
H1: Red-tapism will increase user perception of corruption in e-government services.		✓
H2: Time consumption for securing public services will increase user perception of corruption in e-government services.		✓
H3: Costs entailed in availing public services will increase user perception of corruption in e-government services.	✓	
H4: Provision of a single portal for securing public services will decrease user perception of corruption in e-government services.		✓
H5: Government inefficiency will increase user perception of corruption in e-government services.	✓	
H6: Nepotism and favoritism will increase user perception of corruption in e-government services.	✓	
H7: Easier processes in availing public services will decrease user perception of corruption in e-government services.		✓
H8: Transparency will decrease user perception of corruption in e-government services.	✓	
H9: Sound grievance redressal procedures will decrease user perception of corruption in e-government services.		✓

Table 6: Summary of results of hypothesis testing

6. Discussion

Our study corroborates with the previous research findings that while the potential of e-government initiatives in curbing corruption is high, this potential is yet to be realized in a full-fledged manner (Belwal and Al-Zoubi, 2008; Lio, Liu and Ou, 2011). The demographic analysis of the study showed that only gender has some bearing on the results while age, marital status, educational status and job status are not found to impact the results. This calls for a more expanded approach in terms of sample size to figure out if other demographic variables have any impact on the results. For instance, it might be explored if the frequency of e-government usage via "Digital India" platform mediates the impact of demographic variables on perceptions of users regarding corruption in public service delivery. Similarly, income and internet access might also influence the extent of availing e-government initiatives.

Overall, our results show that corruption is prevalent even after the launch of "Digital India" programme. Users perceive that they have to incur more costs for availing public services and this is indicative of corruption in government services. In our sample, there were a maximum number of business professionals who are usually very busy and they might not wish to spend time on anything apart from their business activities. Apparently, users have to make personal visits to the government offices or solicit help from their clients in return for some charges. Presumably, "Digital India" is newly launched and not many users are availing its services. Respondents perceive that there is favoritism in availing public services. There is inefficiency in public services and this is one of the reasons why easy money is demanded by public officials. There is low transparency in e-government services and users perceive that this is suggestive of high corruption in public services.

7. Conclusion

Our study sought to underscore user perception of corruption in government services post-launch of the "Digital India" programme. Despite the fact that the respondents were drawn from three "Best Performing Districts" as per the Good Governance Week report of 2015, they perceive that corruption prevails in government. Our study lends contribution to the extant literature veering around the impact of digitalization of public services and their efficacy in meeting public needs in an effective, efficient and economic way. Our study responded to the call of ascertaining the issues, prospects and challenges of e-government in India (Alathur et al., 2012; Alathur et al., 2014). As an anti-corruption strategy, e-government initiatives (Andersen, 2009) in the form of "Digital India" need a more robust and planned approach for ensuring that its advantages permeate across the length and breadth of the country.

Finally, our study holds merit in contributing to the "institutional theory" which is based on how an innovation or system needs to be institutionalized for its sustainability (Kim, Kim and Lee, 2009). As per our findings, the anticipated goals of ensuring transparency in government are not being met. We concur that: "Innovations that are widely diffused (taken-for-granted) within society are described as institutionalised. Conversely, those that pose a disruptive threat or become distrusted, fail to gain traction and are abandoned" (Currie, 2009: 70). Implicitly, we aver that if users' confidence and trust in "Digital India" initiative weakens, this e-government innovation will not get institutionalized in the country.

8. Study limitations and future directions of research

Our study is limited in its approach because the study requires a more expansive sample to ascertain the appropriate impact of demographic variables in line with the present research context. The study was conducted in only three districts which figured among the best performers in the Good Governance Week report of 2015. Second, further research is called to probe the quality dimensions (Anwer et al., 2016) of e-government. Third, it may be conceded that "Digital India" is a recent programme which was launched in 2014 and it might be too early to evaluate the programme. Probably, the study might be undertaken after a gap of five or more years to lend reliability to the present study. While the generalizability of the study remains unsettled owing to the small sample size and contextual factors, the approach adopted in the study may be replicated in other contexts where developing countries are adopting e-government measures (Siddiquee, 2016). For instance, contextual factors like government size, ICT infrastructure, ICT literacy, accessibility to e-government websites in local languages, gender ratio or government effectiveness have been known to influence the impact of e-government on corruption prevention in developing countries (Weerakkody, Dwivedi, and Kurunananda, 2009; Zhao and Xu, 2015). Besides, further research is required to assess the privacy and cyber-security concerns of the users while conducting e-transactions. Finally, future study is called for a more detailed exploration of theories of IS (Public Service Motivation theory (Kim and Kim 2016), principal agent theory (De Vries and Sobis,

2016) or self-determination theory (Andrews, 2016)) and their application in ICT-adoption for public service delivery.

