

DETERMINANTS OF PUBLIC VALUE IN DIGITAL GOVERNANCE: AN ANALYSIS OF CITIZENS' PERCEPTION OF DIGITAL SERVICES EXTENDING PVEGAM IN INDIAN CONTEXT

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Abstract

This study aims to investigate the primary factors influencing public value while using digital services from the citizens' perspective by leveraging the Public Value E-Government Adoption Model (PVEGAM). The study has extended the PVEGAM by adding the constructs of Trust and System Quality. Structural Equation Modeling elucidated that public value functions as a pivotal mediator between service delivery parameters and citizens' propensity to embrace e-government services ($R^2 = 0.68$). The findings indicate that the factors such as efficiency, service delivery parameters and openness exert the pronounced influence on the creation of public value. This study offers an empirical contribution by shedding light on the mediating function of public value and a theoretical contribution by verifying the Public Value in E-Government Adoption Model (PVEGAM) in the setting of an emerging economy. This study makes a theoretical contribution by validating the Public Value in E-Government Adoption Model (PVEGAM) within the context of an emerging economy and an empirical contribution by illuminating the mediating role of public value. Furthermore, it discusses the theoretical implications and policy ramifications of the findings to illuminate how digital public services can augment public value and enhance citizens' propensity to embrace e-government services. The study also illustrates the importance of citizen-centered digital policies that focuses on service quality, efficiency, transparency, and responsiveness. In addition, the research highlights possible directions for forthcoming studies, urging continuous improvement and the adoption of new digital tools to foster governance that emphasizes public interest. Convenience sampling was used to collect data from users of digital services; the results are specific to urban (and largely educated) citizens who are digitally literate and cannot be extrapolated to other groups of less educated, older, and rural Indians.

Keywords: Public value, E-government, Digital governance, Citizens' adoption, Trust, Service quality, Citizens' satisfaction, PVEGAM

1. INTRODUCTION

Public value has emerged as an important construct in the assessment of the efficacy of e-government initiatives. E-government pertains to the strategic amalgamation of information and communication

technologies (ICT) aimed at enhancing the innovation, efficiency, and responsiveness of governmental operations and service delivery (Capistrano, 2020). Beyond the mere implementation of technology, e-government initiatives are anticipated to broaden the scope and enhance the quality of public sector performance, ultimately yielding value for citizens and society at large (Savoldelli et al., 2013; Twizeyimana & Andersson, 2019). Public value, conceptualized as the aggregate benefits generated by public sector entities through services, policies, and governance frameworks, serves as a cornerstone criterion for evaluating the success of governmental programs, including those pertaining to digital transformation initiatives (Savoldelli et al., 2013; Faulkner & Kaufman, 2018; Criado & Gil-Garcia, 2019). In assessing the outcomes of a service, it encompasses not only the results of the services themselves but also the methodologies employed to deliver them, addressing dimensions such as trustworthiness, legitimacy, ethics, equity, and accountability (Bojang, 2020; Moore, 1995). The implementation of ICT in public administration has significantly altered the governance structure and the global delivery of services. Governments are increasingly implementing the digital platforms to better serve their citizens aiming to enhance accessibility, reduce bureaucratic obstacles, and bolster transparency and citizen engagement at governmental tiers (Alshibly & Chiong, 2015; Dwivedi et al., 2017). However, the mere availability of digital services does not inherently guarantee that citizens will adopt them or view them as valuable. The success of e-government initiatives is fundamentally contingent upon whether citizens perceive these services as valuable, trustworthy, and responsive to their needs (Mensah et al., 2024; Talukder et al., 2019). This citizen-centric paradigm has gained increasing prominence in contemporary e-government research, shifting the focus from technology-driven methodologies to value-driven frameworks that prioritize the experiences and expectations of citizens (Alruwaie et al., 2020; Twizeyimana & Andersson, 2019).

The concept of public value theory, initially articulated/introduced by Moore (1995), offers a comprehensive theoretical framework for comprehending how government services generate value for citizens and society. In contrast to traditional public administration theories that emphasize efficiency and adherence to procedures, public value theory concentrates on outcomes that citizens collectively appraise, including service quality, equity, trust, and democratic participation (Bryson et al., 2014; Stoker, 2006). Within the e-government paradigm, public value encompasses various dimensions: operational efficiency, service quality, transparency, accountability, citizen engagement, and trust in governmental institutions (Bannister & Connolly, 2014; Grimmelikhuijsen & Feeney, 2017). These dimensions collectively determine whether digital government services are perceived as valuable by citizens and, as a result, whether they are adopted and utilized on a continuous basis.

Notwithstanding the theoretical significance of public value within e-government discourse, empirical investigations examining its determinants remain limited and fragmented. There are the predominant models on adoption of technology, notably the Technology Acceptance Model (TAM) or Unified Theory of Acceptance and Use of Technology (UTAUT), which primarily highlight its perceived usefulness and ease of use (Davis, 1989; Venkatesh et al., 2003). Although these models have made substantial contributions to the understanding of technology adoption, they do not provide sufficient representation for the multidimensional nature of public value creation in the government domains (Carter & Bélanger, 2005; Shareef et al., 2011). The public sector services are inherently different from the one in the private sector in so far as they stress equity, accountability, transparency, and democratic values in general the dimensions in traditional models of technology adoption have been disregarded (Grimmelikhuijsen et al., 2013; Savoldelli et al., 2013). In addition, most e-government research has been done in developed country-centric settings with little knowledge of how public value is formed and perceived in developing and emerging economies (Krishnan et al., 2017; Mensah et al., 2024). Thus, countries like India with their huge digital transformation efforts like Digital India exhibit different governance contexts with diverse populations, varying digital literacy, infrastructural constraints, and differentiated socio-political dynamics (Bhatnagar, 2014; Dwivedi et al., 2017). Understanding how citizens in these contexts perceive public value from digital government services is essential for designing effective and inclusive e-government strategies. To address these gaps, this study employs the Public Value E-Government Adoption Model in addition to constructs such as Trust and system quality which provides a comprehensive framework that integrates public value theory with e-government adoption literature. The extended PVEGAM explicitly incorporates dimensions such as service quality, information quality, system usability, transparency, trust, efficiency, and perceived benefits, positioning public value as a central mediating construct influencing citizens' intentions to adopt and continue using e-government services (Mensah et al., 2024). Unlike traditional technology adoption models, PVEGAM is specifically designed to capture the unique characteristics of public sector digital services and their value-generating mechanisms.

This research investigates the determinants of public value in digital government services from the citizens' perspective in the Indian context. Specifically, it examines how service delivery parameters, efficiency, openness, information quality, system quality, and trust influence citizens' perceptions of public value, and how public value, in turn, affects citizens' intentions to adopt e-government services. Using Structural Equation Modeling (SEM) on data collected from 439 active users of e-government platforms in India, this paper provides robust empirical support on the relationships among these constructs. The results of this study contribute to theory and practice. Theoretically, it supports the PVEGAM paradigm as an emerging-economy setting, showing that public value is a central mediator of the association of service characteristics with adoption intentions. It extends the public value theory by empirically assessing

public value perceptions in digital government services. The study makes practical implications to policymakers and public administrators in the digital governance domain seeking to find solutions to improve their effectiveness. As it identifies, what influences public value perceptions, this research provides evidence-based guidance for which investment and policy intervention to prioritize in the area of e-government development.

1.1. *Research Gap and Contributions*

Despite extensive literature on e-government adoption and public value, three key gaps persist. First, the current studies on the adoption of e-government focuses primarily on technology-centered models (TAM, UTAUT) that may not adequately reflect the multi-faceted nature of public value within government domains. Second, empirical studies investigating the determinants of public value in e-government are scarce and most especially in developing and emerging economies with digital transformation presenting unique challenges. Third, limited studies have studied the mediating role of public value, between service characteristics and adoption intentions. This paper addresses these gaps with (1) the citizen-centric, value-driven framework (PVEGAM) specifically developed for public sector contexts; (2) data from an emerging economy such as India, with a high degree of digital governance engagement; (3) evidence of the mediating role of public value in relation to service delivery parameters and citizens' adoption intentions; (4) as well as identifying the relative importance of different determinants of public value, and thus providing actionable insights to both policy and practice.

2. LITERATURE REVIEW

2.1. *Public Value Theory and E-Government*

Public Value Theory, introduced by Moore (1995), represents a major paradigm shift in the field of public administration away from bureaucratic and New Public Management paradigms towards more outcome-oriented and citizen-oriented approaches. What Moore meant by public value is that government creates value that goes beyond one specific type of choice and into the benefits for society (Bryson, et al., 2014; Stoker, 2006). While private sector value creation is more concerned with improving customer satisfaction and generating profitability, public value creation must meet efficiency, democratic legitimacy and accountability requirements, and equitable supply and demand for services (Benington & Moore, 2011; Grimmelikhuijsen & Feeney, 2017). In e-government, public value is multi-woven. First, Operational value is the citizens' perception of the operational improvements such as the faster, more convenient and more responsive delivery of government services made possible by digital service delivery – (Bannister & Connolly, 2014; Savoldelli et al., 2013). The distinction between this outcome dimension and efficiency

as a characteristic of the service is significant: While efficiency (the speed and ease with which a system handles transactions) is a characteristic of the service or the system itself, the resulting improvements that citizens can experience are an outcome dimension that is part of public value, as identified by Agbabiaka (2018) and Tetteh et al. (2022) as well as DeLone & McLean (2003). Second, service quality represents the degree to which citizens expect that digital services are reliable, responsive, and accessible (Alruwaie et al., 2020; Li & Shang, 2020). Third, transparency value has to do with how open are the operations of government, what information is available and how accountability mechanisms are enabled by the digital platforms (Grimmelikhuijsen et al., 2013; Harrison et al., 2012). Fourth, trust value encompasses citizens' confidence in government institutions and the security of digital interactions (Bélanger & Carter, 2008; Mensah et al., 2024). Finally, democratic value includes citizen participation, engagement, and empowerment through digital channels (Criado & Gil-Garcia, 2019; Roy, 2019).

