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Future of e-Government: An integrated conceptual framework

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ABSTRACT

The information and hyper-connectivity revolutions have caused significant disruptions in citizens' interactions with governments all over the world. Failures in implementing e-government interventions suggest the lack of an integrated approach in understanding e-government as a discipline. In this study, we present an overarching and integrated conceptual framework of e-government grounded in robust qualitative research to describe the factors that must be integrated to implement e-government successfully. Drawing insights from 168 in-depth interviews conducted with multiple stakeholders in India, this study defines e-government as a multidimensional construct with customer orientation, channel orientation and technology orientation as its antecedents. Building on customer orientation and relationship marketing theories, this study proposes that the most significant factor impacting success in implementing e-government projects is citizen orientation, followed by channel orientation and technology orientation. The study also identifies the digital divide, economic growth and political stability as moderators of e-government. Furthermore, the study proposes the tangible and intangible outcomes of e-government with perceived privacy and shared understanding as moderating conditions. Finally, the study presents relevant theoretical and practical implications with future research directions.

1. Introduction

Electronic government (or e-government) refers to the use of information and communication technology (ICT) applications to deliver various government services. E-government has created new opportunities for governments to serve and inform stakeholders with improved quality, accountability and efficiency (Alshehri et al., 2012; Dawes, 2009). Although e-government can efficiently deliver governance, it has yielded mixed results in the developing countries (Bélanger & Carter, 2012; Welch, Hinnant & Moon, 2005; Wirtz & Daiser, 2018). For example, in developing countries, where e-government's success has been particularly limited (Elkadi, 2013; Heeks, 2003a), Furuholt and Wahid (2008) found that more than 60% of e-government projects in developing countries failed to meet the desired outcomes. Furthermore, of the failed projects, 35% failed completely while 50% failed partially in meeting the expected outcomes (Furuholt & Wahid, 2008). Elkadi (2013) argued that failure in the implementation of e-government initiatives results in a loss of already limited resources as well as related cascading effects, such as financial debts, reputation loss and political setbacks for the incumbent government. These losses and costs are unbearable for most developing countries. Therefore, governments in the developing world must holistically recognise and address the nuances involved in the successful implementation of e-government projects (Glyptis et al., 2020).

Although the existing e-government literature is vast and extensive, we observe three major research gaps within it. First, the e-government literature is broadly divided into two streams: studies focused on information systems and studies focused on public administration (Heeks & Bailur, 2007). However, the existing literature has, thus far, failed to integrate knowledge from these two domains. Consequently, the prior literature lacks methodological, philosophical and theoretical rigour (Bannister & Connolly, 2015; Heeks & Bailur, 2007; Abu-Shanab & Harb, 2019). This fragmented approach to the e-government literature poses a significant threat because both viewpoints—information

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systems and public administration—are essential for the effective implementation of e-government (Glyptis et al., 2020; Khan et al., 2021).

Second, the prior literature has focused primarily on assessing citizens' perceptions of e-government services while devoting significantly less attention to studying citizens' needs and expectations from e-government services (Weerakkody et al., 2019).

Third, the existing literature has not yet conceptualised e-government according to the multidimensional and multi-level framework suggested by recent studies (Bannister & Connolly, 2015; Khanra & Joseph, 2019). Such a conceptualisation is necessary to comprehend this complex concept, make generalisations and build theory in the context of e-government. However, it requires a comprehensive view of e-government. This view, which would incorporate the perspectives of multiple e-government stakeholders, such as citizens, policymakers and various implementation partners, is currently lacking in the literature.

The current study aims to address the above research gaps in the existing literature. Addressing these gaps will enable the smooth implementation of e-government projects, specifically in developing countries. The present study thus integrates the perspectives of information systems and public administration by proposing a multidimensional and multi-level framework on e-government that captures the viewpoints of multiple e-government stakeholders (e.g. citizens, intermediaries and policymakers). In developing this proposed framework, the current study focuses on better understanding citizens' needs and expectations towards e-government services. A total of 168 stakeholders participated in this longitudinal qualitative study. The participants were selected using theoretical sampling, concurrent data collection and constant comparative analysis. The framework was developed through the triangulation of longitudinal qualitative data (using the grounded theory approach) and marketplace evidence.

In this study, we first conceptualise e-government with three underlying dimensions, i.e. empowered citizenship, hyper-integrated networks and evolutionary architecture. Next, we identify the antecedents of e-government from the perspectives of citizens, channel partners and technology. Third, our study reports possible outcomes (tangible and intangible) of e-government. Finally, the study also identifies five variables—the digital divide, economic growth, political stability, shared understanding and perceived privacy, which moderate the propositions advanced in the theoretical framework. As the first study of its kind to adopt a holistic approach by including perspectives of all possible stakeholders and disciplines affecting e-government, it offers a novel contribution to the current body of knowledge regarding e-government. Furthermore, the study lays a foundation for building e-government theory.

We organise this research as follows. The first section summarises the evolution of the literature and identifies the stakeholders involved in implementing and diffusing e-government. Next, we describe our qualitative study, which incorporates policymakers and governments' viewpoints through in-depth interviews. Triangulating the insights from this study with the existing literature and marketplace evidence, we propose a multi-level and multidimensional theoretical framework of e-government with relevant propositions and implications for various stakeholders. Finally, we discuss an agenda for future research.

2. Literature review: e-Government

This study presents a review of the e-government literature and reports various dimensions of e-government discussed in previous studies ranging from the domains of computer science, public administration, marketing and technology adoption. In reviewing the e-government literature, we identify two prominent issues. First, because diverse domains have discussed the concept of e-government, the current literature has yet to agree upon a common definition of it (Shanab & Harb, 2019). We review the existing definitions employed in previous studies and present a summary in Table 1. While the existing literature defines e-government as a tool to provide government services to citizens using digital media, we define e-government as socially inclusive, hyper-integrated ICT platforms that are built with evolutionary systems architecture to ensure the efficient delivery of government services with transparency, reliability and accountability. Second, we note a lack of knowledge integration across disciplines within the e-government literature, which has, thus far, hindered efforts to develop a comprehensive theory or framework (Khanra & Joseph, 2019).

We classify the evolution of the e-government literature into five stages (see Fig. 1). Initially, e-government emerged as a medium for the dissemination and exchange of information. During the first two stages, the research thus focused on technological issues related to e-

Table 1
Evolution of e-government definitions

Reference	Purpose and focus	Methodology	Definition of e-Government	Conceptualisation	Theoretical framework
Ho, 2002	Identify the restructuring challenges faced by government in adopting IT to deliver citizen services	Content analysis of official city websites	Government attempts to serve citizens using electronic means	No	No
Layne & Lee, 2001	Outline different stages of e-government development by proposing a four-stage model of e-government development	Qualitative observational study with anecdotal references	Structrually transforming the government to enable electronic governance	No	No
Moon, 2002	Examine the effectiveness of e-government and identify barriers to the progress of e-government	Survey-based research	Using IT applications for the production and delivery of government services	No	No
Ndou & Shkoder, 2004	Identify issues, opportunities and challenges developing countries face while implementing e-government	Case study based observational study	Re-inventing the public sector using ICT, transforming its operations and its interrelationships with the community	No	No
West, 2004	Assess the effectiveness of e-government initiatives by measuring effectiveness in service delivery, democratic responsiveness and public outreach	Web-based survey and content analysis	Using the Internet for the delivery of information and other government services	No	No
Scholta et al., 2019	Extend the stage model to include proactive government as the next stage	Case study	Real-time delivery of services and information to citizens in a customised manner	No	No
Present study	Conceptualise e-government as a multidimensional construct and propose an overarching conceptual framework that contributes to developing the theory of e-government	Grounded theory followed by triangulation using case studies	Socially inclusive, hyper-integrated ICT platforms that are built with evolutionary systems architecture to ensure efficient delivery of government services with transparency, reliability and accountability	Yes	Yes