9. Practical implications

Our study has implications for practitioners as well. Our study corroborates the recommendations made in earlier research that government and public officials should "clearly understand the importance of leadership, strong and sustained commitment, adequate training of the staff, consistent evaluation and monitoring of the performance, and institutionalization of the (e-government) initiative(s)" (Kumar and Best, 2006: 12). Furtherance of "Digital India" initiatives needs to permeate in urban and rural areas and this calls for a proper roadmap to institutionalize the e-government initiatives. Human resource planning is important for sustained results of the e-government initiatives. For a developing country like India, it becomes important to appreciate the socio-economic and political context for ensuring that innovations like "Digital India" initiatives succeed. Corruption has a history of its own in India and while e-government initiatives are one of the means for checking corruption, the government needs to chalk out a proper strategy for a long-term viability of such innovations.

Appendix I: Items in the questionnaire	
1.	I perceive that there is increase in corruption in public services post-launch of Digital India programme than before.
2.	I perceive that there is increase in red tapism in public services post-launch of Digital India programme than before.
3.	I perceive that it is more time-consuming to secure public services post-launch of Digital India programme than before.
4.	I perceive that increased cost is entailed in procuring public services post-launch of Digital India programme than before.
5.	I can procure public services via a single portal post-launch of Digital India programme than before.
6.	I perceive that government inefficiency has increased post-launch of Digital India programme than before.
7.	I perceive that there is increased favoritism in public services post-launch of Digital India programme than before.
8.	I perceive that there are easier procedures for securing public services post-launch of Digital India programme than before.
9.	I perceive that the extent of transparency in public services is too low post-launch of Digital India programme than before.
10.	I perceive that better grievance redressal procedures are well in place post-launch of Digital India programme than before.

References

Abu-Shanab, E.A., Harb, Y.A., and Al-Zoubi, S.Y. (2013), "E-government as an anti-corruption tool: citizen's perceptions", *International Journal of Electronic Governance*, Vol. 6 No. 3, pp. 232-248.

Akingbade, A.O., Navarra, D.D., Georgiadou, Y. and Zevenbergen, J.A. (2012), "A case study of geo-ICT for e-government in Nigeria: does computerisation reduce corruption in the provision of land administration services?, *Survey Review*, Vol. 44 No. 327, pp. 290-300.

Aladwani, A.M. (2016), "Corruption as a source of e-government projects failure in developing countries: a theoretical exposition", *International Journal of Information Management*, Vol. 36 No. 1, pp. 105-112.

Alathur, S., Ilavarasan, P.V. and Gupta, M.P. (2012), “Citizen participation and effectiveness of epetition: Sutharyakeralam- India”, *Transforming Government: People, Process and Policy*, Vol. 6 No. 4, pp. 392-403.

Alathur, S., Ilavarasan, P.V. and Gupta, M.P. (2014), “Determinants of citizens’ electronic participation: insights from India”, *Transforming Government: People, Process and Policy*, Vol. 8 No. 3, pp. 447-472.

Al-Madi, F.N., Al-Shraideh, B.M. and Khrais, L.T. (2016), "The role of e-government on implementing and enhancing transparency in Jordan", *International Journal of Applied Business and Economic Research*, Vol. 14 No. 14, pp. 87-106.

Alshawi, S. and Alalwany, H. (2009), "E-government evaluation: citizen's perspective in developing countries", *Information Technology for Development*, Vol. 15 No. 3, pp. 193-208.

Andersen, T.B. (2009), "E-government as an anti-corruption strategy", *Information Economics and Policy*, Vol. 21 No. 3, pp. 201-210.