The application of public value theory to e-government has gained increasing scholarly attention over the past decade. Twizeyimana and Andersson (2019) conducted a comprehensive literature review identifying service quality, efficiency, transparency, trust, and citizen satisfaction as key dimensions of public value in e-government contexts. Similarly, Savoldelli et al. (2013) developed the eGEP2.0 model, which conceptualizes public value in e-government as comprising both internal (efficiency, effectiveness) and external (service quality, trust, participation) dimensions. Criado and Gil-Garcia (2019) further expanded upon this by underscoring the possibility that new technologies, including AI and big data analytics, can enrich public value creation by increasing the level of personalization, predictive capabilities, and data-driven decision-making. There is empirical evidence to show that perceptions of public value have a large impact on the acceptance and continuation of government's service in e-governance through citizens. MacLean and Titah (2021) show us that citizens' trust in e-government is a key part of public value, which is influenced when they regard the security, privacy protection and transparency of the operation of government. According to Li and Shang (2020), service quality and perceived value are vital determinants of residents' perceptions of their intention to use e-government services continuously in China. Liang et al. (2019) showed that e-government systems hosted in the cloud contribute to public value creation via increased accessibility, scalability, and cost-effectiveness. Together, these studies highlight the need for a public value standpoint in assessing the effectiveness of e-government. But findings from existing research also show major gaps. To begin with, most research focuses on public value as an outcome variable, not as a mediating factor linking service characteristics to adoption intentions. Second, empirical research is still based in developed countries, and less attention has been paid to developing and emerging economies where institutional contexts, digital infrastructure, and citizens' expectations vary widely. Third, there is no integrated models that merge multiple dimensions of public value with established constructs of e-government adoption.

2.2. *Models for Adoption of E-Government and Why They Fail*

The technology acceptance models have dominated research on e-government adoption, namely the Technology Acceptance Model (TAM) and the Unified Theory of Acceptance and Use of Technology (UTAUT). The Technology Acceptance Model (TAM), developed by Davis (1989), suggests that the two main factors determining technology adoption are perceived usefulness and perceived ease of use. UTAUT, proposed by Venkatesh et al. (2003), expands the TAM perspective to include performance expectancy, effort expectancy, social influence, and facilitating conditions as important predictors of technology acceptance and use intention. Although widely utilised in e-government research, these models face a number of limitations in the case of application to public sector contexts. First, TAM and UTAUT are inherently technology-focused models, emphasizing at individual level, the perceptions one has of technology characteristics, not on the larger value generated through the use of government services on a macro level (Carter & Bélanger, 2005; Shareef et al., 2011). Second, these models do not account for the specificities of the public sector in terms of transparency, accountability, equity and democracy (Grimmelikhuisen et al., 2013; Savoldelli et al., 2013). Thirdly, they focus on utilitarian benefits (usefulness, efficiency), and do not mention enough the trust, security, and privacy issues that are very important in government (Bélanger & Carter 2008; Mensah et al., 2024). As a consequence, there have been some extensions and modifications made to technology adoption model for e-government situations in recognition of this shortcoming. Carter and Bélanger (2005) further expanded TAM to include trust and perceived risk as supplementary variables that predict e-governmental adoption. Shareef et al. (2011) built a unified model including TAM, UTAUT and Diffusion of Innovation Theory and better reflected a complex theory of e-government adoption. Alshibly and Chiong (2015) included service quality dimensions in the UTAUT framework to accommodate the service-based character of e-government. A major limitation was, nevertheless, that models of technology adoption did not conceptualize or quantify public value as a key phenomenon. This oversight can be regarded as a misstep given that the goal of e-government is not solely to introduce (technology) but to enhance (public) value to citizens and society (Bannister & Connolly 2014; Twizeyimana & Andersson 2019). Citizens do not adopt e-government services simply on the grounds that they are easy to use or useful to them, but rather that they find that these services add value in multiple dimensions - efficiency, quality, transparency, trust and responsiveness (Alruwaie et al., 2020; Li & Shang, 2020).

2.3. *Digital Governance in the Public Value*

In recent years, Public Value has become closer to the centre of discussions of digital governance. This evolution in public attitudes towards e-government has been facilitated by shifts in perspective away from

merely the 'automation' characteristic of contemporary e-governance and toward the wider contribution to society. Early e-government efforts were largely evaluated on its gains in efficiency, cost-savings and improved speed of administrative work. Yet such limited analyses have also drawn criticism for not summarizing the broader governance outputs anticipated from public digital services (Savoldelli, 2013; Bannister & Connolly, 2014). It is on this very basis that public value theory serves as key resource in overcoming such restrictions. Moore (1995) characterized public value as the aggregate advantage generated from public sector activities that are socially legitimate and consonant with citizen values. This view in the realm of digital governance calls for the success of digital government initiatives to be assessed not simply in terms of service efficiency, but on the quality through which transparency, fairness, accountability and trust are promoted, as well as citizen satisfaction (Cordella & Bonina, 2012; Twizeyimana & Andersson, 2019). These changes signify increased awareness among the public that citizens do not operate only from the perspective of digital applications but rather have active role in the governance process. Digital government platforms have been noted in a number of studies as providing an accessible public service as well as removing the bureaucratic barriers. Cordella and Bonina (2012) posit that digital technologies, when inclusive in nature, can have a substantial contribution in enhancing public value, specifically by extending service access and coordination between government agencies. Karkin and Janssen (2014) likewise argue that connected and interoperable digital systems reduce friction for citizens and governments, increasing perceived utility and service value. Transparency and trust are recurrent themes in the literatures on public value in digital governance. Bannister and Connolly (2014) argue that digital platforms can reinforce institutional legitimacy by enhancing transparency and increasing visibility around government actions. Yet subsequent studies suggest that transparency is not enough on its own. Trust among citizens only develops when digital systems function well, are secure and responsive to their needs (Picazo-Vela et al., 2018; MacLean & Titah, 2021). This shows the strong correlation between technological performance in shaping public value perceptions and governance outcomes. While these conceptual advances are made, much empirical research on public value in digital government is still fragmented. There are many studies that continue to look at each of these as a component of an analytical framework like service quality, transparency or satisfaction without incorporating them into the overall framework. While public value is seen as a general outcome of digital government by many (Roy, 2019; Bouaziz, 2020), there is a dearth of empirical work on the empirical relationships between technology aspects and governance outcomes. As a result, a complete picture of the process by which technological investments within digital government translate into real societal outcomes is limited owing to this fragmentation. It is in answer to these limitations that some of the recent research increasingly advocates and supports a multi-lateral integrated approach that integrate technology and governance perspectives. Modeled approaches, such as the Public Value E-Government

Adoption Model (PVEGAM), see digital government services as socio-technical systems of information, and affect efficiency, trust, satisfaction and legitimacy (Luna-Reyes et al., 2016; MacLean & Titah, 2021). Frameworks like these allow a broader perspective on public value creation by controlling for system factors as well as for attitudes and beliefs from the citizens. The literature tends to suggest that public value in digital governance is multidimensional, citizen-centered, and contextual - defined by the interaction of digital service performance and governance principles. Yet there is little empirical evidence that integrates these dimensions into a unified model most notably from the citizens' viewpoint. This reiterates the importance of conducting research investigating the systematic process of how digital government services support the creation of public value within modern governance contexts.

TABLE 1 - SUMMARY OF LITERATURE REVIEW ON PUBLIC VALUE IN DIGITAL GOVERNANCE

Author(s) & Year	Context / Focus	Key Contribution to Public Value Literature
Moore (1995)	Public administration theory	Introduced public value as the core objective of public sector performance
Cordella & Bonina (2012)	Digital government	Highlighted the role of ICT in enabling inclusion and value creation
Savoldelli (2013)	E-government evaluation	Identified public value as a key criterion for assessing e-government initiatives
Bannister & Connolly (2014)	Digital governance	Emphasized transparency, openness, and legitimacy as public value outcomes
Karkin & Janssen (2014)	Integrated services	Demonstrated how interoperability enhances citizen-perceived value
Luna-Reyes et al. (2016)	Public value framework	Proposed citizen-perceived benefits as the basis for evaluating e-government
Picazo-Vela et al. (2018)	Citizen trust & transparency	Linked transparency and system quality to trust and value creation
OECD (2019)	Digital government	Shifted focus from e-government to co-created digital governance
Twizeyimana & Andersson (2019)	Public value dimensions	Developed a multidimensional public value model for e-government
Criado & Gil-Garcia (2019)	Digital-era governance	Connected digital governance reforms with public value generation
Bouaziz (2020)	Citizen perception	Empirically examined perceived public value in digital services

Source: Own processing

2.4. The Public Value E-Government Adoption Model (PVEGAM)

To address the limitations of traditional technology adoption models and integrate public value theory with e-government adoption research, Mensah et al. (2024) developed the Public Value E-Government Adoption Model (PVEGAM). PVEGAM represents a comprehensive framework that positions public value as a central mediating construct linking service characteristics to citizens' adoption intentions. The model incorporates seven key determinants of public value: quality of information, service delivery parameters, efficiency, openness, user-orientation, responsiveness and Intention to adopt.

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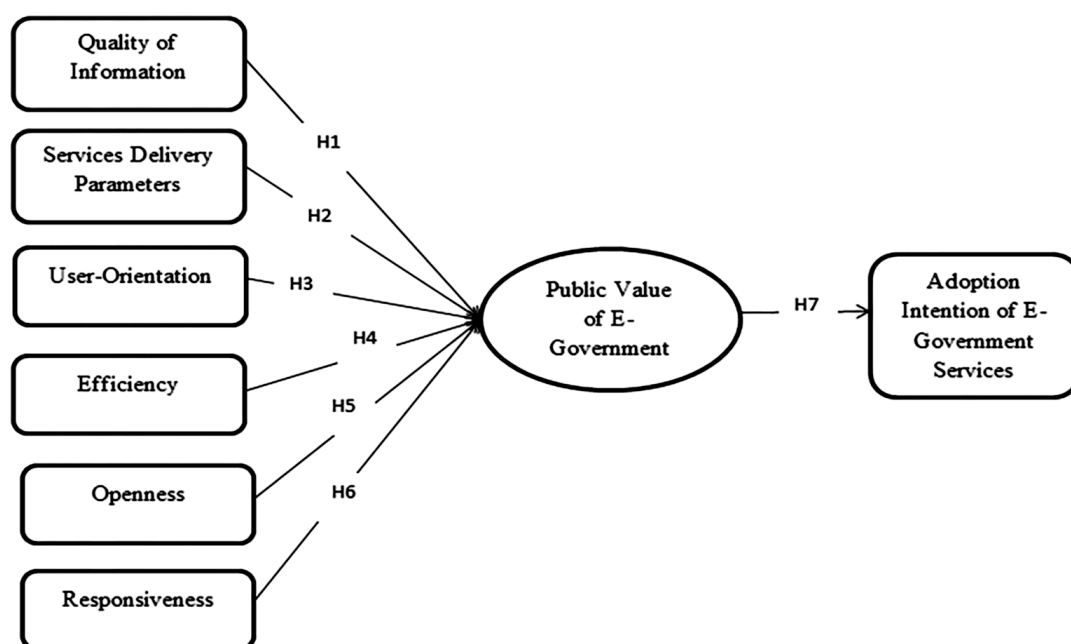