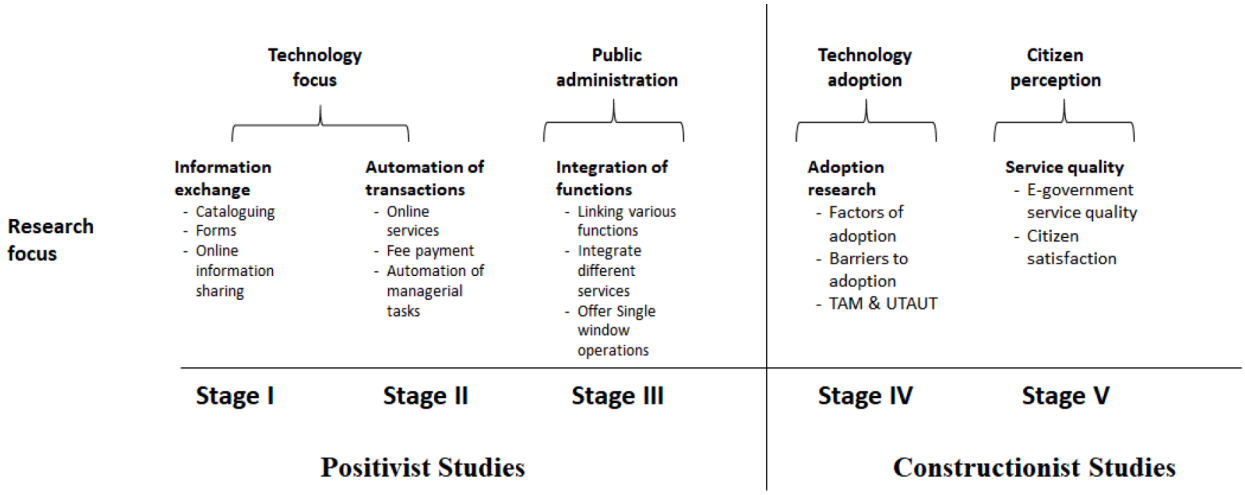


Fig. 1. Evolution of e-government literature

government, i.e. information exchange and automation of transactions (Aldrich, Bertot & McClure, 2002; Schelin, 2003; Yildiz, 2007; Pérez-Morote et al., 2020). In the first stage, more specifically, the focus of e-government remained on governments' adoption of modern ICT to facilitate the exchange of information (Pérez-Morote et al., 2020). The second stage visualised e-government as a tool to provide various services to its citizens; from this stage, e-government emerged as a technology function to automate non-managerial administrative tasks, such as financial transactions, back-office work and clerical checks (Dawes, 2008; Schelin, 2003; Wirtz & Daiser, 2018). With the increasing penetration of computers and usage of ICT, e-government's central theme gradually shifted towards the integration of IT with other core functions (King, 2004; Yildiz, 2007). Therefore, the third stage of research in the e-government domain focused on technology as a medium of public administrative reforms and a tool to enhance convenience in delivering government services and sharing information (Doty & Erdelez, 2002; Halchin, 2004; Seifert & Relyea, 2004).

In the fourth and fifth stages, e-government research has turned towards technology adoption and citizen perceptions by investigating the issues related to user adoption (Gupta & Jana, 2003; Layne & Lee, 2001; Moon, 2002; West, 2004; Ebrahim & Irani, 2005; Sharif et al., 2010; Weerakkody et al., 2013) and service quality (Papadomichelaki & Mentzas, 2011; Weerakkody et al., 2019).

From a philosophical point of view, we can classify the existing e-government literature into positivist and constructionist studies (Heeks & Bailur, 2007). The positivist e-government paradigm used objective variables, such as technology, skills and standard operating procedures (SOPs), to build causal relationships that could empirically explain the success of e-government (Heeks & Bailur, 2007). These studies were wide-ranging and multifaceted, investigating e-government through the disciplines of public administration, information systems, business management, political science and computer science. In contrast, the constructionist paradigms were subjective, targeting individuals and the meanings they ascribed to e-government interventions (Heeks & Bailur, 2007). Driven by these divergent paradigms, our knowledge of e-government thus remains fragmented into two distinct streams and disjointed across domains.

Based on the above discussions, we conclude that e-government research is multifaceted for three main reasons. First, e-government research is rooted in multiple domains, which has engendered a lack of clarity regarding whether e-government is a tool, a phenomenon or a strategy. Second, most studies are anecdotal, dependent on case histories or based on the application of existing frameworks and thus lack theoretical rigour (Bannister & Connolly, 2015; Heeks & Bailur, 2007). Third, unsuccessful e-government cases cannot be explained using extant research and the available frameworks (Choi & Chandler, 2020; Ramli, 2017). In fact, the fragmentation of prior knowledge in the e-government literature leaves the cause of e-government project implementation failures unclear (Choi & Chandler, 2020; Dawes, 2008).

Questions thus arise regarding how governments, especially those in emerging or developing countries, should conceptualise, handle and continuously improve e-government initiatives. The context of developing countries is important to study because the failure rate of e-government interventions in developing countries is higher than in developed countries (Dada, 2006). Dias (2020) found that developing countries exhibit a significant lack of coordination among various stakeholders, which results in a higher rate of failure in implementing e-government projects.

To address these questions and contribute to the existing literature, the current study takes a comprehensive view of the e-government domain and proposes an overarching theoretical framework. The study aims to investigate the following key research questions: (a) What contributes to developing an effective e-government programme? (b) Who are the stakeholders in the e-government programme, and how are they interrelated? (c) What unique outcomes can be expected when e-government programmes are effectively diffused? (d) What underlying conditions must be satisfied for both the successful implementation of e-government and its maximum adoption by stakeholders? In considering these research questions, we observe that the conceptual clarity of e-government is weak. Therefore, we conceptualise e-government as a multidimensional construct, identify its underlying dimensions and develop an overarching conceptual framework to ground the development of e-government theory.

3. Method

We conducted qualitative research with two broad objectives: (a) to conceptualise and define e-government as a multidimensional construct, and; (b) to identify the antecedents of e-government across various disciplines as well as its possible consequences and moderating variables. We relied on grounded theory methodology, which is a practical and flexible approach suitable to investigate complex phenomena, such as e-government (Charmaz, 2008). Furthermore, because scholars employ grounded theory to study dynamic phenomenon, we treated it as an emergent method (Charmaz, 2008). We collected qualitative data via 168 unstructured, semi-structured and unstructured personal interviews (see Table 2) from November 2016 to January 2019. Finally, we triangulated our research findings using five case studies of e-government implementation.

Table 2
Details of interviews conducted (Nov 2016–Jan 2019)

Stakeholder	Criteria for participation	Period	Type of interview	Average duration (minutes)	Number
Government officials (implementation)	Officials who had experience in planning and implementing e-government projects	Nov 2016	Unstructured	75–90	14
Intermediaries	Intermediaries and channel partners engaged in the diffusion of e-government services to citizens	Dec 2016–Jan 2017	Semi-structured	45–60	22
Citizens (rural)	Citizens who had used e-government services	Mar–May 2017	Structured	20–30	55
Academic researchers	Academicians who had substantially researched and published on e-government within the past decade	May 2017	Unstructured	45–60	6
Experts in information technology	IT experts with expertise in the technology used in e-government implementation	Aug 2017	Unstructured	45–60	5
Senior bureaucrats engaged at the policymaking level	Senior bureaucrats engaged in policymaking decisions	Dec 2017	Unstructured	75–90	3
Government officials (operations)	Officials involved in operating e-government services	Jan 2018	Semi-structured	45–60	10
Intermediaries	Intermediaries and channel partners engaged in the diffusion of e-government services to the citizens	Mar 2018	Semi-structured	45–60	8
Citizens (urban)	Citizens who had used e-government services	July 2018	Structured	20–30	38
Academic researchers	Academicians who had substantially researched and published on e-government within the past decade	Dec 2018	Semi-structured	45–60	5
Senior bureaucrats	Senior bureaucrats engaged in policymaking decisions	Jan 2019	Semi-structured	45–60	2
	Total				168

3.1. Interviews

We conducted unstructured interviews with subject matter experts (i.e. academic experts, bureaucrats, government officials and IT experts) to explore the domain and generate deeper insights from the interviewees' experiences. These in-depth interviews, which each lasted more than 60 min., enabled us to identify the core issues related to various stakeholders and prepare questions for subsequent interviews with intermediaries, implementation officers and beneficiaries. The unstructured interviews further helped us create interview schedules for interviewing intermediaries and government officials involved in the implementation and operations of e-government services. Next, we conducted semi-structured interviews with government officials and intermediaries involved in the implementation and day-to-day operations of e-government. The semi-structured interviews allowed us to further explore the issues related to various stakeholders and generate deeper insights. Finally, we conducted structured interviews with the beneficiaries of e-government services, i.e. the citizens. We also followed these structured citizen interviews with another round of semi-structured interviews to seek clarification, understand the emergent developments and validate our research propositions. The interviews were informative and valuable in understanding the macro- and micro-facets of e-government from three different lenses: public administration, information technology and marketing/channel management.

The interview protocol explored the following issues: (a) *issues related to policy formulation,* i.e. policymakers' conceptions and implementation of e-government projects; the stages of planning and implementation; and governments' motivations—including stated and unstated goals—in embarking upon e-government projects; (b) *implementation-related issues,* i.e. the technological and administrative barriers government agencies face while planning and implementing e-government projects as well as field-level government officials' efforts to comprehend e-government services from the viewpoint of policymakers, administrators, channel partners and end-users; (c) *issues related to channel partners* i.e. channel partners' understanding of their roles and responsibilities from implementation to operationalisation, including the various environmental challenges they face in delivering e-government services as well as the shared experiences of the stakeholders across different stages of e-government project implementation; (d) *issues citizens face,* i.e. the beneficiaries' perceptions and experiences, including their motivations/barriers in adopting e-government services, their satisfaction with the services and their feedback. Collectively, the field interviews provided sufficient evidence to validate the proposed theoretical framework.

3.2. Triangulation: Using a case study

A tool to build methodological rigour in qualitative studies, triangulation involves converging data from multiple sources (Jonsen & Jehn, 2009). Jonsen and Jehn (2009) asserted the value of the triangulation method in validating themes in qualitative research through constant cross-verification of conceptualisations, data, methods, respondents and theories. In this study, we carefully studied five e-government projects as individual case studies for triangulation purposes (Annexure 1). We used these case studies to triangulate the proposed antecedents of e-government along with the relevant moderating variables and outcome variables for the proposed theoretical framework. These case studies also supported our efforts to theorise e-government as a multi-level construct. Finally, we established construct validity by triangulating data across field interviews, case studies and the extant literature (Malodia, Gupta & Jaiswal, 2019; Patton, 1987).