Andrews, C. (2016). Integrating public service motivation and self-determination theory: a framework. *International Journal of Public Sector Management*, Vol. 29 No. 3, pp. 238-254.

Anwer, M. A., Vatcharaporn, E., Mariam, R., and Anjum, M. (2016), "E-government services evaluation from citizen satisfaction perspective", *Transforming Government: People, Process and Policy*, Vol. 10 No. 1, pp. 139-167.

Asogwa, B.E. (2012), "Electronic government as a paradigm shift for efficient public services: opportunities and challenges for Nigerian government", *Library Hi Tech*, Vol. 31 No. 1, pp. 141-159.

Barrett, M., Sahay, S. and Walsham, G. (2001), “Information technology and social transformation: GIS for forestry management in India”, *The Information Society*, Vol. 17 No. 1, pp. 5-20.

Belwal, R., and Al-Zoubi, K. (2008), "Public centric e-governance in Jordan: a field study of people's perception of e-governance awareness, corruption, and trust", *Journal of Information, Communication and Ethics in Society*, Vol. 6 No. 4, pp. 317-333.

Bertot, J.C., Jaeger, P.T. and Grimes, J.M. (2010), “Using ICTs to create a culture of transparency: e-government and social media as openness and anti-corruption tools for societies”, *Government Information Quarterly*, Vol. 27 No. 3, pp. 264-271.

Bertot, J.C., Jaeger, P.T., and Grimes, J.M. (2012), "Promoting transparency and accountability through ICTs, social media, and collaborative e-government", *Transforming Government: People, Process and Policy*, Vol. 6 No. 1, pp. 78-91.

Brynard, D.J. (1995), "Combating red tape in the public sector", *International Journal of Public Sector Management*, Vol. 8 No. 4, pp.38-47.

Bussell, J. (2011), "Explaining cross-national variation in government adoption of new technologies", *International Studies Quarterly*, Vol. 55, pp. 267-280.

Chatfield, A.T., and Alhujran, O. (2009), "A cross-country comparative analysis of e-government service delivery among Arab countries", *Information Technology for Development*, Vol. 15 No. 3, pp. 151-170.

Ciborra, C. (2005), “Interpreting e-government and development”, *Information Technology & People*, Vol. 18 No. 3, pp. 260-279.

Ciborra, C., and Navarra, D.D. (2005), "Good governance, development theory, and aid policy: risks and challenges of e-government in Jordan", *Information Technology for Development*, Vol. 11 No. 2, pp. 141-159.

Cullen, R. (2009), "Culture, identity and information privacy in the age of digital government", *Online Information Review*, Vol. 33 No. 3, pp.405 - 421.

Currie, W. (2009), "Contextualising the IT artefact: towards a wider research agenda for IS using institutional theory", *Information Technology & People*, Vol. 22 No. 1, pp.63-77.

Davison, R.M., Wagner, C., and Ma, L.C.K. (2005), "From government to e-government: a transition model", *Information Technology & People*, Vol. 18 No. 3, pp. 280-299.

Dehkordi, S.R., and Dehkordi, S.R. (2014), "E-government, trust and corruption", *International Journal of Information Science and Management*, Vol. 1 Special Issue, pp. 59-67.

DeVaujany, F., Carton, S., Mitev, N., and Romeyer, C. (2014), "Applying and theorizing institutional frameworks in IS research: a systematic analysis from 1999 to 2009", *Information Technology & People*, Vol. 27 No. 3, pp. 280-317.

De Vries, M. and Sobis, I. (2016). Increasing transparency is not always the panacea: an overview of alternative paths to curb corruption in the public sector. *International Journal of Public Sector Management*, Vol. 29 No. 3, pp. 255-270.

DiMaggio, P. J., and Powell, W. W. (1983), "The iron cage revisited: Institutional isomorphism and collective rationality in organizational fields", *American Sociological Review*, Vol. 48 No. 2, pp. 147–160.

Dominguez, L.R., Sanchez, I.M., and Alvarez, I.G. (2011), "Determining factors of e-government development: a worldwide national approach", *International Public Management Journal*, Vol. 14 No. 2, pp. 218-248.

Faroqi, M.G., and Siddiquee, N.A. (2011), "Limping into the information age: challenges of e-government in Bangladesh", *Journal of Comparative Asian Development*, Vol. 10 No. 1, pp. 33-61.