FIGURE 1- PVEGAM

TABLE 2 - DETERMINANTS OF PVEGAM

Determinant	Description	Author(s) & Year
Service Delivery Parameters	This reflects citizens' perceptions with e-government services of whether these services consistently meet their needs, respond promptly to inquiries, provide accurate information and demonstrate understanding of citizen concerns.	(Parasuraman et al., 1988; Alruwaie et al., 2020; Li & Shang, 2020)
Efficiency	Efficiency measures how efficiently e-government services reduce the time effort and costs required for citizens to access government services.	(Savoldelli et al., 2013; Bannister & Connolly, 2014; Dwivedi et al., 2017)
Openness	Openness refers to the availability, accessibility, and understandability of government information and decision-making processes facilitated by e-government services.	(Harrison et al., 2012; Grimmelikhuijsen et al., 2013; Grimmelikhuijsen & Feeney, 2017)
Quality of Information	Quality of information encompasses the accuracy, completeness, timeliness, and relevance of information provided through e-government platforms.	(DeLone & McLean, 2003; Shareef et al., 2011; Alruwaie et al., 2020)
Perceived Benefits (User-Orientation)	Perceived Benefits refers to citizens' evaluative beliefs about the advantages and positive outcomes gained from using e-government services, including convenience, time savings, improved access to information, and enhanced service quality.	(Shareef et al., 2011; Alruwaie et al., 2020)
Responsiveness	Responsiveness is the degree to which government sector organizations adhere to the requests and demands of citizens. Responsiveness in e-government is the expectation that citizens have regarding timely responses to their demands/inquiries through the e-government system.	(Karunasena and Deng, 2012; Ngonzi and Sewchurran, 2019)
Intention to Adopt	The degree to which citizens intend to use or continue using digital government services for accessing government information and public services. In terms of e-government, the public value is the use of e-government systems to improve the provision of government services that meet the demands of citizens and the general public.	(Kelly et al., 2002; Karunasena and Deng, 2012; Dolan, 2015)

Source: Compiled by the authors based on the reviewed literature

PVEGAM posits that these seven determinants together affect citizens' perception of public value which in turn, impact their adoption and ongoing usage of e-government services. By situating public value as a mediating variable, PVEGAM contributes a theoretically and empirically testable hypothesis about the way in which service characteristics lead to the adoption behavior via perceived value. This strategy reflects the focus of public value theory on the effects of the outcomes that citizens value and addresses the limitations of technology-centric adoption models.

2.5. E-Government in India: Context and Challenges

India is particularly relevant as a context for assessing the impact of e-government on public value because of its sweeping digital transformation efforts alongside a heterogeneous population and governance challenges. The Digital India program, which was launched in 2015, seeks to convert India into a digitally enabled society and knowledge economy by the development of digital infrastructure, online service delivery, and digital literacy campaigns (Bhatnagar, 2014; Dwivedi et al., 2017). Key e-government platforms like Unified Mobile Application for New-age Governance (UMANG), DigiLocker, e-District services, and Government e-Marketplace (GeM) have been introduced to enhance access and efficiency to services. However, e-government adoption in India has its challenges. First, rural-urban, socioeconomic, and educational disparities still have significant digital divides which restrict access to digital services to marginalized groups (Krishnan et al., 2017; Rana et al., 2015). Second, infrastructure limitations such as poor internet connectivity in rural areas generate obstacles within e-government usage. Third, unequal digital literacy at different levels hinders citizens from using information and digital tools efficiently (Dwivedi et al., 2017). Fourth, concern about the safety and security of personal data and government surveillance also affect the trust of citizens in e-government (Rana et al., 2015).

Knowledge on how citizens in this setting understand public value from e-government services is important for inclusive and effective digital governance strategies. Previous studies on e-government adoption in India have been used predominantly as technology adoption models (Dwivedi et al., 2017; Rana et al., 2015), with little to no contribution to include value-based dimensions of public value. The present study addresses this gap by exploring citizens' perception of public value and the factors that shape these perceptions.

2.5.1 Federalism and State-Level Variation in E-Government Implementation

In addition to the more general obstacles detailed in the preceding sections, India's federal system of governmental structure has made a significant impact on the achievements of e-government and citizens' perception of public value. Due to its constitutional flexibility, different states have varied levels of digital readiness, digital infrastructure etc., and progressively influence the quality of their institutional and

service delivery (Parsheera, 2022). The prevalence of this kind of heterogeneity is significant in terms of understanding what factors lead to the creation of public value in the Indian context.

First, the costs at the state level are likely to be particularly important, and there are capacity constraints which make efficiency a particularly salient quality signal. Kalsi and Kiran (2013) studied ten government of the state projects under consideration and found that certain limitations still exist in the areas of technical capacities, interoperability standards and co-ordination mechanisms. In this context, efficiency in services delivery, which means the existence of fewer institutional and technical obstacles as well as quickness of transactions with good system performance, gives a good indication that the state has taken steps to get over the institutional and technical obstacles. The significance of efficiency as an indicator of the working of e-government may be even higher with citizens in states with weaker capacity.

Secondly, the e-government users in India, as a demographic group, highlight the importance of efficiency. According to the study of Kuriyan and Ray (2009), the benefits of e-government have traditionally been enjoyed by emerging middle classes that have access to and knowledge about, digital media. This demographic has numerous of the existing e-government users and are highly value their time, convenience and transactional efficiencies. To users who are educated, urban and used to fast, efficient, private digital services, the efficiency of the digital services that government provides becomes a benchmark to measure public value.

Third, in a competitive federalism that is present in India, states bid against each other to gain the attention of investors and to showcase their effectiveness of governance. Efficient delivery of digital service as a tangible indicator of state capacity and modernisation, impacts citizen perceptions as well as inter-state comparisons (Prasad, 2012). In this context, efficiency is less of a functional feature, than of a symbolic feature indicating the state's effort to reform and become citizen-centric.

For the present analysis, the contextual factors thus help to explain the fact that efficiency is the strongest predictor of public value ($\beta = 0.213$; $p < 0.001$). In a federal system with differing levels of state capacity, the variation in infrastructure and access to digital tools and literacy amongst citizens and the growing presence of digital actors in cities, efficiency is the most tangible and salient aspect of the e-government question: is it delivering on its promises?

2.6. Summary of Literature and Research Gap

The review of literature highlights several conclusions and observations. First, based on public value theory a strong theoretical foundation can be established to evaluate the effectiveness of e-government, focusing on the outcomes that citizens collectively value as more than just technological utility. Additionally, traditional technology adoption models (TAM, UTAUT) are not adequate enough when they

are applied to public sectors i.e., not reflecting the public value dimensions of transparency, accountability, trust, and democratic participation. Third, PVEGAM offers a comprehensive framework that integrates public value theory with e-government adoption research, positioning public value as a central mediating construct. Fourth, empirical research on public value in e-government remains limited, particularly in developing and emerging economy contexts.

The study addresses these gaps by empirically examining the determinants of public value in digital government services using PVEGAM in the Indian context. Specifically, it investigates: (1) how service delivery parameters, efficiency, transparency, information quality, system quality, trust, and perceived benefits influence citizens' perceptions of public value; (2) how public value, in turn, affects citizens' intentions to adopt e-government services; and (3) the relative importance of different determinants in shaping public value perceptions. This study contributes empirical evidence from an emerging economy context, enhancing theoretical understanding and practical guidance in e-government design and implementation.

3. RESEARCH MODEL AND HYPOTHESES DEVELOPMENT

Drawing on the Public Value E-Government Adoption Model (PVEGAM) and the literature reviewed, this research proposes a comprehensive research model examining the determinants of public value and their influence on citizens' intentions to adopt e-government services. The current study extended the PVEGAM model which incorporates eight key determinants of public value: service delivery parameters, efficiency, openness, quality of information, system quality, trust, perceived benefits and citizens intention to adopt. Public value serves as a mediating construct linking these antecedents to citizens' adoption intentions. The following sections develop hypotheses for each relationship in the model.

3.1. *Service Delivery Parameters and Public Value*

Service delivery parameters are the quality aspects of digital government service dimensions which includes responsiveness, reliability, assurance, and empathy. Reliability refers to the ability of digital services to perform dependably and accurately; responsiveness reflects the willingness to help citizens and provide prompt service; assurance encompasses the knowledge and courtesy of service providers and their ability to inspire trust and confidence; and empathy reflects the individualized attention provided to citizens (Parasuraman et al., 1988; Alruwaie et al., 2020).

In this context, high-quality service delivery demonstrates government's commitment in meeting the citizens' needs and expectations, thereby enhancing perceptions of public value. When citizens perceive that digital government services are reliable, responsive, and attentive to their concerns, they are more

likely to view these services as valuable and beneficial (Li & Shang, 2020; Mensah et al., 2024). This is supported by existing empirical studies as service quality is a strong predictor of citizens' satisfaction with and perceived value of e-government services (Alruwaie et al., 2020; Shareef et al., 2011). So, the following hypothesis is proposed:

H1: Service delivery parameters have a significant positive effect on public value.

3.2. Efficiency and Public Value

Efficiency measures how efficiently digital services reduce the time, effort, and costs required for citizens to access government services compared to traditional channels (Bannister & Connolly, 2014; Savoldelli et al., 2013). Efficiency is a basic aspect of operational public value as it helps people to do things in a more convenient way and the government is free to use resources efficiently. Citizens' demand such services from digital services that do not require long trips to the government office because of the time saving, reduced cost, and simplified processes (Alshibly & Chiong, 2015; Dwivedi et al., 2017). Hence, citizens recognized the digital services as more efficient than more traditional service. According to empirical research, perceived efficiency plays a critical key role in enabling and motivating digital adoption and satisfaction (Alruwaie et al., 2020; Li & Shang, 2020). Therefore, the following proposition was developed as:

H2: Efficiency has a significant positive effect on public value.

3.3. Openness and Public Value

Openness has to do with transparency and accountability of services, especially in terms of availability, accessibility, making decisions, processes, and procedures as well as government information (budgets and expenditure) readily available to citizens via digital platforms. (Harrison et al., 2012; Grimmelikhuijsen et al., 2013). Transparency fosters public value, and enables citizens to evaluate government performance, understand policy decisions, hold public officials accountable and participate in more democratic processes. The open access of the e-government digital platforms that offer data, policies, budgets, performance metrics also contribute to transparency and raise citizen trust in the government (Bertot et al., 2010; Grimmelikhuijsen & Feeney, 2017). The effectiveness of e-government on citizens' trust in the e-government system has also already been empirically confirmed through the research conducted by Mensah et al., 2024. Therefore, the following hypothesis is proposed:

H3: Openness has a significant positive effect on public value.