3.3. Data analysis

We adopted thematic content analysis using the Gioia method to conceptualise and define e-government. Accordingly, we systematically analysed the insights generated from the triangulation study (Gioia, Corley & Hamilton, 2013). This approach helped us identify the underlying dimensions and define e-government. A five-member panel consisting of two professors, two research associates and one subject expert conducted the thematic analysis by extracting themes from the interview text and categorising them under appropriate dimensions. The panel also identified the zero-order items using open coding, first-order constructs using axial coding and second-order constructs using selective coding (see Table 3). The selective coding resulted in six major dimensions: e-government, citizen orientation, channel orientation, technology orientation, tangible outcomes and intangible outcomes. Table 4 presents the operational definitions of the first-order and second-order constructs. Further, we identified the inter-relationships between the six dimensions in the theoretical framework (see Fig. 2). We then conducted a reliability analysis by constituting a new seven-member panel consisting of three professors and four research scholars. After the panel members examined the coded categories independently, we analysed the inter-rater reliability using Fleiss Kappa

Table 3
Classification of zero-order, first-order and second-order codes

Zero-order	First-order	Second-order
• Efforts to include citizen representation in ideation	*Empowered citizenship*	Conceptualisation of e-government
• Inclusive planning and governance structure		
• Collaborating and partnering with communities (online and offline)		
• Enabling citizens to share and report information		
• Integrating various state administrative functions/services	*Hyper-integrated networks*	
• Building cooperative and collaborative functioning across government agencies		
• Facilitating interoperability between different e-government systems (single-window system)		
• Pre-empting changes	*Evolutionary systems architecture*	
• Developing architecture that supports multidimensional as well as incremental changes		
• Building a modular system		
• Technology self-efficacy level of citizens	*Understanding citizen readiness*	Citizen orientation
• Awareness level of citizens		
• Perceived usefulness among citizens		
• Citizen's trust towards e-government services		
• Perceived ease of use		
• Understanding social norms and peer pressure	*Defining cultural context*	
• Understanding the operating environment of citizens		
• Understanding socio-cultural barriers		
• Mapping citizens' life experiences		
• Identifying impact areas	*Co-creating value*	
• Building trust-based relationships with citizen groups		
• Developing local partnerships		
• Continuously sharing information with citizens		
• Seeking feedback regularly		
• Sharing responsibility to solve problems	*Building cooperative norms*	Channel orientation
• Refraining from exploiting the bargaining power of either party		
• Remaining open to feedback and changes when needed		
• Extending assistance to all parties		
• Ensuring adequate economic returns for intermediaries	*Building a sustainable economic model*	
• Ensuring flexibility for business model innovation		
• Providing adequate infrastructure and marketing support		
• Utilising an innovative PPP business model to ensure profitability in operations		
• Capitalising on inbuilt growth opportunities and scalability		
• Sharing risks with intermediaries		
• Providing entrepreneurial orientation to intermediaries	*Transforming intermediaries*	
• Investing in intermediaries' learning and development		
• Promoting intermediaries social inclusion and upliftment		
• Empowering intermediaries		
• Benchmarking with globally established technology standards	*Building technological capabilities*	Technology orientation
• Investing in the development of strong technological skills		
• Investing in state-of-the-art R&D facilities		
• Taking the lead in innovation activities		
• Developing capabilities to integrate third-party applications and technologies		
• Training senior bureaucrats and policymakers in contemporary technological developments	*Building managerial capabilities*	
• Committing resources to learning and development		
• Adopting principles of flexible management		
• Committing to change		
• Savings in operating costs due to paperless work culture	*Cost advantage*	Tangible outcomes
• Savings in operating costs due to reduced requirements for workforce, physical space and utilities		
• Savings in process costs due to single-window systems		
• Significant reduction in service delivery time	*Time advantage*	
• Reduction in redundant activities leading to low turnaround time		
• Instant data sharing across government departments		
• Increased accuracy and elimination of human mistakes	*Efficiency*	
• Fast-tracking of work to serve more citizens with fewer resources		
• Reduction in inefficiencies due to manual procedures of interdepartmental coordination		
• Citizens obtain information easily and quickly	*Citizen satisfaction*	Intangible outcomes
• No need for citizens to visit government offices physically		
• Cost and time saving for citizens		
• Increased transparency	*Trust in government*	
• Enhanced accountability		
• Ease of tracking applications		
• Reduced corruption		

estimates. These analyses revealed substantial agreement with a Kappa value of 0.79 (Artstein & Poesio, 2008).

We present the results of the study below. First, we discuss the conceptualisation of e-government. Second, we discuss the antecedents followed by the outcomes of e-government. Finally, we discuss the moderating variables.

4. e-Government framework

4.1. Conceptualization of e-Government

The conceptualisation of e-government includes three sub-categories: empowered citizenship, hyper-integrated networks and evolutionary systems architecture.

Table 4
Operational definitions of constructs used in the conceptual framework

Construct	Operational definition	Literature
Empowered citizenship	An inclusive governance structure where the design of e-government enables citizens to freely access information and participate in the decision-making process	Box, 1999; Flak & Rose, 2005; Zimmerman, 2000
Hyper-integrated network	An integrated platform that allows interoperability across government agencies and facilitates collaborative functioning among them	Kim et al., 2003; Mali & Gil-García, 2017; Panetto & Cecil, 2013
Evolutionary systems architecture	A modular system that is designed to support incremental upgrades and improvements in components, features, applications, etc.	(Alcaide–Muñoz et al., 2017 Sepasgozar et al., 2019; West, 2004
Understanding citizen readiness	Assessing awareness about e-government, the ability to use technology and the perceived value of the services from the perspective of citizens	Liljander et al., 2006; Meuter et al., 2005; Ho & Ko, 2008
Defining cultural context	Outlining the distinctness of a society's guiding forces, which regulate the behaviour of its members	Lee, 2006; Moon et al., 2017
Co-creating value	Collaborating with citizens and/or representatives of society to co-create value through continuous rounds of interactions and feedback	Jaworski & Kohli, 2014; Randall et al., 2011; Vargo & Lusch, 2004
Building cooperative norms	Agreement between government and intermediaries supporting e-government functions to work towards a common goal while protecting mutual interests	Al-Sobhi et al., 2010; Coleman & Mayo, 2007; Hofer et al., 2012
Building a sustainable economic model	Safeguarding the economic interests and financial well-being of intermediaries so that operating e-government services can serve as a primary source of livelihood	Sein & Furuholt, 2012; Williamson, 1991
Transforming intermediaries	Building channel partners' entrepreneurial abilities through various measures, such as skill development training, entrepreneurship training, etc.	(Cavusgil, 1990; Shiver & Perla, 2016)
Building technological capabilities	Investing in R&D, gradually accumulating and upgrading knowledge to manage technological advances, conducting innovation activities and identifying new applications by combining technologies to solve complex governance problems	Dutta et al., 2005; McGrath et al., 1995
Building managerial capabilities	Developing management capacity and expertise by creating training facilities and imparting contemporary technical skills to the office bearers engaged in e-government	Castanias & Helfat, 2001; Thompson & Heron, 2005
Cost advantage	The ability of the government to lower the cost of delivering public services with the help of information technology and automation	Karunasena et al., 2011; Evans & Yen, 2006; Moon, 2002
Time advantage	The ability of an e-government project to generate efficiency through time compression, which, in turn, can be directly measured in monetary terms	Fagan & Fagan, 2001
Efficiency	The ability of the government to reduce the wastage of resources while delivering similar or improved services to its stakeholders	Chircu, 2008; Chircu & Lee, 2005; Moore, 1995
Citizen satisfaction	Citizens' collective assessment of the performance of the e-government system based on their experiences with the quality of e-government services at various touchpoints	Evans & Yen, 2006; Heeks, 2008
Trust in government	Perceived judgement of citizens about transparency and accountability in the delivery of governance	Bannister & Connolly, 2011; Welch et al., 2005

4.1.1. Empowered citizenship

The term 'empowered citizenship' refers to an inclusive governance structure where the design of e-government enables citizens to freely access information and participate in the decision-making process. Empowered citizenship is an important building block of e-government design. The long-term objective of e-government is to shift the loci of governance from the government to the individual citizens (Box, 1999; Flak & Rose, 2005). The attribute 'empowered citizenship' finds its roots in both stakeholder theory and empowerment theory (Box, 1999). Normative assumptions of stakeholder theory suggest that stakeholders possess intrinsic rights. Hence, in the context of e-government, citizens have a legitimate right to influence and participate in the decision-making process (Box, 1999). Similarly, empowerment theory postulates citizen empowerment as a higher order of participatory government where citizens exert real power to control and influence decisions affecting the quality of social/community projects (Zimmerman, 2000; Sepasgozar et al., 2019) During our interviews, one senior bureaucrat remarked:

'If I have to tell you the underlying dimensions of a successful e-government project based on my experience, I would say that every project, irrespective of its scope, is built on the foundation of empowerment. A citizen-centric project is successful only if it is designed to empower them [citizens]'. [Respondent #8]

Three stages ensure citizen empowerment in the context of e-government. The first step in shifting the onus of governance towards citizens is to ensure inclusivity. For example, the government of India has promoted inclusion by implementing initiatives such as enrolling citizens in *Aadhaar*[1] and opening information kiosks in rural areas. The second step is to ensure the free availability of information. In India, the government has made significant strides in digitising data, including digitising land records, healthcare information and agriculture-related information and promoting the online implementation of the Right to Information Act. In many cases, citizens not only access information online but are also empowered to upload and share information. The third and final step to empower citizens is to enable them to participate and influence the decision-making process. In some instances, Indian citizens have participated and influenced policy decisions by sharing their opinions via social media or providing feedback through various government portals. For example, the design of the Startup India, Make in India and Skill India initiatives incorporated citizens' feedback and suggestions. The government has also rolled out the MGov portal to encourage citizen participation in policymaking (Gandhi, 2016).