Foley, P., and Alfonso, X. (2009), "Egoververnment and the transformation agenda", *Public Administration*, Vol. 87 No. 2, pp. 371-396.

Foo, C., Wu, W., and Chin, T. (2014), "Governance for China: a multi-method research in corruption studies", *Chinese Management Studies*, Vol. 8 No. 3, pp. 288-312.

Fourie, I. (2010), "Social and political implications of data mining: Knowledge management in e-government", *Online Information Review*, Vol. 34 No. 1, pp.194 - 195.

Garcia-Murillo, M. (2010), "The effect of internet access on government corruption", *Electronic Government*, Vol. 7 No. 1, pp. 22-40.

Garcia-Murillo, M. (2013), "Does a government web presence reduce perceptions of corruption?", *Information Technology for Development*, Vol. 19 No. 2, pp. 151-175.

Gelman, A., and Hill, J. (2007). *Data analysis using regression and multilevel/hierarchical models*. Cambridge University Press.

El-Haddadeh, R., Weerakkody, V., and Al-Shafi, S. (2013), "The complexities of electronic services implementation and institutionalisation in the public sector", *Information & Management*, Vol. 50 No. 4, pp. 135-143.

Hair, J.F., Black, W.C.B, Anderson, R.E. and Tatham, R.L. (2010), *Multivariate Data Analysis*, 7th edn, Prentice-Hall, Upper Saddle River, NJ.

Hasan, S. (2004), "Introducing E-government in Bangladesh: problems and prospects", *International Social Science Review*, Vol. 78 Nos. 3/4, pp. 111-125.

Hiller, J.S. and Belanger, F. (2001), "*Privacy strategies for electronic government*", Available at: www.businessofgovernment.org/report/privacy-strategies-electronic-government, Accessed on 17th April, 2017).

Jun, K., and Wang, F., and Wang, D. (2014), "E-government use and perceived government transparency and service capacity", *Public Performance & Management Review*, Vol. 38 No. 1, pp. 125-151.

Kalsi, N.S. and Kiran, R. (2013), "E-governance success factors: an analysis of e-governance initiatives of ten major states of India", *International Journal of Public Sector Management*, Vol. 26 No. 4, pp. 320-336.

Kim, S., Kim, H.J. and Lee, H. (2009), "An institutional analysis of an e-government system for anti-corruption: the case of OPEN", *Government Information Quarterly*, Vol. 26 No. 1, pp. 42-50.

Kim, Y.J. and Kim, E.S. (2016), "Exploring the interrelationship between public service motivation and corruption theories", *Evidence-based HRM: a Global Forum for Empirical Scholarship*, Vol. 4 No. 2, pp. 181-186.

King, J.L., Gurbaxani, V., Kraemer, K.L., McFarlan, F.W., Raman, K.S. and Yap, C.S. (1994), "Institutional factors in information technology innovation", Information Systems Research, Vol. 5 No. 2, pp. 139-69.

Koutrakou, V.N. (2006), "The Greek e-government experiment", *Journal of E-government*, Vol. 3 No. 2, pp. 75-98.

Krell, K., Matook, S., and Rohde, F. (2016), "The impact of legitimacy-based motives on IS adoption services: an institutional theory perspective", *Information & Management*, Vol. 53 No. 6, pp. 683-697.

Krishnan, S., Teo, T.S. and Lim, V.K. (2013), "Examining the relationships among e-government maturity, corruption, economic prosperity and environmental degradation: a cross-country analysis", *Information & Management*, Vol. 50 No. 8, pp. 638-649.

Kumar, R., and Best, M.L. (2006), "Impact and sustainability of e-government services in developing countries: lessons learned from Tamil Nadu, India", *The Information Society*, Vol. 22 No. 1, pp. 1-12.

Lio, M.C., Liu, M.C., and Ou, Y.P. (2011), "Can the internet reduce corruption? A cross-country study based on dynamic panel data models", *Government Information Quarterly*, Vol. 28 No. 1, pp. 47-53.

Lollar, X.L. (2006), "Assessing China's e-government: information, service, transparency and citizen outreach of government websites", *Journal of Contemporary China*, Vol. 15 No. 46, pp. 31-41.