3.4. Information Quality and Public Value

The quality of information incorporates relevance, accuracy, completeness, timeliness as well as the comprehensibility of information which is provided by e-government services (DeLone & McLean, 2003). High Quality information empowers citizens to be well informed about policies and procedures of government and also make their contribution in the decision making while using digital services. In government settings, the quality of the information is crucial since wrong, incomplete or outdated information can endanger citizens' welfare as well as their rights and ability to access services (Alruwaie et al., 2020; Shareef et al., 2011). When citizens believe they can count on the information offered by e-government platforms, they are likely to believe that they are useful services and perceive them as valuable (Li & Shang, 2020). Empirical studies have demonstrated that information quality is a significant predictor of e-government adoption and satisfaction (Alshibly & Chiong, 2015; Mensah et al., 2024). Therefore, the following hypothesis is proposed:

H4: Information quality has a significant positive effect on public value.

3.5. System Quality and Public Value

System quality refers to the technical performance characteristics of digital platforms, including reliability, response time, ease of navigation, user interface design, and compatibility across devices and browsers (DeLone & McLean, 2003; Alshibly & Chiong, 2015). High system quality ensures that citizens can access and use digital services smoothly without encountering technical problems or usability barriers.

Poor system quality manifested through frequent downtime, slow loading times, complex navigation, or compatibility issues creates frustration and barriers to access, thereby diminishing citizens' perceptions of public value (Shareef et al., 2011). Conversely, well-designed, reliable, and user-friendly systems enhance user experience and contribute to positive public value perceptions (Alruwaie et al., 2020; Li & Shang, 2020). Empirical research has consistently shown that system quality is a significant determinant of e-government adoption and satisfaction (Alshibly & Chiong, 2015; Mensah et al., 2024). Therefore, the following hypothesis is proposed:

H5: System quality has a significant positive effect on public value.

3.6. Trust and Public Value

Trust represents citizens' confidence in government institutions and the security and privacy of digital interactions (Bélanger & Carter, 2008; MacLean & Titah, 2021). Trust is a complex notion that includes technological trust (belief in the security, privacy, and reliability of digital platforms), interpersonal trust

(belief in the honesty and ethical behaviour of government officials), and institutional trust (belief in the competence, sincerity, and integrity of the government).

Trust is particularly critical in e-government contexts where citizens must share personal and sensitive information through digital channels and rely on government systems for essential services (Carter & Bélanger, 2005; Mensah et al., 2024). When citizens trust government institutions and believe that digital platforms are secure and protect their privacy, they are more likely to perceive e-government services as valuable and beneficial (MacLean & Titah, 2021). Therefore, the following hypothesis is proposed:

H6: Trust has a significant positive effect on public value.

3.7. Perceived Benefits and Public Value

Perceived Benefits" is citizens' evaluative belief about the advantages and positive outcomes that they can get from using e-government services encompassing convenience, time-saving, information, quality of services, cost-savings and transparency (Li & Shang, 2020; Pham et al., 2023). It measures individual level, user-centric evaluations of the net benefits of e-government participation, and it includes a number of value attributes that cross over from the utilitarian (functional, instrumental) to the hedonic (enjoyment, satisfaction) side of participation, away from the wider, society level construct of Public Value. Note that, as operationalized in this study, Perceived Benefits is not synonymous of SERVQUAL's 'expectations' (Parasuraman et al., 1988), which are in fact expectations or normative standards, against which the actual service is compared. Perceived Benefits, on the contrary is an evaluative construct that is based on outcomes, pertaining to users (inevaluative) assessments of the benefits which they, or others, have gained or which they could gain from using e-government services. This conceptualization is consistent with recent e-government studies which theorized perceived value as a mediational factor between e-government service quality dimensions and behavioral intentions like satisfaction and continued use (Pham et al., 2023; Li & Shang, 2020). E-government users who feel that the e-government services provide more benefits than traditional methods are more inclined toward the usefulness of the e-government services in their benefit and quality of life (Li & Shang, 2020; Mensah et al., 2024). To support this, the following is postulated:

H7: Perceived Benefits have a significant positive effect on public value.

3.8. Public Value and Citizens' Intention to Adopt E-Government Services

Public value represents citizens' overall assessment of the collective benefits created by e-government services across multiple dimensions, including service quality, efficiency, transparency, trust, and responsiveness (Moore, 1995; Twizeyimana & Andersson, 2019). According to public value theory,

citizens are more likely to support and utilize government initiatives that they perceive as generating significant public value (Bryson et al., 2014; Stoker, 2006).

In digital services contexts, citizens' perceptions of public value serve as a critical mediating mechanism linking service characteristics to adoption intentions. When citizens perceive that digital government services create substantial public value by improving service quality, enhancing efficiency, increasing transparency, building trust, and delivering tangible benefits- they are more likely to intend to adopt and continue using these services (Li & Shang, 2020; Mensah et al., 2024). On the other hand, when citizens feel that digital government services don't offer much public value, they are less likely to use them, even if they are easy to use or technologically advanced.

Empirical studies have established that perceived value is a crucial predictor of behavioural intentions in diverse technology adoption scenarios (Alruwaie et al., 2020; Li & Shang, 2020). Research indicates that citizens' perceptions of public value significantly enhance their intentions to adopt and persist in using digital government services (Mensah et al., 2024; Talukder et al., 2019). Therefore, the following hypothesis is proposed:

H8: Public value has a significant positive effect on citizens' intention to adopt e-government services.

The model positions public value as a central mediating construct that links seven antecedent factors (service delivery parameters, efficiency, openness, information quality, system quality, trust, and perceived benefits) to citizens' intentions to adopt e-government services. This model is grounded in public value theory and the PVEGAM framework, emphasizing the multidimensional nature of public value creation in digital government contexts.

4. RESEARCH METHODOLOGY

4.1. Research Design and Approach

This research uses a quantitative research design and cross-sectional survey design to investigate determinants of public value and their effect on users' intention to adopt digital government services. The study is quantitative because this design allows for methodically measuring constructs and testing relationships hypothesized through experiment and generalization to a higher population (Creswell & Creswell, 2018). The cross-sectional design enables data collection at a single point in time, providing a bird's eye view of citizens' perceptions of and intentions with respect to e-government services.

4.2. Population and Sampling

There were Indian citizens who actively use government of India's digital services. These can range from UMANG, DigiLocker, e-District platforms to income tax-filing platforms and other on-line government service platforms. As the size of the population in India is large, geographically spread and socio-demographically diverse; it was very difficult to select the probability sample in limited time frame and the limited resources. Thus, a non-probability sampling method was used which is a convenience sampling method, in which respondents were selected based on their relevance of experience in the use of e-government platforms.

Participants were recruited via the online medium like social media websites, online forums, and e-mail invitations. The questionnaire included some screening questions at the front to assure that, by placing respondents at the intersection of key themes and data, they had access to and experience with digital government services in the recent past. If the respondent had not tried using any digital government service in the last six months, he or she was removed from the sample and not allowed to proceed with the survey. In this regard, the answers included the latest and most recent knowledge of a user experience, and avoided highlighting general knowledge or indirect knowledge of e-services.

A commonly accepted guideline for sample size in structural equation modelling (SEM) was used to determine the sample size. Previous methodological guidance has indicated that samples of 200 or more observations can be acceptable for SEMs, but that the larger the sample (in the 300-500 observations range) the more appropriate the SEM analyses involving multiple constructs and complex relationships (Hair et al., 2019; Kline, 2015). Thus, 500 questionnaires were handed out. 439 valid responses were retained for the final analysis resulting in a valid response rate of 87.8% after deletion of responses that were incomplete and inconsistent. This sample size was well beyond the minimum SEM suggested and was large enough to be statistically powerful to test the proposed hypotheses.

4.2.1 Sampling Limitations and Demographic Bias

While the sampling methodology adopted proved suitable for accessing users of digital government services, it also had some drawbacks. The sample population might have been more dominated with educated people, Internet connected and digitally literate who could access the data on the Internet platforms and online forums. This might have led to an over-representation of citizens already comfortable with digital platforms, and under-representation of citizens who did not use the internet as often and/or were not as digitally literate.

This is reflected on the demographic profile of the sample. The majority of the respondents were in the age group of 20-39 years and majority respondents had graduate/post graduate educational qualification.

This indicates the sample was a more representative of younger, educated and digitized citizens in India rather than being a representative sample of the population. Hence, caution needs to be exercised in generalizing the results to rural citizens, older age, citizens with lower education levels and citizens with limited access to the digital technology.

However, for the purposes of the present study the sample was suitable because the research was targeted specifically on citizens that had recently experienced with the implementation of digital government services. The use of screening questions was useful in ensuring that all the respondents were relevant in the context of the study. Future studies could consider stratified (or quota or mixed mode) sampling, however, to engage respondents with a wider spectrum of region, age, education, and access to digital tools.

4.3. Data Collection Instrument

Data were collected through a structured questionnaire in three main sections: (1) screening questions to check eligibility; (2) measurement items for the research constructs; (3) demographic information. All measurement items were adapted from validated scales in prior e-government and information systems research to ensure content validity and reliability.

The questionnaire was initially developed in English and then translated into Hindi to accommodate respondents who prefer Hindi. Back-translation procedures were employed to ensure equivalence between the English and Hindi versions. The questionnaire employed a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree) for all construct measurement items. The five-point scale was chosen because it provides greater variability and sensitivity in capturing respondents' attitudes and perceptions compared to three-point scales, while remaining manageable for respondents (Hair et al., 2019).

A pilot test was carried out with 30 respondents to evaluate the clarity, comprehensibility, and appropriateness of the questionnaire items. Minor adjustments to clarity were made on the basis of feedback from the pilot test. All respondents were provided informed consent prior to filling out the questionnaire. The informed consent included a clear explanation of the purpose of the study, the voluntary nature of participation, confidentiality and anonymity, the estimated time required to complete the survey, and the opportunity and right of the individual to discontinue at any point of time without consequences. Data collection involved no personally identifiable information and respondent anonymity was guaranteed.

4.4. Data Analysis Techniques

Structural Equation Modeling (SEM) was used for the analysis of data collected that simultaneously assess the multiple relationships among latent constructs (Hair et al., 2019; Kline, 2015). The data analysis proceeded in two stages following the two-step approach recommended by Anderson and Gerbing (1988). First, the measurement model was evaluated to assess the reliability and validity of the constructs. This included examining factor loadings, internal consistency reliability (Cronbach's alpha and composite reliability), convergent validity (average variance extracted), and discriminant validity (Fornell-Larcker criterion and Heterotrait-Monotrait ratio). Second, the structural model was evaluated to test the hypothesized relationships among constructs and assess the overall model fit.

Data analysis was conducted using IBM AMOS 26.0, a widely used software package for SEM analysis. Preliminary data screening was performed using IBM SPSS 27.0 to assess missing data, outliers, normality, and multicollinearity.