[1] Aadhaar is a 12-digit unique identification number issued to each resident of India by the country's identification authority.

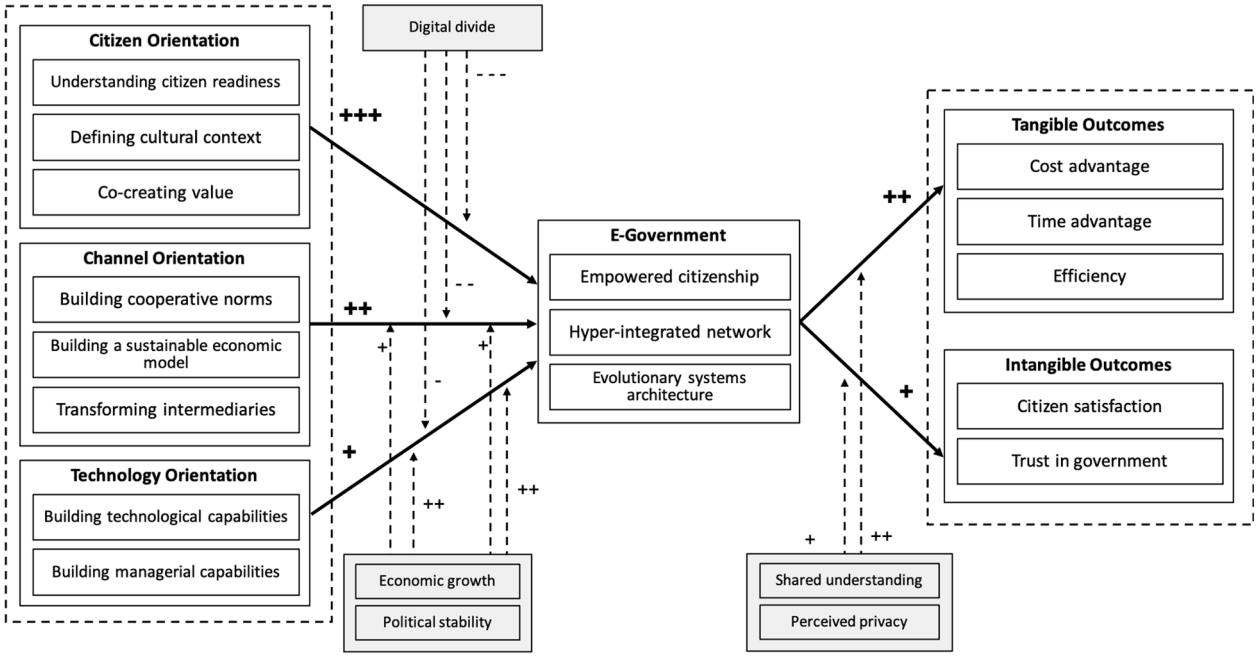
Annexure 1
Details of the case studies

Case study	Description	Characteristics	Benefits/outcomes	References
eGram project	The eGram project is aimed at delivering essential citizen services in rural India by setting up information kiosks at the village level.	- Easy access for citizens using intermediaries. - Kiosks designed in consultation with village representatives. - Village administration, i.e. panchayat, oversees operations of information kiosks. - Government and private partners in PPP mode manage infrastructure jointly. - Single window for citizens. - Regular training for village-level entrepreneurs.	• Cost savings for government. • Accelerating projects in villages from planning to completion. • Easy access to land records and various certificates. • Reduction in corruption. • Financial inclusion of the poor and minorities. • Son of the soil operates an information kiosk, thereby enhance trust among citizens.	https://egram.gujarat.gov.in/
Centralised processing centre (CPC)	The CPC is an integrated e-government platform to manage income-tax returns and related processes.	• Citizens can access the portal 24 × 7. • Easy filing of returns with the ability to update and make corrections. • Automated return processing, demand and refund management. • Online tracking of returns. • Simplified mechanism to submit grievances. • Integrated e-filing and centralised processing. • Hi-tech record management and call centre. • Evolutionary technology infrastructure in a PPP model.	• Rapid processing of returns results in cost and time savings. • Reduction in litigation costs due to reduction in human errors. • Reduction in interest liability due to real-time processing of refunds. • Cost savings due to reduced paperwork. • Real-time tracking of returns by citizens. • Enhanced transparency. • Cost and time saving for citizens.	https://www.incometaxindia.gov.in/Documents/vision-mission-values-2020-07012011.pdf https://www.incometaxindiaefiling.gov.in/home
Passport Seva	Passport Seva is the national online portal to deliver passports and related services to citizens.	• Citizens can apply for passports through the portal 24 × 7. • Citizens can upload all supporting documents and pay fees online. • Applicants can choose a convenient date and time for submitting biometric information and verification documents. • Portal works in a PPP model with Tata Consultancy Services (TCS) handling all intermediary services. • Integration of passport office with the postal department, police department, banking systems, etc. • Technology services outsourced for efficient system quality.	• Increased efficiency in service delivery. • Increased transparency of operations and empowerment of Indian citizens. • Reduction in passport delivery time. • Police verification conducted seamlessly online. • Enhanced public trust. • Cost and time saving for both the passport department and citizens.	https://www.india.gov.in/spotlight/passport-seva-portal-convenient-way-get-passport#tab=tab-1
E-procurement	E-procurement is a government procurement portal used by the central government, state governments and public sector undertakings to procure various products and services online.	• Includes e-tendering, e-auctioning, vendor management and related services. • Online bid submission and bid opening. • Transparent vendor selection and finalisation. • Vendor evaluation module to catalogue	• Cost savings and transparency in spending. • Elimination of paperwork. • Enhanced choices via competitive bidding and an increase in the number of bids. • Standardisation in the buying process.	https://www.c1india.com/what-is-e-procurement/

(*continued on next page*)

Annexure 1 (*continued*)

Case study	Description	Characteristics	Benefits/outcomes	References
		vendors and evaluate their services. • Integration of all government departments and public sector organisations. • National informatics centre services incorporated handles the technology.	• Transparency and reduction in cartel formation. • Reduction in overall procurement time. • Data safety and privacy of bids submitted. • Enhanced trust and satisfaction among suppliers and vendors via simplified bidding process.	
Direct benefit transfer	Direct benefit transfers involve re-engineering public welfare schemes using ICT and Fin-Tech.	• The direct transfer of public welfare schemes, healthcare insurance, subsidies, etc., to beneficiaries' accounts. • Tool for financial inclusion. • Integration of banks, welfare schemes, public administration using Fintech. • Unified payment interface.	• Easy monitoring of public welfare schemes. • Real-time delivery of benefits to citizens. • Financial inclusion while keeping the cost of operations low. • Increased citizen satisfaction and trust.	https://dbtbharat.gov.in/



Degree of legend: +, ++ and +++ refer to increasing gradation of relative effects

Fig. 2. E-government: conceptual framework. *Degree of legend: +, ++ and +++ refer to increasing gradation of relative effects*

4.1.2. Hyper-integrated network

The term 'hyper-integrated network' refers to an integrated platform that allows interoperability across government agencies and facilitates collaborative functioning among them. Such a network enables governments to collect/disseminate information and deliver services through a single window (Mali & Gil-García, 2017). Organisational theory proposes information-based integration as a vehicle for effective coordination and control (Kim, Park & Prescott, 2003). Similarly, the enterprise integration literature emphasises the role of 'enterprise interoperability' in making organisations more adaptable, agile, decentralised and flexible (Panetto & Cecil, 2013). Stressing the importance of integration and interoperability, one senior policymaker commented:

'In India currently, we have 44 mission mode projects (MMPs) under the national e-government project, of which 12 are integrated MMPs. These integrated MMPs permit interoperability among the participating organisations and have resulted in modernising the public sector. [The MMP] has not only revolutionised the way the government now interacts with its stakeholders but has also reduced the cost significantly and enhanced efficiency'. [Respondent #3]

The hyper-integrated network is a fundamental element of the modern e-government system through which governments can perform their tasks with efficiency and transparency by seamlessly interacting with citizens and businesses (Ebrahim & Irani, 2005; Sepasgozar et al., 2019) For example, e-procurement is a fully integrated e-government

project implemented by the Indian government as a common portal designed to make government procurement simple, transparent and efficient. This portal has an integrated framework that allows different organisations, states and civic bodies to share and exchange information irrespective of data formats, devices and systems architectures.