Madon, S., Reinhard, N., Roode, D. and Walsham, G. (2009), "Digital inclusion projects in developing countries: processes of institutionalization", *Information Technology for Development*, Vol. 15 No. 2, pp. 95-107.

McGrath, K., and Maiye, A. (2010), "The role of institutions in ICT innovation: learning from interventions in a Nigerian e-government initiative", *Information Technology for Development*, Vol. 16 No. 4, pp. 260-278.

Mistry, J.J., and Jalal, A. (2012), "An empirical analysis of the relationship between e-government and corruption", *International Journal of Digital Accounting Research,* Vol. 12, pp. 145-176.

Mutula, S.M., and Mostert, J. (2010), "Challenges and opportunities of e-government in South Africa", *The Electronic Library*, Vol. 28 No. 1, pp. 38-53.

Naz, R., Pathak, R.D., Rahman, M.H., Agarwal, K.N. and Smith, R.F.I. (2006), "The potential of using it to cut corruption in service delivery: a case study of services to farmers in Fiji", *International Journal of Effective Management*, Vol. 3 No. 1, pp. 39-52.

Ndou, V. (2004), "E-government for developing countries: opportunities and challenges", *The Electronic Journal of Information Systems in Developing Countries*, Vol. 18 No. 1, pp. 1-24.

Neupane, A., Soar, J., Vaidya, K. and Yong, J. (2014), "Willingness to adopt e-procurement to reduce corruption", *Transforming Government: People, Process and Policy*, Vol. 8 No. 4, pp. 500-520.

Ojha, A., and Palvia, S. (2012), "E-government and the fight against corruption: Conceptual model and five case studies from India", *Journal of Information Technology Case and Application Research*, Vol. 14 No. 4, pp. 11-29.

Orlikowski, W.J. and Barley, S.R. (2001), "Technology and institutions: what can research on information technology and research on organizations learn from each other?", *MIS Quarterly*, Vol. 25 No. 2, pp. 145-65.

Pathak, R.D., Naz, R., Rahman, M.H., Smith, R.F.I. and Agarwal, K.N. (2009), "E-governance to cut corruption in public service delivery: a case study of Fiji", *International Journal of Public Administration*, Vol. 32 No. 5, pp. 415-437.

Rana, N.P., and Dwivedi, Y.K. (2015), "Citizen's adoption of an e-government system: validating extended social cognitive theory (SCT)", *Government Information Quarterly*, Vol. 32 No. 2, pp. 172-181.

Rana, N.P., Dwivedi, Y.K., Williams, M.D., and Lal, B. (2015), "Examining the success of the online public grievance redressal systems: an extension of the IS success model", *Information Systems Management*, Vol. 32 No. 1, pp. 39-59.

Reddick, C.G., Abdelsalam, H.M.E. and Elkadi, H.A. (2012), "Channel choice and the digital divide in e-government: the case of Egypt", *Information Technology for Development*, Vol. 18 No. 3, pp. 226-246.

Saghafi, F., Zarei, B., and Fadaei, M. (2016), "The conceptual model for the effect of technology on the political and social aspects of Iran's e-government", *Quality and Quantity*, Vol. 50 No. 4, pp. 1765-1780.

Saxena, K.B.C. (2005), "Towards excellence in e-governance", *International Journal of Public Sector Management*, Vol. 18 No. 6, pp. 498-513.

Schware, R., and Deane, A. (2003), "Deploying e-government programs: the strategic importance of "I" before "E"", *info*, Vol. 5 No. 4, pp.10-19.

Scott, W.R. (2001), *Institutions and Organizations*, 2nd ed., Sage Publications, Thousand Oaks, CA.

Scott, W.R. (2003), "*Organizations: Rational, natural and open systems",* Prentice-Hall, Upper Saddle River, NJ.

Sharma, S.K., Govindaluri, S.M., and Gattoufi, S. (2015), "Understanding and predicting the quality determinants of e-government services: a two-staged regression-neural network model", *Journal of Modelling in Management*, Vol. 10 No. 3, pp.325-340.

Sheryazdanova, G., and Butterfield, J. (2017), "E-government as an anti-corruption strategy in Kazakhstan", *Journal of Information Technology & Politics*, Vol. 14 No. 1, pp. 83-94.