4.5. Common Method Bias

Since data were collected from a single source (self-reported questionnaires) at a single point in time, common method bias is a potential concern. To mitigate this risk, several procedural and statistical remedies were employed (Podsakoff et al., 2003). Procedurally, the questionnaire assured respondent anonymity, used clear and concise wording, varied the order of construct measurement, and avoided leading or loaded questions. Statistically, Harman's single-factor test was conducted by entering all measurement items into an exploratory factor analysis. The results showed that the first factor accounted for 38.4% of the total variance, which is below the threshold of 50%, indicating that common method bias is not a significant concern in this study (Podsakoff et al., 2003).

5. RESULTS

5.1. Respondent Profile

Table 5.1. shows the profile of 439 respondents. 45.1% were males, and 54.9% women participated in the survey. The demographic characteristics indicate that the sample represents a diverse cross-section of respondents in terms of age, gender, and educational attainment. Female respondents were a bit more represented (54.9%) than males (45.1%), which means women are active users of digital service. Most of the respondents belonged to the age category 20 to 29 years old (41.5%), followed by those in the age range 30 to 39 (29.4%). This reflects a strong representation of the active users of digital government services. In terms of educational status, the majority of participants had a graduate level of education

(54.2%), followed by post-graduates (33.3%). The presence of Ph.D. holders (5.5%) adds credibility and diversity to this sample. Overall, the demographic profile indicates that the sample is appropriate and adequate for examining citizens' perceptions of public value and adoption intention toward digital government services. E-Gov services were reported as used by respondents in terms of income tax filing 78.4%, DigiLocker 65.8%, UMANG 54.2%, e-District services 48.3% and online payments of utility bills 71.5%. Survey respondents had been using e-government services for an average of 3.8 years, meaning they have a adequate familiarity of participating and understanding digital government platforms.

TABLE 5.1 - DEMOGRAPHICS OF RESPONDENTS (N = 439)

Item	Description	Frequency	Percentage (%)
Gender	Male	198	45.1
	Female	241	54.9
Age	Below 20	61	13.9
	20-29	182	41.5
	30-39	129	29.4
	40-49	39	8.9
	49 above	28	6.4
Education	Graduation	238	54.2
	Post-Graduation	146	33.3
	Ph.D.	24	5.5
	Other	31	7.1

Source: Own processing

5.2. Assessment of the Measurement Model

The reliability and validity of the constructs were validated before inspecting the structural relationships through the evaluation of the measurement model. The result of the measurement model assessment, in terms of factor loadings, Cronbach's alpha, composite reliability (CR) and average variance extracted (AVE), is reported in Table 5.2. Reliability Assessment: Internal consistency was analyzed using Cronbach's Alpha and Composite reliability: the reliability of each indicator as well as composite reliability. (Cronbach's alpha values for each of the constructs ranged from 0.847 to 0.921; all constructs were described as significantly more reliable, exceeding the recommended level of acceptable values of 0.70, Hair et al. Composite reliability values ranged from 0.851 to 0.925, also exceeding the threshold of 0.70, indicating satisfactory internal consistency.

Convergent Validity:

Convergent validity was assessed by examining factor loadings and average variance extracted (AVE). All measurement items loaded significantly on their respective constructs with standardized factor loadings ranging from 0.702 to 0.891, exceeding the recommended threshold of 0.50 (Hair et al., 2019). AVE values have ranged from 0.589 to 0.714, all surpassing the threshold of 0.50, confirming the convergent validity as constructs explained over half of the variance in their indicators:

TABLE 5. 2 - MEASUREMENT MODEL RESULTS

Construct	Items	Factor Loading	Cronbach's α	CR	AVE
Service Delivery Parameters	SDP1	0.812	0.891	0.894	0.629
	SDP2	0.798			
	SDP3	0.785			
	SDP4	0.821			
	SDP5	0.753			
Efficiency	EFF1	0.847	0.887	0.891	0.672
	EFF2	0.835			
	EFF3	0.802			
	EFF4	0.794			
Openness	TRO1	0.823	0.869	0.873	0.634
	TRO2	0.791			
	TRO3	0.802			
	TRO4	0.768			
Information Quality	INQ1	0.808	0.902	0.905	0.657
	INQ2	0.825			
	INQ3	0.812			
	INQ4	0.791			
	INQ5	0.817			
System Quality	SYQ1	0.778	0.847	0.851	0.589
	SYQ2	0.762			
	SYQ3	0.754			
	SYQ4	0.781			
	SYQ5	0.759			
Trust	TRU1	0.856	0.913	0.916	0.687
	TRU2	0.843			
	TRU3	0.821			
	TRU4	0.812			
	TRU5	0.824			
Perceived Benefits	PE1	0.871	0.898	0.901	0.695
	PE2	0.847			
	PE3	0.802			
	PE4	0.815			
Public Value	PVA1	0.891	0.921	0.925	0.714
	PVA2	0.845			
	PVA3	0.832			
	PVA4	0.847			
	PVA5	0.824			
	PVA6	0.838			
Intention to Adopt	ITA1	0.863	0.905	0.908	0.712
	ITA2	0.852			
	ITA3	0.827			
	ITA4	0.831			

Note: CR = Composite Reliability; AVE = Average Variance Extracted

Source: Own processing

5.3. Discriminant Validity

Discriminant validity was assessed using the Fornell-Larcker criterion and the Heterotrait-Monotrait (HTMT) ratio. According to the Fornell-Larcker criterion, the square root of each construct's AVE should exceed its correlations with other constructs (Fornell & Larcker, 1981). Table 5.3. presents the correlation matrix with the square roots of AVE on the diagonal. All diagonal values exceed the corresponding off-diagonal correlation coefficients, confirming discriminant validity.

Additionally, the HTMT ratio was examined, with values below 0.85 indicating adequate discriminant validity (Henseler et al., 2015). All HTMT values in this study ranged from 0.412 to 0.783, below the threshold of 0.85, further confirming discriminant validity.

Special care was taken to focus on pairs of constructs which are conceptually related and might be subject to overlap. Otherwise, the result of the discriminant analysis shows that the sure value of the discriminant of two constructs, namely Efficiency and Public Value (0.68) and Perceived Benefits and Public Value (0.72) is lower than conservative value of 0.85, which means these construct pairs, in spite of being conceptually related, are empirically different. Effort was made that all the Measurement Items collect both aspects of services by the Efficiency Items, and individual-level evaluations by the Perceived Benefits Items, while the Public Value Items collect broader governance outcomes (transparency and accountability, trust in government). The results reflect the validity of the proposed causal model which assumes that Efficiency and Perceived Benefits are predictors and not overlapping or redundant concepts to predict the concept of Public Value.

TABLE 5.3 - DISCRIMINANT VALIDITY – FORNELL-LARCKER CRITERION

Construct	SDP	EF	OP	QOI	SQ	T	UO	PV	AI
1. Service Delivery Parameter	0.793								
2. Efficiency	0.612	0.820							
3. Openness	0.548	0.587	0.796						
4. Quality of Information	0.601	0.623	0.594	0.811					
5. System Quality	0.524	0.556	0.518	0.582	0.767				
6. Trust	0.589	0.607	0.641	0.618	0.547	0.829			
7. Perceived Benefits	0.634	0.658	0.601	0.642	0.578	0.623	0.834		
8. Public Value	0.687	0.721	0.698	0.714	0.623	0.709	0.738	0.845	
9. Intention to Adopt	0.592	0.614	0.587	0.601	0.547	0.623	0.641	0.756	0.844

Note: Diagonal values (in bold) represent the square root of AVE; off-diagonal values represent correlations among constructs. SDP- Service Delivery Parameter, EF-Efficiency, OP-Openness, QI- Quality of Information, SQ- System Quality, T-Trust, UO- Perceived Benefits, PV- Public Value, AI- Adoption Intention

5.4. Structural Model Assessment

After confirming the reliability and validity of the measurement model, the structural model was evaluated to test the hypothesized relationships. The model fit indices indicated acceptable fit: $\chi^2 = 1847.32$ (df = 682), $\chi^2/df = 2.71$, CFI = 0.921, TLI = 0.915, RMSEA = 0.063 (90% CI: 0.059-0.067), and SRMR = 0.057. These values meet the recommended thresholds, indicating that the proposed model adequately fits the data (Hair et al., 2019; Hu & Bentler, 1999).

Hypothesis Testing:

Table 5.4 presents the results of hypothesis testing, including standardized path coefficients (β), t-values, p-values, and hypothesis support decisions. All eight hypotheses were supported at the $p < 0.001$ significance level.

DETERMINANTS OF PUBLIC VALUE IN DIGITAL GOVERNANCE: AN ANALYSIS OF CITIZENS' PERCEPTION OF DIGITAL SERVICES EXTENDING PVEGAM IN INDIAN CONTEXT

TABLE 5.4 - STRUCTURAL MODEL RESULTS AND HYPOTHESIS TESTING

Hypothesis	Path	B	t-value	p-value	Decision
H1	Service Delivery Parameters → Public Value	0.182	4.127	< 0.001	Supported
H2	Efficiency → Public Value	0.213	4.854	< 0.001	Supported
H3	Openness → Public Value	0.196	4.472	< 0.001	Supported
H4	Quality of Information → Public Value	0.147	3.381	< 0.001	Supported
H5	System Quality → Public Value	0.112	2.618	< 0.01	Supported
H6	Trust → Public Value	0.168	3.847	< 0.001	Supported
H7	Perceived Benefits → Public Value	0.174	3.952	< 0.001	Supported
H8	Public Value → Intention to Adopt	0.756	18.342	< 0.001	Supported

Note: β = standardized path coefficient; SDP- Service Delivery Parameter, EF-Efficiency, OP-Openness, QI- Quality of Information, SQ- System Quality, T-Trust, PE- Perceived Benefits, PV- Public Value, AI- Adoption Intention