4.1.3. Evolutionary systems architecture

Evolutionary systems architecture refers to a modular system that is designed to support incremental upgrades and improvements in components, features, applications, etc. With constant innovations in the field of ICT, e-government is not only evolving dynamically (Alcaide–Muñoz et al., 2017) but also transforming the ways in which the government and the public interact (West, 2004). Initially introduced as an innovative way of sharing information with citizens, e-government has evolved to a stage where it is anticipated to provide a self-governance platform. However, this evolution requires the continuous development of the information architecture and upgrading the systems architecture (Janssen & Van Veenstra, 2005). During the field interviews, one IT expert associated with e-government commented:

> *'The e-government projects initially were focused only on the cataloguing of information on various government portals. However, today we envisage e-government to be the key driver of projects such as smart cities, e-participation, etc. The major challenge is to ensure that we design systems architectures that are evolutionary (progressive), i.e. they are modular enough to be upgraded across multiple dimensions'. [Respondent #154]*

Hence, the technological platforms used in the context of e-government must be evolutionary in design. Only then can e-government accelerate from the growth stage to the maturity stage.

The above three underlying dimensions collectively describe e-government. Though the literature on ICT projects focuses on automating public administration and government services, the presence of the dimensions discussed above in unison constitutes e-government. Nonetheless, each of the above dimensions may vary in proportion and degree of intensity across different projects. In the following sections, this study defines e-government and advances research propositions to explain the theoretical relationship between its antecedents, outcomes and moderators.

Amalgamating the three dimensions, we define e-government as 'socially inclusive, hyper-integrated ICT platforms that are built with evolutionary systems architecture to ensure the efficient delivery of government services with transparency, reliability and accountability'. Identifying and understanding the various building blocks and their importance in establishing e-government will benefit the government and policymakers by allowing them to better understand and envisage broader goals for planning and implementing e-government projects. It will also guide them in formulating conducive policy frameworks for the smooth execution of projects, enhance the adoption of e-government and thereby produce more desirable outcomes. Extracting insights from field interviews through a grounded theory approach and triangulating with active cases of e-government interventions, we propose an overarching theoretical framework (see Fig. 2) for e-government. The proposed framework identifies the antecedents of e-government, its outcomes and moderators.

4.2. Antecedents to e-government

4.2.1. Citizen orientation

We define citizen orientation as the extent to which the government is committed to understanding and satisfying its citizens' requirements with respect to governance. E-government has initiated a paradigm shift in governance, and governments are increasingly pursuing service transformation strategies for their citizens, whom they consider as customers (Dutil et al., 2008; King & Cotterill, 2007). The public administration literature often refers to this citizen orientation as the 'citizen-customer model' (Osborne & Gaebler, 1992; Smith & Huntsman, 1997). The citizen-customer model postulates that the efficiency of government services would improve if the government, like a business organisation, were to enter a 'customer-service contract' with its citizens and the government were obliged to respond to the needs of citizens in return for taxes (Schachter, 1995). Rooting our arguments in the public administration literature, we argue that the government is a contemporary public management organisation and that e-government—with its market orientation—substitutes for conventional hierarchical, bureaucratic governance in delivering government services cost-effectively and transparently (Aberbach & Christensen, 2005). Considerable research on organisational performance has proved that adopting a customer orientation significantly influences performance (Jaworski & Kohli, 1996; Kennedy, Wellman & Klement, 2003). Customer orientation theory asserts that generating intelligence about customers is crucial for success and positively affects firm performance (Lin & Germain, 2003). Therefore, public management organisations must adopt a citizen orientation and comprehend citizen-related factors before planning and implementing e-government projects. Thus, this study proposes three underlying dimensions of a citizen orientation: *understanding citizens' readiness, defining cultural context* and *co-creating values*. Attention to these dimensions will significantly strengthen e-government projects.

4.2.1.1. Understanding citizen readiness. Citizen readiness refers to the level of citizens' awareness about e-government, their ability to use technology and the perceived value of e-government services from citizens' perspectives. We ground the construct of citizen readiness in the theory of customer readiness (Ho & Ko, 2008). Existing research has conceptualised customer readiness as a state of mind characterised by clarity, ability and optimism where a consumer is prepared to try a new technology or service (Liljander et al., 2006; Meuter et al., 2005; Ho & Ko, 2008; Pérez-Morote et al., 2020). Assessing citizens' readiness to adopt new technology is likely to make citizens feel empowered and help policymakers design citizen-centric e-government projects. During field interviews, one senior administrative officer associated with eGram[2] summarised the process as follows:

> *'In the development phase of the eGram project, the challenge was to identify the expectations of key stakeholders, including citizens. We initiated an extensive campaign to interact with villages and communities' representatives, providing them detailed information about the eGram initiative. The project department worked in collaboration with the panchayat.[3] Department and community leaders to co-design the project. This not only helped us create awareness about the project but also garner trust among the users'. [Respondent #112]*

In the context of the eGram project, we found that the eGram Society's efforts to assess the technological self-efficacy and awareness levels of citizens helped it understand users' perceptions towards technology applications. Referring to the above discussions, we propose that the government's efforts to adopt a citizen-oriented approach to e-government projects will favourably affect the design and structure of e-government portals. In turn, this approach will result in greater acceptance of such projects (Shareef, Ojo & Janowski, 2008) and enable the portals to deliver more effective outcomes.

4.2.1.2. Defining cultural context. Defining cultural context involves

[2] The eGram project is an initiative undertaken by the government of India. Under this project, information kiosks are set up at the village level to provide e-services to citizens.

[3] A panchayat is a village-level local self-government elected by the people of that village. A panchayat is responsible for local administration on behalf of the government.

outlining the distinct guiding forces of a society, which regulate the behaviour of its members. The marketing literature has established that consumers prefer products and services that are congruent with their socio-cultural context (Lee, 2006; Moon et al., 2017). Because e-government is comparable to any ICT product, it is important for the government to first define the socio-cultural context of its beneficiaries and then design a communication message congruent with the prevalent culture. Borrowing from the framework of the '*theory of reasoned action*' (Fishbein & Ajzen, 1974) and Hofstede's '*cultural theory*' (Hofstede, 1984), we observe that perceived social pressures impact the operating environment under which individual citizens make decisions. These operating environments may include gender-related barriers, caste systems, social hierarchies, power dimensions, etc. One of the government officials engaged in implementing the eGram project stated:

> *'One major challenge in implementing eGram was the resistance to using information kiosks. We learned that the village panchayat and the elected leaders enjoyed a lot of authority and power. They were not comfortable parting with issuing caste certificates, domicile certificates, land records, etc. Therefore, we made a small change in the reporting structure and decided to put these information kiosks under the direct supervision of the village panchayat'. [Respondent #14]*

In the above case, an effort to establish congruence between the prevailing socio-cultural context and the e-government project's design significantly affected the sustainability of the information kiosks. This example highlights the need for governments to understand the diverse social norms, types of peer pressure and operating environments in which citizens consume government services, encounter socio-cultural barriers and live their lives. Based upon the above evidence, we propose that defining the socio-cultural context significantly influences customer-centricity, which may strengthen the feasibility of e-government projects.

4.2.1.3. Co-creating value. Co-creating value involves collaborations between the government and citizens and/or representatives of society to generate mutual benefits through continuous rounds of interactions and feedback. We root this argument in the premise of service-dominant logic, which postulates the customer as a co-creator of value (Vargo & Lusch, 2004). Adopting service-dominant logic, governments can leverage their strengths to accumulate and capitalise on their citizens' knowledge and thereby co-create innovative and impactful e-government services. For example, the eGram project followed the service-dominant logic across different phases. The project team actively involved all stakeholders in identifying the impact areas, continuously shared information with stakeholders via repetitive rounds of interactions and incorporated stakeholders' feedback into the project's design. Commenting on the value of co-creation, one senior policymaker noted:

> *'The government today is encouraging citizen participation in multiple ways. For example, hackathons are organised to seek participatory solutions from citizens. Similarly, the district administration is encouraged to spend time in rural areas to directly interact with the citizens and build trust-based relationships'. [Respondent #142]*

Value co-creation is a multifaceted process that involves a complex array of dimensions such as connection, trust and commitment (Randall et al., 2011). However, co-creation is a desirable goal and can significantly improve customer orientation (Jaworski & Kohli, 2014), ultimately enhancing the desirability of e-government from the citizens' perspective.

4.2.2. Channel orientation

Intermediaries not only enable the implementation but also facilitate the delivery of e-government services to citizens by acting as channel partners and providing a crucial link between governments and their citizens, especially when citizens have limited technological self-efficacy (Sein, 2011; Weerakkody et al., 2013). They facilitate physical interaction between governments and citizens and provide intelligent information intermediation (i.e. they help citizens understand the required information and access it on their behalf; Al-Sobhi, Weerakkody & Al-Busaidy, 2010). Though these channel partners play an important role in the diffusion of e-government, they often struggle to sustain their operations, leading to relationship dissatisfaction (Mukerji, 2008; Sein, 2011). The marketing literature argues that a satisfied channel partner is likely to have a long-term orientation and continuity with the business (Bolton, 1998; Del Bosque Rodríguez, Agudo & Gutiérrez, 2006; Ganesan, 1994). Therefore, it is essential to protect the interests of these intermediaries and take proactive steps to ensure their sustainability. The concept of channel partner satisfaction includes two major dimensions: economic satisfaction and non-economic satisfaction (Del Bosque Rodríguez et al., 2006). Drawing upon the theory of relationship marketing, we propose that *building cooperative norms, building a sustainable economic model* and *transforming intermediaries* are conducive to the process of planning and executing e-government projects.