Shim, D.C., and Eom, T.H. (2008), "E-government and anti-corruption: empirical analysis of international data", *International Journal of Public Administration*, Vol. 31 No. 3, pp. 298-316.

Siddiquee, N.A. (2016), "E-government and transformation of service delivery in developing countries: The Bangladesh experience and lessons", *Transforming Government, People, Process and Policy*, Vol. 10 No. 3, pp. 368-390.

Singh, G., Pathak, R.D., Naz, R. and Belwal, R. (2010), "E-governance for improved public sector service delivery in India, Ethiopia and Fiji", *International Journal of Public Sector Management*, Vol. 23 No. 3, pp. 254-275.

Srivastava, S.C., Teo, T.S.H., and Devaraj, S. (2016), "You can't bribe a computer: dealing with the societal challenge of corruption through ICT", *MIS Quarterly: Management Information Systems*, Vol. 40 No. 2, pp. 511-526.

Susanto, T, D., and Goodwin, R. (2010), "Factors influencing citizen adoption of SMS-based e-government services", *Electronic Journal of eGovernment*, Vol. 8 No. 1, pp. 55–71.

Sutherland, E. (2014),"Corruption and internet governance", *Info*, Vol. 16 No. 2, pp. 1-15.

Sutherland, E. (2016), "India – The evolution and corruption of licensing", *info*, Vol. 18 No. 3, pp. 4-26.

Teo, T.S. (2001), "Demographic and motivation variables associated with Internet usage activities", *Internet Research*, Vol. 11 No. 2, pp. 125-137.

Thelen, K. (1999), "Historical institutionalism in comparative politics", *Annual Review of Political Science*, Vol. 2, pp. 369–404.

Tolbert, C. J., and Mossberger, K. (2006), "The effects of e-government on trust and confidence in government", *Public Administration Review*, Vol. 66 No. 3, pp. 354–369.

Valle-Cruz, D., Sandoval-Almazan, R., and Gil-Garcia, J.R. (2016), "Citizens' perceptions of the impact of information technology use on transparency, efficiency and corruption in local governments", *Information Polity*, Vol. 21 No. 3, pp. 321-334.

Vasiu, I., and Vasiu, L. (2006), "Top management skills in e-governance", *Journal of E-Government*, Vol. 2 No. 3, pp. 5-17.

Venkatesh, V.,Sykes, T.A., and Venkatraman, S. (2014), "Understanding e-government portal use in rural India: role of demographic and personality characteristics", *Information Systems Journal*, Vol. 24, pp. 249-269.

Walsham, G., and Sahay, S. (1999), "GIS for district-level administration in India: problems and opportunities", *MIS Quarterly*, Vol. 23 No. 1, pp. 39-65.

Weerakkody, V., Dwivedi, Y.K., and Kurunananda, A. (2009). Implementing e-government in Sri Lanka: Lessons from the UK. *Information Technology for Development*, Vol. 15 No. 3, pp. 171-192.

Yang, K., and Rho, S. (2007), "E-government for better performance: promises, realities, and challenges", *International Journal of Public Administration*, Vol. 30 No. 11, pp. 1197-1217.

Zhang, H., Xu, X., and Xiao, J. (2014), "Diffusion of e-government: a literature and directions for future directions", *Government Information Quarterly*, Vol. 31 No. 4, pp. 631-636.

Zhao, X., and Xu, H.D. (2015), "E-government and corruption: A longitudinal analysis of countries", *International Journal of Public Administration*, Vol. 38 No. 6, pp. 410-421.

Ziemba, E., Papaj, T., Zelazny, R., and Jadamus-Hacura, M. (2016), "Factors influencing the success of e-government", *Journal of Computer Information Systems*, Vol. 56 No. 2, pp. 156-167.

Zorn, T.E., Flanagin, A.J., and Shoham, M.D. (2011), Institutional and noninstitutional influences on information and communication technology adoption and use among nonprofit organizations. *Human Communication Research*, Vol. 37 No. 1, pp. 1-33.

Zucker, L.G. (1977), "The role of institutionalization in cultural persistence", *American Sociological Review*, Vol. 42 No. 5, pp. 726-43.