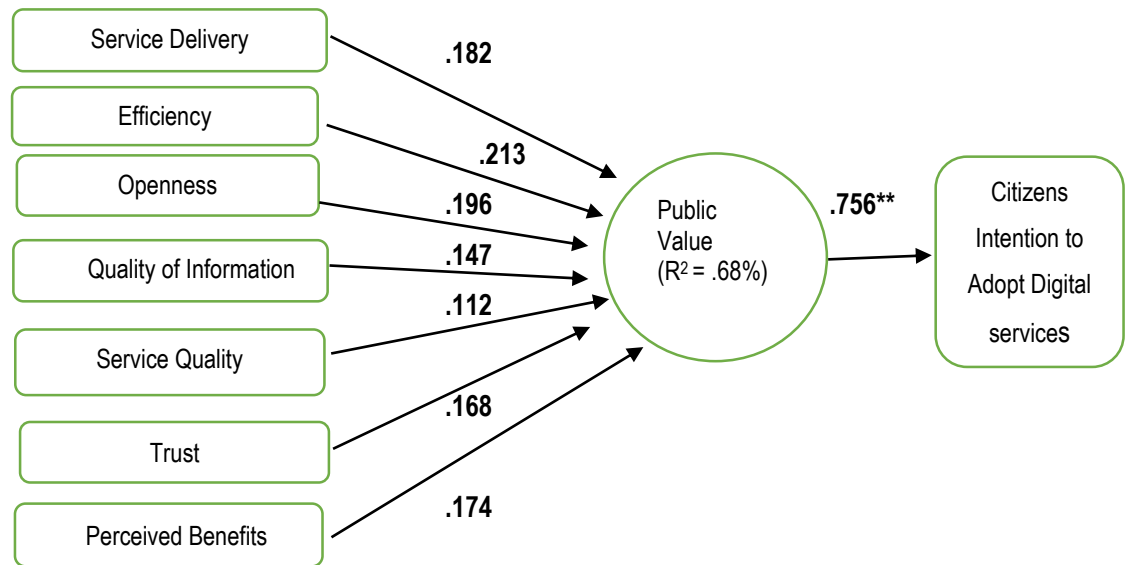


FIGURE 2 - EXTENDED PVEGAM

The results of the research hypothesis tested are indicated in table 5.4. The results demonstrate strong empirical support for the proposed PVEGAM. The constructs of PVEGAM such as Quality of Information, Service Delivery Parameters, Perceived Benefits, Efficiency, Openness, system quality and Trust were all found to have significant positive effects on Public Value, thereby validating the multidimensional nature of public value creation in digital governance. In the present study, the User Orientation construct has been operationalized as Perceived Benefits to better reflect the underlying measurement items.

5.5. Key Findings:

Service Delivery Parameters → Public Value (H1): Service delivery parameters have a significant positive effect on public value ($\beta = 0.182$, $p < 0.001$), supporting H1. This indicates that citizens who perceive

digital government services as reliable, responsive, and empathetic are more likely to perceive higher public value.

Efficiency → Public Value (H2): Efficiency has the strongest effect on public value among all antecedents ($\beta = 0.213$, $p < 0.001$), supporting H2. This finding highlights that efficiency gains in terms of time savings, effort reduction, and convenience are the most critical driver of public value perceptions.

Openness → Public Value (H3): Transparency and Openness has a significant positive effect on public value ($\beta = 0.196$, $p < 0.001$), supporting H3. This demonstrates that citizens value e-government services that enhance government transparency and information accessibility.

Quality of Information → Public Value (H4): Information quality has a significant positive effect on public value ($\beta = 0.147$, $p < 0.001$), supporting H4. Accurate, complete, and timely information contributes to citizens' perceptions of public value.

System Quality → Public Value (H5): System quality has a significant positive effect on public value ($\beta = 0.112$, $p < 0.01$), supporting H5. While significant, system quality shows the weakest effect among all antecedents, suggesting that technical performance, while important, is less critical than service and information quality.

Trust → Public Value (H6): Trust has a significant positive effect on public value ($\beta = 0.168$, $p < 0.001$), supporting H6. Citizens' confidence in government institutions and the security of digital interactions contributes to public value perceptions.

Perceived Benefits → Public Value (H7): The results suggest that Perceived Benefits is significant to public value ($\beta = 0.174$, $p < 0.001$), thus supporting H7. Positive evaluative beliefs regarding the benefits of the interaction with the government through the digital elements positively impact citizens' public value perceptions.

Public Value → Intention to Adopt (H8): Public value has a strong significant positive effect on citizens' intention to adopt digital government services ($\beta = 0.756$, $p < 0.001$), supporting H8. This finding confirms the central role of public value as a mediating mechanism linking service characteristics to adoption intentions.

The model explains 68% of the variance in public value ($R^2 = 0.68$) and 57% of the variance in citizens' intention to adopt e-government services ($R^2 = 0.57$). These values indicate substantial explanatory power, demonstrating that the proposed model effectively captures the key determinants of public value and adoption intentions (Hair et al., 2019).

Examining the standardized path coefficients reveals the relative importance of different determinants. Efficiency ($\beta = 0.213$) is found to be the most potent predictor of public value, followed by transparency and openness ($\beta = 0.196$), service delivery parameters ($\beta = 0.182$), perceived benefits ($\beta = 0.174$), trust ($\beta = 0.168$), information quality ($\beta = 0.147$), and system quality ($\beta = 0.112$). Such ranking yields actionable advice for policymakers as to who should focus on what in e-government design and implementation.

6. DISCUSSIONS

6.1. Interpretation of Findings

In the Indian context, the findings of this study underpin robust empirical evidence for the Public Value E-Government Adoption Model (PVEGAM). All eight hypotheses were held, indicating that service delivery parameters, efficiency, transparency and openness, information quality, system quality, trust, and perceived benefits significantly contribute to citizens' value perception and influence their policy intention to use e-government services. These results are an aid to theoretical as well as practical strategies of adopting e-government.

6.1.1 Efficiency as the primary determinant of Public Value

Efficiency emerged as the strongest determinant showing a positive and significant relationship ($\beta = 0.213$) with respect to public value. The finding agrees with preceding empirical studies highlighting the value of performance durations, reduction of performance times, convenience, and service accessibility in the e-government adoption (Dwivedi et al., 2017; Li & Shang, 2020). This is significant in an Indian context as the people usually spend a lot of time in queue, waiting time for services, limited working hours of offices, and the complexity of the process when availed of the traditional public services. Digital government platforms, however, can help cut down on such barriers, allowing citizens to deal with government entities faster, remotely, and without having to come into contact with physical government offices.

These findings indicate that citizens associate higher public value with e-government services that simplify administrative procedures and reduce the time, effort, and costs involved in accessing public services. Services, which are offered around the clock, across various locations, and can be done in fewer process steps are more likely to be considered valuable and useful by citizens. Therefore, efficiency in digital service delivery should be viewed not merely as a technical characteristic of the system, but also as an important determinant of citizens' perceived public value.

This finding has important implications for policymakers and public administrators seeking to enhance the efficiency and effectiveness of digital government services. Reducing the complexity of the processes,

speeding up the completion of transactions, making them easier to use, minimizing the number of documents required, and improving support in the backend by the different departments of the organisation are all important steps in implementing e-governments. Digital investments – both in infrastructure, platforms and in re-structuring administrative processes – have the potential to enhance citizen trust in public value and boost their uptake of government through digital.

But the concept of efficiency needs to also be understood in the context of diverse digital governance architecture in India. The availability of the internet and its usage, degree of digital literacy, administrative capabilities, and awareness of online services vary significantly in different parts of India. Yet, the majority of respondents in the current sample were younger, educated and digitally active, with time-saving and convenience possibly being all the more important. Other factors - namely trust and accessibility, whether language support is available and whether there are, for elderly users or those who are less digitally literate, assisted-service options, as well as confidence around the use of digital platforms could be just as, if not more, significant, for citizens living in rural areas. Hence, in this research, efficiency is the highest factor but to make e-government adoption inclusive, efficient digital platforms have to be coupled with supportive mechanisms that assist less digitally advanced citizens in making efficient use of the platforms.

6.1.2 Openness as a fundamental driver of public value

Openness has emerged as the second top predictor of public value ($\beta = 0.196$), indicating the importance of openness and accessibility in information provision and the extent of government accountability in shaping citizens' value perception. The result is in line with studies which show that transparency improves levels of trust in government and citizen satisfaction with public services (Grimmelikhuijsen et al., 2013; Harrison et al., 2012; Bertot et al., 2010). In India, where concerns over corrupt practice, the transparency of government operations and a lack of accountability continue to generate substantial governance challenges, e-government platforms that promote greater transparency are an impressive contribution. When citizens have more access to information about policies, procedures, standards of service and governmental performance- they can watch their governments closely, hold officials accountable and actively get a say in democratic affairs. This transparency value forms a significant part of overall perceptions of public value. The prominent effect of transparency on public value suggests that e-government initiatives must be oriented towards transparent data policies, effective communication of service standards and processes, real-time measurement of service requests and accessible systems for feedback and complaints. Transparency mechanisms add not just value to the public, but also foster trust in government institutions.

6.1.3 Dimensions and quality of service delivery parameters

Metrics in services performance including reliability, responsiveness, assurance, and empathy, as dimensions of the service delivery parameters, also have significant public value effect ($\beta = 0.182$). This finding confirms that the e-government services are regarded as more valuable by citizens when they consistently meet their needs, respond promptly to their inquiries, deliver information accurately, and realize citizen needs when they call (Alruwaie et al., 2020; Li & Shang, 2020; Parasuraman et al., 1988). Service delivery parameters are essential because technology alone cannot provide public value; service delivery quality through digital channels should be equally, if not more, important. Digital government systems have to take user requirements into consideration by having consistent performance, responsive support systems, and clear communication that is easy to understand and follow. The three quality dimensions of service, which are assurance (assurance of competence and inspiring confidence) and empathy (empathy), were specifically relevant in case of government, as they may need differing levels of digital literacy including personal services and the needs of citizens.

6.1.4 Perceived Benefits

Perceived Benefits (citizens' evaluative beliefs of benefits gained from e-government services) is a significant influence on public value ($\beta = 0.174$). The Higher order outcome 'public value' is mediated by perceived benefits, the service delivery attribute is of efficiency, service delivery parameters and openness. The present results are consistent with the most recent research on e-government that considers perceived value as a mediator between service quality and behaviour results (Pham et al., 2023; Li & Shang, 2020). At first, citizens assess their personal benefits gained from the e-government services convenience, time savings, information and cost savings, and these assessments relate to their overall assessment of public value collective and democratic benefits, including transparency, accountability and trust in government (Alruwaie et al., 2020; Shareef et al., 2011). Outreach and communication about e-government should clearly identify and state the tangible benefits that citizens can expect from e-government services, as this will greatly impact public value. People must be aware of: what services are available, how these services save time, how these services save money and how services improve outcomes as compared to more traditional methods.

6.1.5 Trust as a Foundation of Public Value

Trust affects the people's values greatly ($\beta = 0.168$), confirming the crucial importance of institutional confidence and their perceptions of safety in shaping citizens' value judgments (Bélanger & Carter, 2008; MacLean & Titah, 2021; Mensah et al., 2024). Trust in government institutions and trust in data protection and privacy protections necessary preconditions for valuing things in digital governance contexts where

citizens are expected to share sensitive information are essential components of making the trust feel valuable. The relevance of trust reveals that trust is vital for digital government endeavors; thus, efforts must place an emphasis on cybersecurity, data protection, privacy protection, and clear data governance policies. Mechanisms of building trust through third-party security certifications, explicit privacy policies in lay language and transparent mechanisms for notifying of data breaches enable citizens to increase confidence in digital government services.