4.2.2.4. Building cooperative norms. Building cooperative norms refers to agreement upon behavioural expectations between government and intermediaries supporting e-government functions to work towards a common goal while protecting mutual interests. Scholars have used the resource dependency theory to assert the need for collaboration between firms and their channel partners (Hofer et al., 2012). In e-government scenarios, both governments and intermediaries possess unique sets of resources, which makes them interdependent. The government depends on intermediaries to provide their citizens with access to e-government services (Al-Sobhi et al., 2010). Intermediaries, in turn, depend on the government for technology, infrastructure and services. The current literature provides extensive evidence that firms' efforts to exploit intermediaries' dependency using coercion or undue influence ultimately hinder performance and produce an adverse relationship climate (Coleman & Mayo, 2007; Duffy, Browning & Skinner, 2003). In contrast, these dependency relationships must be balanced, symbiotic and mutually beneficial. For example, during our field interviews, one lawmaker recalled:

> *'Initially, the administration adopted the strategy of heavy-handed use of power; there were severe penalties for the channel partners. As a result, intermediaries started adopting practices to manipulate the system to avoid penalties and still not deliver the expected services. They would carry the modem along with them and login to the system just for compliance'. [Respondent #163]*

Learning from such practices, the government realised that it was difficult to monitor the information kiosks using force. Thus, it decided to treat its intermediaries as partners and began collaborating with them to understand their challenges, requirements and expectations. The government's willingness to extend a helping hand to these intermediaries resulted in positive reciprocation. The intermediaries shared feedback crucial to improve the system, and the government made changes accordingly. Collaborative norms result in shared responsibility and joint problem-solving, which increases the probability of success for e-government projects.

4.2.2.5. Building a sustainable economic model. Building a sustainable economic model refers to safeguarding the economic interests and financial well-being of intermediaries so that operating e-government services can serve as a primary source of livelihood. The literature has identified the economic sustainability of intermediaries as a major barrier to the success of e-government projects (Sein & Furuholt, 2012). Intermediary relationships can be analysed using the transaction cost economics (TCE) framework (Williamson, 1991). According to this

framework, a relationship between government and intermediaries in the e-government context is characterised by transaction-specific investments, which include both manpower and physical assets. These investments require a significant commitment from the perspective of intermediaries. Hence, they expect a reasonable return on their investment; in the absence of such a return, the investments become sunk and unrecoverable. For example, during our field interviews with intermediaries involved in the eGram project, we found that village-level entrepreneurs were required to work on a commission basis. Due to the low adoption of services, these entrepreneurs were not able to earn even a minimum wage by operating these kiosks. One local representative in the panchayat remarked:

> *'Some e-government services are seasonal while some services are low in demand. The village-level entrepreneurs did not find the job worthwhile, and as a result, many of them closed their shops. Even those who are continuing are not considering this as their primary source of livelihood and open their services for a limited time. Some of them open only once a week'. [Respondent #79]*

Learning from such insights, the government of India decided to adopt a public–private partnership (PPP) approach as a strategy to ensure the economic sustainability of information kiosks. Under this approach, the private partner was required to invest in the infrastructure, and business-to-consumer (B2C) services were included in addition to government services. The revenue was shared between intermediaries, private investors and the government, with the highest share (50%) allocated to the intermediaries (Ojha & Pandey, 2017). Therefore, we propose that efforts to build a sustainable economic model for intermediaries will strengthen the channel orientation and, in turn, will enhance the success of e-government.

4.2.2.6. Transforming intermediaries. Transforming intermediaries refers to building the entrepreneurial abilities of channel partners through various measures, such as skill development training, entrepreneurship training, etc. Citizens rely on intermediaries' services to use e-government facilities. To effectively assist citizens, therefore, intermediaries must understand e-government thoroughly. This understanding must include the government's underlying objectives, the macro- and micro-environmental aspects of e-government, technical expertise and, finally, economic perspectives (Cavusgil, 1990). The theory of relationship marketing considers channel partners as an extended salesforce and, hence, advocates for their transformation (Shiver & Perla, 2016; Alcaide–Muñoz et al., 2017). Channel partners can be transformed through training, marketing support and incentives for performance. Creating value for intermediaries would not only benefit e-government projects but also transform channel partners in their entrepreneurial orientation. One of the respondents during field interviews shared the following:

> *'Initially, my kiosk was barely meeting operating expenses, and at that stage, I was recommended for a one-week entrepreneurship training program. The training helped me to think divergently, and I started offering value-added services along with my traditional e-government services. I also expanded my business by taking a loan under the credit guarantee scheme. Now my business has grown to an extent where I have given employment to three persons at my centre'. [Respondent #41]*

Transforming intermediaries promotes their social inclusion and upliftment, which, in turn, enhances cooperation and collaboration between government and intermediaries and produces a sustainable e-government model.

4.2.3. Technology orientation

The innovation literature has used the term 'technology orientation' to describe a firm's ability to build a new solution with the help of existing technical expertise and R&D investments (Gatignon & Xuereb, 1997; Workman, 1993). Technology is an important driver of e-government, and governments worldwide are investing heavily in technology procurement (Cordella & Iannacci, 2010). Beyond merely procuring technology, however, the success of e-government requires the ability to use technology innovatively to solve unique problems. A technology orientation thus involves making a higher degree of commitment to R&D, acquiring and applying new technologies with a clear strategic orientation, training stakeholders and promoting firm behaviour to produce a long-term competitive edge (Cooper, 1994; Halac, 2015; Zhou, Yim & Tse, 2005). Hence, we discuss *building technological capabilities* and *building managerial capabilities* as the two underlying dimensions of technology orientation.

4.2.3.7. Building technological capabilities. Building technological capabilities refers to investing in R&D, gradually accumulating and upgrading knowledge to handle technological advances, conducting innovation activities and identifying new applications by combining technologies to solve complex governance problems. The literature on capabilities concurs on the need for firms to efficiently combine multiple resources to enhance productivity (Dutta, Narasimhan & Rajiv, 2005; McGrath, Berdahl & Arrow, 1995). The resource-based view postulates that upgrading existing capabilities in a path-dependent manner enhances positive outcomes and leads to superior performance (Isobe, Makino & Montgomery, 2008). Similarly, the dynamic capability theory suggests that a firm can build superior technical capabilities by integrating and reconfiguring its internal and external competencies (Teece, Pisano & Shuen, 1997). For example, the government of India has leveraged FinTech innovatively to transform public services by integrating *Aadhaar* with multiple public administration services. *Aadhaar* has thus become a financial inclusion tool, direct benefit transfer, e-transaction and public financial management system. One of the respondents engaged in policy advocacy commented:

> *'Today, the government is actively engaged in building technological capabilities like never before. Under the Digital India initiative, the government is not only benchmarking with global technological standards but also is investing heavily in skill development and building R&D facilities to create a digitally empowered society'. [Respondent #155]*

The drive to build technological capabilities has enabled the government to integrate third-party applications and technologies to provide a holistic view of citizen interactions with government and businesses. Although the current literature on e-government thus recognises technology as an enabler of e-government, existing research is limited to citizens' adoption of technology (Shareef et al., 2009; Moon & Norris, 2005; Wang, 2003; Ebrahim & Irani, 2005). The term 'technological capabilities', however, is a broad strategic concept and an important antecedent of e-government. Hence, we propose that committing resources to build R&D facilities, taking the lead in innovation activities and engaging in continuous improvement will strengthen e-government initiatives' technological orientation and aid in the formation of successful e-government programmes.

4.2.3.8. Building managerial capabilities. Building managerial capabilities refers to developing management capacity and expertise by creating training facilities and imparting contemporary technical skills to the office holders engaged in e-government. Management capacity is required to ensure adequate human resources to handle e-government projects whereas management expertise is essential for effectively planning and controlling e-government processes. The resource-based view of the firm argues that managerial capabilities play a critical role in effectively leveraging the firm's resources and improving firm performance (Castanias & Helfat, 2001; Thompson & Heron, 2005). Our in-depth field interviews revealed that insufficient managerial capabilities restricted the performance of e-government initiatives despite sufficient technical capabilities. The bureaucrats and government officers who were deputised as project officers for various e-government

projects were reluctant to learn the requisite skills. One of the senior policymakers commented:

> *'Officials involved in e-government projects initially lacked the willingness to learn about technology. One major reason was that the e-government project experience was not considered a domain experience, and as a result, many officers lost promotion opportunities. Additionally, there was no incentive to retain talent in e-government projects, and those who were deputed in these projects were on the lookout to move back to their parent cadre'. [Respondent #167]*

While implementing e-government initiatives, the government realised that e-government is a rather technology-intensive activity and that central and state-level governments fell woefully short of human resources with specialised skills. Recognising the gap, a specialised committee was appointed to suggest a policy to strengthen the national e-government programme. The committee presented a new human resource policy for e-government. The policy recommendations also included linking e-government experience with officers' career paths and incentivising performance. Because the technological landscape is dynamic, officers engaged in e-government activities must continuously update their skills and remain informed of current developments through ongoing learning. To meet these requirements and accommodate the need for new HR policies, governments must adopt flexible management principles. Hence, we propose building managerial capabilities, strengthening technology orientation in e-government and enhancing the odds of successful e-government implementation.

Citizen orientation, channel orientation and *technology orientation* act in concert to provide a favourable setting for the formulation of successful e-government projects; however, these factors are likely to affect e-government differently. Analysing the current definitions of e-government reveals that the unique mission of e-government has consistently included serving citizens and creating value (Sharif, Irani & Weerakkoddy, 2010). Similarly, scholars have argued that the purpose of e-government derives mainly from citizens' increasing expectations (Linders, 2012) and that the success of e-government is contingent on the willingness of citizens to adopt e-government (Evans & Yen, 2006; Shareef et al., 2009). Therefore, we propose that a citizen orientation will have a more substantial influence than will a channel orientation or a technological orientation on the formation, acceptance and diffusion of e-government.