6.1.6 Quality of Information and System Quality

However, information quality ($\beta = 0.147$) and system quality ($\beta = 0.112$) have the relatively limited consequences for public value. These results suggest that accurate, complete and timely information and trustworthy and user-friendly systems are important, but they are less important than efficiency, transparency and quality of service in influencing public value perceptions. In contrast, the less impact of system quality indicates citizens may be open to overlook small technical imperfections if e-government services achieve satisfactory performance on efficiency, transparency, and service quality dimensions. This should not be taken as a sign that the effectiveness of systems is declining, as poor system quality can result in large barriers to access and use. Instead, the result indicates that when the system quality level is reached, additional system quality improvements may be less effective than investing in efficiency, transparency, and service quality.

6.1.7 Public Value as a Mediator of Change

Public value plays a crucial mediating role in the relationship between service characteristics and adoption intentions, as evidenced by the significant effect it has on citizens' intentions to use digital government services ($\beta = 0.756$). The findings provide empirical support for public value theory's core principle that people are more inclined to support and make use of digital government initiatives that they believe create substantial public value (Bryson et al., 2014; Moore, 1995; Stoker, 2006).

The high R^2 value for public value (0.68) indicates that the seven antecedent factors collectively explain 68% of the variance in public value perceptions, demonstrating the comprehensiveness of the PVEGAM framework. Likewise, the R^2 value of 0.57 for adoption intentions means that public value accounts for 57% of the variance in citizens' intentions to adopt e-government services, thus the public value construct has good explanatory validity. Such findings have theoretical implications. They thus highlight that in order to understand e-government adoption, it is necessary to move beyond technology-centric models (TAM, UTAUT) to value-centric frameworks that clearly describe and measure public value. This mediating effect of public value implies that service feature conditions do not directly influence adoption intentions but influence people's perceptions of the value created by e-government services. This finding is a positive

reminder for the necessity of developing e-government projects which explicitly consider public value creation at different levels.

Thus, the study extends prior research in several ways. First, it provides empirical validation of the PVEGAM framework in an emerging economy context (India), addressing the geographic concentration of digital government research in developed countries. Second, it shows the relative importance of different determinants of public value, helping to inform decisions on prioritization of investments and policies. Third, with a large sample size and strong statistical analysis, it establishes public value as a mediator, thereby consolidating the empirical grounding of public value theory in digital government contexts.

6.2. Theoretical Implications

This study makes several important theoretical contributions to e-government and public value literature.

First, it is important to examine the PVEGAM model in the Indian context, as it testifies to its generalizability and robustness in an emerging economy. PVEGAM was developed and empirically verified by Mensah et al. (2024), and this study offers independent empirical validation in a different geographic and institutional context with distinct governance challenges, infrastructural constraints, and socio-cultural variances. Such cross-context validation reinforces the generalizability of the PVEGAM framework and its efficacy for explaining e-government implementation in a variety of contexts.

6.2.1 Public Value as a Mediating Mechanism

Second, the research empirically proved that public value is the primary mediator that connects service attributes (service delivery parameters, efficiency, transparency, information quality, system quality, trust, and perceived benefits) with citizens' intentions to adopt services. These results contribute to insights in public value theory by identifying causal processes by which e-government services shape citizen decision-making. There is no direct influence of service characteristics on adoption intentions, but service characteristics are able to influence adoption intentions because they are part of the constructs based on how perceptions of public value can determine adoption intentions. This mediating role turns public value into an important explanatory factor in e-government adoption models.

6.2.2 Extension of E-Government Adoption Theory

Third, the research furthers e-government adoption theory by revealing the limitations of technological models (TAM, UTAUT) as well as the merit of value-centric frameworks when investigating e-government effectiveness. Although acceptance models emphasize the perceived usefulness and the ease of using technology in general, it can be seen that public values as well as their adoption intentions are influenced

more generally by an array of factors, such as transparency, trust, quality of service, and efficiency. The high explanatory value for the PVEGAM model ($R^2 = 0.68$ for public value and $R^2 = 0.57$ for adoption intentions) is an encouraging conclusion which argues for a multidimensional, public value-focused strategy in predicting e-government adoption.

6.2.3 Identification of Key Public Value Drivers

Fourth, this paper identifies the factors of public value, comparing their relative importance and thereby providing a theoretical picture of which are the most influential in shaping citizens' perceptions of value. Efficiency and transparency as first and second predictors of public value, followed by service delivery parameters, perceived benefits, trust, information quality, and system quality, respectively, implies that other components of e-government (efficiency, transparency, service quality) matter more for the creation of public value than its technical dimensions (system quality). This rank is useful for theoretical interpretation of the "multidimensionality" of public value and for the relative importance of certain value dimensions.

6.3. Theoretical Contributions: Distinguishing Service Attributes from Public Value Outcomes

From a theoretical perspective this study is significant as it clearly seems to separate service and system attributes and public value outcomes in the context of e-government. A common problem in the field of e-government studies is the conceptual and measurement overlap of the service quality dimensions on the one hand and outcome constructs like public value, satisfaction and net benefits on the other. For example, if efficiency concerns the time, effort and ease in performing the transaction, then it can be considered a service quality attribute. It can also be viewed as a component of 'public value', if it reflects government effectiveness and responsiveness as a whole. Likewise, when there is no clear distinction between outcome-based evaluations and normative standards, and between norm-based evaluations and perceived benefits, the constructs expectations, user orientation and perceived benefits can sometimes be confused.

The present study tries to remove these concern of construct-validity by justifying each construct by clearly defining and placing it in the appropriate location within the proposed causal model. Efficiency, service delivery parameters, openness, information quality and system quality are considered as antecedent service/system attributes. These constructs are the ones reflecting the attributes of e-government platforms from citizens' interactions with digital public services. The positioning is based on the information systems success model (ISSM), which distinguishes its system quality, information quality, and service quality constructs from outcome constructs like use, user satisfaction, and net benefits (DeLone & McLean, 2003).

But public value is viewed as an outcome-based construct which reflects citizens' judgments on the general outcomes and impact of e-government services. It mirrors citizens' perception of new means and values from their engagement with digital government services on the individual, administrative and democratic levels. Under this definition public value can be viewed as such as improvements in usefulness of service, responsiveness of administration, effectiveness of public service, transparency and citizen oriented governance. This conceptualisation is closer to a public value theory and the literature on 'e-government', which argues that public value is a more general result of public service transformation instead of being a narrow technical component in delivering public services (Moore, 1995; Twizeyimana & Andersson, 2019, Agbabiaka, 2018).

A valuable aspect of the study is the distinction between the service attributes—efficiency—and outcomes—public value. The efficiency used in the model is defined as citizens' feeling of faster transactions, less effort, more ease and less procedural obstacles in using e-government platforms. However, the public value is the citizens' holistic view that digital government services have contributed to improved effectiveness, responsiveness, transparency and benefit of governance. This distinction minimizes the problems of construct "confusion" as well as helps increase theoretical clarity of the model.

The latter is reconceptualisation of the construct named "User Expectations" or "User orientation". The earlier label could potentially elicit normative expectations or anticipatory standards in evaluating service performance as typically mentioned in the service quality literature (e.g., Parasuraman et al., 1988), which could cause a construct-validity issue. In this study construct was better formulated as Perceived Benefits as it is evaluative beliefs held by citizens as regards to the benefits to be gained from e-government service usage. In this way, the relabelling adds to the conceptual clarity of the construct by providing insight into what is perceived as being useful, convenient, offering an advantage to the service and delivering gains to the user, instead of merely being expected that things ought to work that way or vice versa.

Emphatical validation of the model was also conducted to provide theoretical constructs for the model. Based on results of the discriminant validity test, it was found that the constructs leading to the research were sufficiently different from each other, both the construct of efficiency and public value, and the construct of perceived benefits and public value. These constructs are considered as capturing distinct, but related, theoretical areas as their acceptable HTMT values suggest. This validates the proposed Public Value E-Government Adoption Model and minimises the problem of contamination of measurements.

In general, the design of this study helps to bring a more distinct conceptual separation between the attributes of the service provided through platforms, and the public value delivered to citizens. In this way,

it provides a more detailed model for understanding citizen assessments of digital government services (DGS) and how the nature of digital government service is related to citizens' public value judgments. The findings may help inform subsequent e-government research in the creation of less polluted measurement constructs, in preventing conceptual overlap, and lay the groundwork for testing of the more defensible theoretical relationships between e-government service quality, perceived benefits, public value, and intention to use e-government services.

7. POLICY IMPLICATIONS

The findings of this research have a number of actionable implications for policy that need to be taken by government agencies, policymakers and e-government practitioners. It should be taken into account by them in order to improve the effectiveness as well as to maximize public value created from digital governance development initiatives.

Prioritize Efficiency Enhancement

As efficiency was identified as the main predictor of public value, e-government projects must focus on streamlining processes, lowering transaction time, reducing transaction delay and procedural complexity. Policymakers ought to be focusing on process reengineering, workflow optimization and infrastructure improvements to improve the efficiency and convenience level of digital services and to reduce their costs and speed up the processes. Specific strategies include:

- Streamlining workflows to reduce multi-phase procedures.
- Real-time processing and instantaneous service delivery whenever possible.
- Enabling/ Permitting 24/7 service availability for citizen convenience.
- Integration between departments to minimize multiple applications.
- Offering mobile-optimized offerings to allow for access wherever the person wants.

This is evidenced by initiatives in India like Single Window Clearance System, instant PAN card issuance and real-time processing of tax refund which prove that this is an increasingly efficient way of increasing public value perception.

7.1. *Enhance transparency and openness*

Given that transparency affects public value in such a powerful way, open data policies, transparent communications and accountability mechanisms become key. Policymakers should:

- Compile service standards, processing times, and performance metrics on e-government websites.

- Develop real-time tracking systems to enable citizens to track the status of their service requests.
- Include readily accessible channels for feedback, complaints, and grievance redressal.
- Provide government data in open, machine-readable formats that can be watched by the general public and allowed for innovation.
- Clearly explain how citizen data are collected, used, and protected.
- Regularly release performance reporting and accountability measures.

Examples of these strategies include the Right to Information (RTI) portal of India, open data platforms and monitoring service delivery.

7.2. Invest in Service Quality and Citizen-Centric Design

The direct correlation indicates that service delivery parameters create significant public value, which should be emphasized through all e-government service design on four fronts: reliability; responsiveness; assurance; and empathy. Policymakers should:

- Perform user research and usability testing to assess citizen needs and desires.
- Develop user-friendly, intuitive interfaces that cater to different stages of digital literacy.
- Give multilingual support so it can be used by non-English speakers.
- Provide an array of different access to services (web, mobile apps, kiosks) to cater for different preferences.
- Implement responsive helpdesk and customer service mechanisms.
- Collect and process feedback frequently from citizens to continuously improve the quality of service.