Indeed, the inability of citizens to physically access and effectively use e-government services is one of the most significant barriers in implementing e-government initiatives (Heeks, 2000; Sein, 2011). Intermediaries play an instrumental role in bridging this gap. They not only provide physical access but have the potential to overcome socio-cultural hurdles by increasing awareness, providing information to citizens and delivering services efficiently. Therefore, next to citizen centricity, it is important to ensure channel partners' sustainability and well-being. Hence, we advance the following proposition:

Proposition 1. Citizen orientation, channel orientation and technology orientation will positively affect the feasibility and success of e-government to varying degrees. Citizen orientation is likely to have the most positive effect while technology orientation is likely to have the least positive effect.

4.3. Outcomes of e-Government

The public value theory (Moore, 1995) suggests that the government has the responsibility to deliver public services and create public value. Creating public value includes achieving both tangible and intangible goals. In the public administration literature, the government's tangible goals include economic gains to fulfil administrative and political objectives; meanwhile, intangible goals include efficiency in the delivery of services to ensure social inclusion, trust generation, etc. (Chircu, 2008; Twizeyimana & Andersson, 2019). Rooting our argument in public value theory, we assert that e-government has the potential to enhance the efficiency of public administration through automation and the delivery of tangible outcomes, such as *cost advantage, time advantage* and *efficiency* (Alford & O'Flynn, 2009). While efficiently delivering public services and maintaining transparency, e-government also delivers intangible outcomes, such as *citizen satisfaction* and *trust in government*.

4.3.1. Tangible outcomes

4.3.1.9. Cost advantage. In the context of e-government, cost advantage refers to the ability of the government to reduce the cost of delivering public services with the help of information technology and automation. E-government is expected to generate cost advantages by reducing administrative costs, manpower costs, procurement costs and various other operational costs (Karunasena et al., 2011; Evans & Yen, 2006; Moon, 2002). For example, the e-government initiative 'centralised processing centre' (CPC) undertaken by India's Income Tax Department has produced massive cost savings. We list the savings as follows: (a) Interest payments on delayed tax refunds have declined from 17% to 4.77%,[4] (b) storage and maintenance costs for documents have declined, as have litigation costs due to the quick settlement of grievances and (c) cost savings have accrued from automating the processing of returns (approximately USD 2.5 million). Similarly, during our field interviews, one senior official associated with the CPC commented:

> *'Post CPC, all tax refunds are processed through online banking directly into the account of the taxpayer. I am here citing publicly available data; recently, a news article said 22.1 million refunds were processed online in the financial year 2019–20. Just calculate the savings because of paper saved and postage cost, and it should be significant'. [Respondent # 5]*

By integrating multiple decision-making units, centralising decisions, such as procurement, and eliminating redundant activities, e-government ultimately produces cost savings (Evans & Yen, 2006). This is especially true of e-government projects that are hyper-integrated and evolutionary.

4.3.1.10. Time advantage. Time advantage is defined as the ability of an e-government project to generate efficiency through time compression, which, in turn, can be directly measured in monetary value. A fully integrated e-government platform has the potential to automate processes using artificial intelligence and eliminate human intervention (Fagan & Fagan, 2001). Tasks such as accounting, record keeping and file retrieval, can be completed instantly, thereby saving significant man-hours. For example, the CPC has resulted in a significant reduction of tax return processing time from 52 weeks to 9 weeks, thereby reducing the workload on the workforce by more than 80%. During our field interviews, one IT expert remarked:

> *'Under the national e-government plan, the government of India transformed its passport services. Under this project, the processes were redesigned to empower citizens, and multiple stakeholders were integrated for faster throughput. The amount of time and resources saved is phenomenal both for the passport office and for citizens'. [Respondent #163]*

By eliminating the need for physical presence, digitisation of government services empowers citizens to access services 24 × 7, which results in time compression for both service providers and end-users. Service providers and users can then invest the time saved in other productive activities to create cost advantages. Hence, citizen-centric and integrated e-government projects create significant time advantages for governments and their stakeholders.

[4] Source: Income tax department website: https://pib.gov.in/newsite/mbErel.aspx?relid=98377

4.3.1.11. Efficiency. In the context of e-government, efficiency is defined as the ability of the government to reduce the wastage of resources while continuing to deliver similar or improved services to its stakeholders. One of the key strategic goals of e-government is efficiency in the delivery of public services (Chircu, 2008; Chircu & Lee, 2005; Moore, 1995). For example, India's online tax filing mechanism has ensured greater accuracy and a reduction in the government's non-discretionary workload, which releases the workforce to concentrate on revenue-generating jobs, such as scrutiny and tax recovery. Similarly, the government of India has implemented e-procurement to enhance efficiency and transparency in the procurement of goods and services via an e-marketplace. This initiative has enabled the government to significantly reduce the wasting of public resources in the procurement process. With the implementation of e-procurement, the number of suppliers has increased many times resulting in wider set of choices for government departments and cost savings due to competitive bidding. Therefore, we propose that a well-designed e-government project can significantly enhance the efficiency of government functioning.

4.3.2. Intangible outcomes

4.3.2.12. Citizen satisfaction. In the context of e-government, citizen satisfaction is defined as citizens' collective assessment of the performance of the e-government system based on their experiences with the quality of e-government services at various touchpoints. The public value framework focuses on improving citizen satisfaction as an important outcome of implementing e-government (Heeks, 2008). A well-designed e-government system has the potential to improve the quality and ease of interaction between government and citizens, leading to greater citizen satisfaction (Evans & Yen, 2006). Recalling a visit to a passport office, one of the respondents during our field interview commented:

> *'On the day of my appointment with the passport office, I exited the passport office in less than one hour. I was delighted with the process. It saved my time, energy and commission I earlier paid to the consultant'. [Respondent #114]*

E-government systems that are citizen-oriented enhance the quality of interactions, simplify the interface and increase accessibility, thus increasing citizen satisfaction (Welch et al., 2005). Citizen satisfaction not only accelerates the diffusion of e-government but promotes trust in government, which, in turn, further strengthens the adoption of e-government.

4.3.2.13. Trust in government. Bannister and Connolly (2011) argue that the core objective of e-government is to restore citizens' trust in the governance system and in the government itself. Hence, we propose trust in government as an important intangible outcome of well-designed e-government. We define trust in e-government as the perceived judgement of citizens about the transparency and accountability of e-governance delivery. According to Zucker (1986), citizens' experiences with government processes and the professional standards the government exhibits are two important sources of trust in government. E-government has the potential to streamline and transform government processes to make citizen engagement more interactive, responsive and transparent. During our field interviews, one respondent commented as follows:

> *'Now, in the current scenario, when I apply for a tender through the e-procure website, I believe the process is much more transparent and fair. I can see the status of my submission, can easily track the application, and in my opinion, the possibility of corruption is lower'. [Respondent #127]*

E-government significantly improves citizens' experiences during their interactions with the government, which boosts their trust in both e-government and government in general (Bannister & Connolly, 2011; Welch et al., 2005). Trust in government enhances the quality of the relationship between citizens and government, and citizens who trust the government display a higher level of cooperation with it, leading to greater citizen satisfaction. Hence, we conclude that trust in government and citizen satisfaction co-vary (Welch et al., 2005).

Though e-government is likely to result in tangible as well as intangible outcomes, the primary goal of the government when implementing e-government initiatives should be to enhance the efficiency of governance and generate tangible outcomes, i.e. cost and time advantages. These tangible outcomes result from government efforts to integrate multiple departments, exhibit operational efficiency and eliminate redundant activities, which further promotes the achievement of intangible outcomes, such as citizen satisfaction and trust in government. With cost and time advantages, the government can further strengthen its e-government facilities. Therefore, we advance the following proposition:

Proposition 2. The successful implementation and diffusion of e-government will generate more tangible outcomes than intangible outcomes.

4.4. Moderating factors

Using grounded theory and triangulation based on marketplace evidence, we identify the following boundary conditions as moderating factors: the digital divide, economic growth, political stability (as moderators between antecedents and e-government), shared understanding and perceived privacy (as moderators between e-government and outcomes).

4.4.1. Digital divide

The digital divide refers to the gap in information literacy, skill sets and access to technology, which creates social and economic inequality among groups (Dewan & Riggins, 2005; Zhao & Khan, 2013). The collective digital capabilities of a community influence the motivations and purpose of adopting e-government (Helbig, Gil-García & Ferro, 2009; Zhao, Collier & Deng, 2014), which, in turn, can inhibit or enhance the ability of e-government to empower citizens. Therefore, we expect the digital divide to negatively moderate the association between citizen orientation and e-government. To bridge the gap in accessibility and technical literacy, governments focus on building networks of intermediaries, such as information kiosks and telecentres (Wang & Shih, 2009). As discussed above, the role of intermediaries is to facilitate access, and hence, the greater the digital divide, the greater the need for channel orientation. Therefore, we conclude that the digital divide negatively moderates the relationship between *channel orientation* and e-government. Finally, existing studies have demonstrated that the national digital divide significantly affects the technological prowess of a nation, which, in turn, affects the development and diffusion of e-government (Cuervo & Menéndez, 2006). Nations with a wide digital divide must invest heavily in IT infrastructure while enhancing citizens' and officials' skills to use IT; these investments leave fewer resources to invest in R&D and management capability. Therefore, the digital divide also negatively moderates the association between technology orientation and e-government. Based on the above arguments, we advance the following proposition:

Propositions 3. : The digital divide will negatively moderate the association between e-government and its three antecedents, with the greatest impact on the citizen orientation link followed by the channel orientation and technical orientation links.