The principles of citizen-centric design should be used to orientate across all stages of e-government development, ranging from needs assessment and system design, to implementation and refinement processes, to the improvement itself.

7.3. Build trust through security and privacy protections

E-Government initiatives such as cybersecurity, data protection and transparent data governance can only go a long way toward securing and preserving the very important role which trust plays in public value. Policymakers should:

- Ensure strong security features in cyber-security (encryption, secure authentication, intrusion detection).
- Adhere to data security regulation and international standards.
- Communicate privacy policies transparently in simple language.

- Give citizens power over their data. This includes, for example, the option to access, correct, or delete personal data.
- Implement clear data breach notification policies.
- Achieve third-party security certifications for added credibility.

In the Indian context, actions such as the Digital Personal Data Protection Act, cybersecurity frameworks or data localization policies have emerged as major steps towards improving trust in all types of services provided by digital government service providers.

7.4. Communicate perceived benefits clearly

A significant number of benefits from which citizens may expect to take advantage are shown to have a strong positive effect on public value. Policymakers should:

- Create targeted communications campaigns emphasizing time savings, convenience, cost savings, and better service quality.
- Showcase real-world advantages with testimonials and case studies.
- Show comparative data demonstrating the benefits of digital services compared to traditional outlets.
- Provide a reward system on this front - faster processing, cheaper fees for early adopters.
- Mobilize community leaders and influencers to raise awareness of digital governance initiatives so that it can enhance citizens' intention of adopt and utilize the digital platforms for availing the government services.

Efficient communication strategies can build citizens' knowledge about the advantages of e-government and encourage adoption, particularly among those with low levels of digital literacy and inadequate or no experience with digital services.

7.5. Ensure information and system quality

Although information quality and system quality had relatively weaker influences on public value, they are still fundamental foundations of effective e-government. Policymakers should:

- Develop assurance mechanisms regarding quality of information by guaranteeing correctness, completeness and timeliness.
- Update content frequently to ensure relevance.
- To reduce downtime, make proper investments in infrastructure and system maintenance.
- Perform routine user testing and performance monitoring.
- Allow for cross-device, cross-browser compatibility.

- Optimize system performance in low bandwidth environments.

It is vital to establish baseline standards for the quality of information and systems to prevent obstacles to access and to foster good user experiences.

7.6. *Adopt a public value framework for e-government evaluation*

Because of the substantial mediation effect of public value, the e-government evaluation models as well as their assessment tools should also be encouraged to explicitly measure the public value creation and performance across multiple dimensions (the latter in a technology-centred way by looking at e-government indicators such as adoption rates and system performance) rather than technology-centered measures. Policymakers should:

- Create a detailed evaluation framework across efficiency gains, service quality improvements, transparency improvements, trust building, and citizen satisfaction.
- Conduct citizen surveys to gauge the perception of public value and identify opportunities for continuous improvement.
- Use public value metrics for investment decision-making and initiative prioritization.
- Publish public value performance reports that show accountability and impact.

Using a public value framework for evaluation ensures e-government initiatives are grounded in their purpose to create value in order to help citizens and society.

8. LIMITATIONS AND FUTURE RESEARCH DIRECTIONS

Although this study makes significant theoretical and practical contributions, there are a number of limitations that should be considered and, in relation to these limitations, points to potential research directions.

8.1. *Cross-Sectional Design:*

First, the study uses a cross-sectional design and gather data from one point in time. This design limits the ability to make causal inferences and does not capture changes in public value perceptions and adoption intentions over time. Future research should employ longitudinal designs to examine how public value perceptions evolve as citizens gain experience with e-government services and as digital platforms mature and improve. Longitudinal studies can also investigate the stability of the relationships identified in this study and examine whether the relative importance of different public value determinants changes over time.

8.2. Convenience Sampling:

Second, the study sample consisted of convenience sample making it difficult to generalise the results to the broader population of users of e-government in India. Convenience sampling used in this study could introduce selection bias although the final sample size was deemed to provide an adequate size for structural equation modelling and adequate statistical power for hypothesis testing. There is a risk that respondents who voluntarily fill out online surveys are different from those who do not respond, on factors such as education, digital literacy, Internet access, familiarity with digital practices, and attitudes towards digital government services.

There was also a strong youth bias, with most being highly educated and active with digital technologies. In particular, a high percentage of the respondents were from the age group 20-39 and most of them were graduate and post graduate. Results indicated in this profile apply mainly to e-government users that are digital literate and relatively educated. Hence, caution should be exercised when generalising to rural citizens, less educated groups, emails and to older citizens who have limited access to digital technologies.

The future research is needed to be done with more representative sampling like stratified random sampling, quota sampling, or multi-stage sampling methods. These solutions would enable scientists to incorporate responses from people in various locations, age groups, categories of education, income as well as materials regarding their digital literacy. Mixed-mode data collection, which means collecting data online and offline or indirectly, such as in a rural or semi-urban field should also be considered in future studies. This will make it easier to engage citizens with a usage experience across e-government services via common service centres, intermediaries or assisted digital access facilities.

8.3. Self-Reported Data:

Third, the research uses self-reported questionnaire data, which have certain biases related to common method bias, social desirability bias, and recall bias. Although statistical tests (Harman's single-factor test) find common method bias not to be a major issue, future studies may pursue mixed-methods approaches involving surveys alongside tangible behavioral data (e.g., real usage logs, transaction records), and qualitative interviews to triangulate findings and add richer data on citizens' experiences and perspectives.

8.4. Geographic Context:

Fourth, the study is adapted from India, and although the study offers important insights in the context of an emerging economy, its findings may not be entirely generalizable to other countries with different institutional realities, forms of governance, cultural attitudes, and levels of digital infrastructure. The study

should be replicated in other developing and richer nation contexts in subsequent research in order to explore cross cultural contrasts on public value perception and predictors of e-government uptake. Comparison studies are able to reveal universal drivers of how public value perceptions develop across different settings as well as context-dependent drivers that call for relevant policy strategies.

8.5. *Limited Examination of Moderating Factors:*

The study fails to investigate if there are any moderating effects that might affect relationships between public value determinants and public value perceptions.

The effects of service features on public value perceptions may be mitigated by variables like citizens' digital literacy, past digital government experience, age, education, and geographic location (rural vs. urban). To determine which citizen segments, respond best to various public value drivers and to guide the development of focused interventions, future studies should examine these moderating effects.

Emerging Technologies:

The study does not specifically look at cutting-edge technologies like blockchain, big data analytics, artificial intelligence, or the Internet of Things; instead, it concentrates on existing digital government services. Through increased efficiency, transparency, predictive power, and personalisation, these technologies have a great deal of potential to improve the creation of public value (Criado & Gil-Garcia, 2019). Future studies should study the impact of new technologies on public value perceptions and adoption intentions, and potential ways through which they are to be properly embedded and incorporated into e-government platforms to generate public value.

8.6. *Qualitative Insights:*

Seventh, the quantitative method yields strong statistical evidence that constructs inter-relate, but does not tell a full story about the local and context-specific experience of citizens. Future research should use more qualitative methods (interviews, focus groups, and case studies) to take a better and further understanding into how citizens' experience and view of public value in e-governance. Methods of qualitative investigation have the potential to reveal barriers to uptake, uncover unmet needs and in the process supply much more context rich information for policy design.

8.7. *Public Value Co-Creation:*

Finally, the present study focuses on the citizens as recipients of e-government services. It neglects to consider citizens as co-creators of public value. New studies highlight the potential for citizens to actively be involved in co-design, co-producing and co-evaluating public services and thus contribute to the

creation of public value (Criado & Gil-Garcia, 2019; Roy, 2019). Further research should investigate, in e-government, mechanisms for citizen participation and co-creation and how participatory modes of engagement shape public perceptions of value, and intentions to introduce and adopt them.

9. CONCLUSIONS

The study has analysed the factors affecting public value in digital government use on the citizens' behalf by using the Public Value E-Government Adoption Model (PVEGAM) framework in the Indian context. Drawing on survey responses of active users of digital government services, the study offers strong empirical evidence that service delivery characteristics including efficiency, transparency and openness, information quality, system quality, trust and perceived benefits play significant roles on citizens' perceptions of public value and have a significant influence on citizens' intention to adopt digital services. The results have shown that efficiency and transparency show a significant role for public value as well as service delivery parameters, followed by perceived benefits and trust, information quality and system quality. Public value facilitates 68% of the variability in the adoption intention of citizens, suggesting that public value is a critical mediator between service characteristics and adoption intention. These findings confirm the PVEGAM framework in a developing economic context, extending public value theory by empirically identifying the main drivers of public value in digital government services. This research theoretically addresses e-government and public administration literatures by showing the inadequacies presented by technology-centred adoption models but the merits of value-centred approaches that deliberately articulate and evaluate public value. The study places public value as an important explanatory variable to be considered in the context of e-government adoption arguing that digital government services are adopted not only due to the technological or user-friendliness, but by citizens themselves, who perceive these services to deliver substantial value in the dimensions of efficiency, transparency and service quality, trust and responsiveness. Practically, the study provides practical implications to policymakers and public administrators aiming to strengthen the functionality of digital governance projects. The findings highlight the need for focusing on: efficiency improvements, transparency measures, service design based on citizen needs, trust-building measures and communicating advantages in a way that ensures the citizens know they can trust the public to act in their best interest. This is where adopting a public value framework towards the design, implementation and evaluation of e-government enables governments to optimize and extract value from e-government services for citizens and ultimately improve e-government adoption, satisfaction and governance outcomes in the country. Against the backdrop of India's ambitious Digital India initiative, this research offers evidence-informed guidance to promote the designing and implementation of digital services that are authentic in the sense of creating public value and catering to citizens' needs and expectations. With

digital transformation still reshaping governance at scale globally, identifying and aligning with public value creation will be key to delivering promising e-government initiatives for better service delivery, greater transparency, and stronger citizen-government relationships. Future research should take this work forward in longitudinal studies, cross-country comparisons, moderating factors, emerging technologies, and qualitative exploration of citizens' experiences. As the theoretical understanding of public value in e-government continues to advance and practitioners gain practical knowledge about it, one can also contribute to the development of more effective and inclusive models of citizen-centered digital governance. Hence, by focusing on citizens, governments can better align their policy objectives with societal needs. This harmonization ensures that digital initiatives do not merely serve administrative efficiency or institutional goals, but also create tangible public value such as greater inclusion, fairness, accountability, and improved quality of life. In this way, citizen-centric digital services become a crucial mechanism for achieving meaningful governance outcomes, where technology acts as an enabler of stronger relationships between governments and the people they serve, rather than as an end in itself.

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