4.4.2. Economic conditions

Economic conditions refer to the state of a nation's macro-economic indicators. Existing studies have argued that the economic conditions of a country directly affect the country's ICT infrastructure, which, in turn,

defines the scope of its e-government initiatives (Kim, 2007; Nour, Abdel Rahman & Fadlalla, 2008). The UN's e-government readiness index measures the capacity of governments to develop and implement e-government services. According to Nour et al. (2008), countries with strong economic conditions score higher on the readiness index because their ability to invest in ICT infrastructure, R&D and capability development is greater than that of countries with poor economic conditions. Similarly, economic conditions also influence the ability of governments to support intermediaries via subsidies and economic incentives. Because economic conditions are dynamic and refer to the external environment, we consider economic conditions as a moderating variable. Based on our field observations and the literature, we advance the following proposition:

Proposition 4. Economic conditions will have a greater positive impact on the relationship between technology orientation and e-government than on the relationship between channel orientation and e-government.

4.4.3. Political stability

Political stability refers to the degree to which an elected government is stable, independent and free from the vulnerability of being destabilised or overthrown before the completion of its designated term. Stable political leadership is likely to drive policy changes and governance reforms, including e-government (Ahn & Bretschneider, 2011). According to the e-readiness assessment report published by the Indian Ministry of Electronics and Information Technology, the state leading the e-readiness rankings also had a history of a stable political environment. As discussed earlier, e-government is a complex project requiring the integration of multiple departments, which is often challenged by the politics–administration dichotomy (Yildiz, 2007). Therefore, political stability may improve intergovernmental relations and facilitate coordination with third parties. Based on the above arguments, we advance the following proposition:

Proposition 5. Political stability will have a more significant positive effect on the technology orientation of e-government than on the channel orientation of e-government.

4.4.4. Perceived privacy

Perceived privacy refers to '*the subjective probability with which consumers believe that the collection and subsequent access, use and disclosure of their private and personal information is consistent with their expectations*' (Chellappa, 2008). In the context of e-government, the literature has shown that citizens are often sceptical about the privacy of their personal information, which may limit their use of e-government services (Hiller & Bélanger, 2001). The prevailing assumption also holds that increasing citizen awareness about the government's existing privacy enforcement laws and policies will lead citizens to perceive greater privacy, which, in turn, encourages them to use e-government information platforms. The literature further suggests that privacy protection influences trust-building significantly; an individual is likely to trust an online transaction if he or she believes that any such transaction will align with his or her expectations (Culnan & Armstrong, 1999; Malhotra, Kim & Agarwal, 2004). Therefore, we propose the following:

Proposition 6. Perceived privacy will have a greater positive effect on the tangible than the intangible outcomes of e-government.

4.4.5. Shared understanding

In the context of e-government, shared understanding is defined as individual and collective ownership of e-government projects and the existence of a common interpretation of project goals across multiple departments engaged in the planning and implementation of e-government (Heeks, 2003b). The aim of e-government is to ensure that government services are cohesively and seamlessly available to citizens by integrating multiple departments and creating a shared understanding of e-government goals and objectives (Lam, 2005). When departments lack this shared understanding and clarity, efforts to define their roles and responsibilities are characterised by confusion and conflict, which, in turn, impede the successful implementation of e-government (Lam, 2005). The lack of a shared understanding also hinders ownership and accountability, which may create confusion and distrust among end-users. Hence, we propose the following:

Proposition 7. Shared understanding will have a greater positive effect on the tangible than the intangible outcomes of e-government.

5. Discussions

According to Bannister and Connolly (2020), '*ICT in public administration or any other aspect of social science can serve different purposes other than simply being roadmaps for action*'. For example, ICT applications can also serve as visions or idealised views of a possible future—e.g. a vision of a future public administration that is fluid, transparent, flexible, participative, integrated, seamless, consultative, transformative and so on. The current implications of e-government are profound and wide-ranging; with adequate policy support and strategic planning, e-government can transform governments and promote inclusive and sustainable governance. This study develops a theoretical framework of e-government, which identifies its antecedents, outcomes and moderators. This multidimensional and multi-level conceptual framework contributes to the literature as well as to policymaking by conceptualising e-government from multiple stakeholders' perspectives.

5.1. Theoretical implications

This study expands the existing understanding of e-government and contributes towards the development of e-government theory, which has languished over the years (Abu-Shanab & Harb, 2019). This study, through its proposed theoretical framework, offers an inclusive discussion of the antecedents and outcomes of e-government by employing and linking various theories. For example, customer orientation theory describes the factors conducive for citizen orientation, the theory of relationship marketing explains channel-related factors conducive to e-government, and the resource-based view and dynamic capability theory offer support for the role of technological factors in the growth of e-government. The conceptualisation section invokes the literature about stakeholder theory, empowerment theory and organisational theory to derive the underlying characteristics of e-government. Furthermore, our conceptualisation underscores empowerment as one of the most crucial elements in defining e-government.

Despite the enormous potential of e-government to contribute to transforming government–citizen interactions, it has remained largely unstructured. In addition to structuring the current literature, this study conceptualises e-government as a multidimensional construct. The three underlying dimensions identified—*empowered citizenship, hyper-integrated networks* and *evolutionary systems architecture*—develop an understanding of e-government from a demand perspective and position e-government at the intersection of public administration and services marketing (public service delivery), having characteristics of credence services. Contrary to earlier notions of e-government as a bi-party phenomenon (Carter & Bélanger, 2005), i.e. government-to-citizen (G2C), government-to-business (G2B), etc., this study argues that interactions via e-government are not limited to two parties; rather, they involve channel partners' alias intermediaries to enhance the accessibility and quality of core services.

The existing literature often describes e-government as a tool to develop a customer orientation in the delivery of government services with an emphasis on creating the e-government portal as a front-end citizen touchpoint. This study extends this view in three ways. First, we identify the relevant stakeholders and propose restructuring and integrating these stakeholders at the back end to achieve a seamless

experience at the front end of e-government. Second, we offer an integrated view of the relevant cultural, economic, technical, political and managerial issues to identify the antecedents of successful e-government. Finally, we identify relevant e-government goals, including both tangible and intangible outcomes, while discussing the contextual boundary conditions. We expect the moderators' effects and magnitude of their effects to vary depending on the context of the beneficiaries and the category of e-government services.

5.2. Policy implications

By serving as a roadmap for the planning and implementation of e-government projects, the proposed conceptual framework can help government agencies and public administrative bodies realise the desired outcomes of e-government. The conceptual framework offers insights and develops a better understanding of the multidimensional and multifaceted issues related to e-government, which can be used to build an integrated policy framework for connected governance. This study offers important implications to understand and influence the cultural context in designing public policy and implementation strategy to enhance citizen readiness for the adoption of e-government.

Based on this study and the framework it proposes, governments can devise a strategic framework and a national agenda that can function as a common vision and mission of e-government. Further, the different government departments and state governments can employ this national agenda as a benchmark by aligning their department-level goals to it. The government, as a policymaker, can also utilise the proposed framework to spearhead policies establishing technology standardisation, which, in turn, will facilitate interoperability across various government departments and stakeholders.

The proposed theoretical framework also has widespread implications for designing a PPP model that not only ensures the economic sustainability of e-government but also maintains collective ownership among the relevant stakeholders. Our framework underscores the potential of intermediaries and external partners to contribute significantly to the success of e-government provided that a suitable policy outlines cooperative norms, ensures economic feasibility and promotes those intermediaries' continuous development. Finally, this study offers important policy implications for developing adequate managerial capabilities to efficiently handle e-government operations.

6. Limitations and future research directions

This study attempts to provide a theoretical framework of e-government by consolidating the currently fragmented knowledge on e-government and re-defining e-government as a multidimensional construct while identifying its antecedents, outcomes and moderating factors. However, it does not empirically test the framework; in the future, scholars can empirically test the model to validate it and enhance its usefulness for policymakers. Similarly, to gauge the strength of e-government, future research can focus on developing a multidimensional scale of e-government based on the underlying dimensions proposed in this study. Further studies can also attempt to identify additional moderators to strengthen the framework. The propositions we advance in this study are based on qualitative interviews and triangulation from theory. In the future, scholars can enhance the generalisability of these propositions by operationalising them and testing them with empirical data. Finally, the current study is limited to data from one emerging country. Hence, a comparative study of multiple emerging countries may provide interesting insights to strengthen the theory of e-government and inform policymakers.

CRediT authorship contribution statement

Suresh Malodia: Conceptualization, Investigation, Methodology, Writing – original draft, Writing – review & editing. **Amandeep Dhir:** Conceptualization, Methodology, Writing – review & editing, Project administration. **Mahima Mishra:** Conceptualization, Methodology, Writing – review & editing, Project administration. **Zeeshan Ahmed Bhatti:** Conceptualization, Methodology, Writing – review & editing, Project administration.

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