IMPACT OF DIGITAL TRANSFORMATION ON GOVERNANCE WITH REFERENCE TO SELECTED STATE GOVERNMENT SCHEMES OF INDIA

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GOPAL MOHAN

(2K20/PHDUIEV/03)

Under the Supervision of

Dr. NIDHI MAHESHWARI

Associate Professor, Delhi Technological University

Department of University School of Management and Entrepreneurship

DELHI TECHNOLOGICAL UNIVERSITY

(Formerly Delhi College of Engineering)

Shahbad Daulatpur, Main Bawana Road, Delhi 110042, India

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Gopal Mohan

CANDIDATE'S DECLARATION

I Gopal Mohan, hereby certify that the work which is being presented in the thesis entitled "Impact of Digital Transformation on Governance with Reference to Selected State Government Schemes of India," in partial fulfilment of the requirements for the award of the Degree of Doctor of Philosophy, submitted in the Department of University School of Management and Entrepreneurship, Delhi Technological University, is an authentic record of my own work carried out during the period from 26 August, 2020 to 10August, 2025, under the supervision of Professor Nidhi Maheshwari.

The matter presented in the thesis has not been submitted by me for the award of any other degree of this or any other institute.

Gopal Mohan
(2K20/PHDUIEV/03)

UNIVERSITY SCHOOL OF MANAGEMENT AND ENTREPRENEURSHIP
DELHI TECHNOLOGICAL UNIVERSITY
SHAHBAD DAULATPUR, MAIN BAWANA ROAD DELHI-110042 (INDIA)

CERTIFICATE BY THE SUPERVISOR

Certified that Gopal Mohan (2K20/PHDUIEV/03) has carried out the research work presented in this thesis entitled "Impact of Digital Transformation on Governance with Reference to Selected State Government Schemes of India" for the award of the degree of Doctor of Philosophy from the University School of Management and Entrepreneurship, Delhi Technological University, Delhi, under my supervision.

The thesis embodies the results of original research work carried out independently by the candidate. The contents of the thesis have not been submitted in part or full for the award of any other degree or diploma to this or any other University/Institution by the candidate or by anyone else.

Dr. Nidhi Maheshwari
Associate Professor, USME
Delhi Technological University
New Delhi

Date: _____

Place: New Delhi

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Gopal Mohan

ABSTRACT

In the contemporary landscape of public administration, the integration of digital technologies into governance systems has emerged as a transformative force capable of redefining the relationship between the state and its citizens. While numerous studies acknowledge the potential of digital tools to enhance transparency, accountability, and service delivery, there exists a substantial gap in understanding the mechanisms through which digital transformation leads to good governance outcomes—particularly in the context of developing nations like India, where administrative complexity and socio-political diversity pose unique challenges. This doctoral research addresses this critical gap by investigating the multidimensional influence of digital transformation on governance within the Indian public sector, focusing specifically on selected state government schemes.

The central objective of this study is to develop and empirically validate a comprehensive conceptual framework that captures how digital transformation initiatives contribute to the transformation of government operations and the realization of good governance principles. The study explores five interlinked constructs: digital transformation, government transformation, citizen engagement, trust in public institutions, and digital public service delivery—each playing a distinct yet interconnected role in influencing governance outcomes. This framework is grounded in a robust theoretical foundation, drawing from the Technology–Organization–Environment (TOE) framework, institutional trust theory, participatory governance, and service-dominant logic. By combining these perspectives, the study constructs a nuanced lens through which digital transformation can be understood not merely as a technological upgrade but as an institutional process of structural change.

The methodology adopted in this research follows a post-positivist paradigm with a quantitative approach, leveraging Structural Equation Modeling (SEM) to assess the relationships between the latent constructs. Primary data was collected from 540 respondents across different regions of India, all of whom were stakeholders in or beneficiaries of key state government digital schemes, including e-governance portals, digital welfare platforms, and ICT-enabled public service programs. The constructs and measurement scales used in the study were rigorously validated using confirmatory factor analysis (CFA), ensuring reliability and construct validity. This empirical investigation facilitates a structured understanding of the causal relationships and mediating effects present in the framework.

The results provide compelling evidence for the transformative potential of digital governance. Firstly, the analysis confirms that digital transformation has a direct and significant impact on government transformation, wherein digital tools enable more agile, transparent, and responsive administrative systems. This finding validates the conceptualization of digital infrastructure not just as an enabler of automation, but as a foundational driver of systemic reform. The digitization of workflows, automation of processes, and data-driven decision-making systems contribute to enhancing the agility and responsiveness of public institutions.

Secondly, the study underscores the centrality of citizen engagement in the digital transformation process. E-participation tools such as feedback systems, online complaint redressal mechanisms, and participatory budgeting platforms have significantly altered the modes of interaction between governments and citizens. The analysis shows that citizen engagement is positively correlated with government transformation, suggesting that inclusive, participatory processes catalyze institutional responsiveness. These findings reinforce the principles of open governance and participatory democracy by highlighting the co-productive role of citizens in shaping policy outcomes.

Thirdly, trust and confidence in public institutions emerge as both antecedents and consequences of successful digital transformation. The study reveals that trust mediates the relationship between digital transformation and governance

transformation, emphasizing that technology alone is insufficient unless supported by public confidence in institutional intent and competence. Transparent data policies, cybersecurity protocols, and visible accountability measures are essential to maintaining trust in digital initiatives, especially in contexts marked by past failures or low institutional credibility.

Fourthly, the research establishes that digital public service delivery serves as both a driver and an outcome of transformational governance. Efficient, accessible, and citizen-centric service delivery—enabled by digital tools such as unified service portals, mobile apps, and real-time dashboards—enhances the perceived legitimacy of the government. The empirical analysis supports the proposition that high-quality digital services not only fulfill governance functions but also reinforce trust and encourage continued engagement, creating a virtuous cycle of digital reinforcement.

Finally, the study concludes that transformation of government operations acts as a mediating mechanism through which digital initiatives translate into good governance outcomes. These outcomes—defined in terms of transparency, efficiency, accountability, responsiveness, and equity—are significantly shaped by how well digital tools are embedded into institutional processes. The thesis, therefore, positions digital transformation not as a one-time technical project but as a continuous, adaptive journey involving institutional redesign, capability building, and stakeholder alignment.

From a theoretical standpoint, this research contributes to multiple academic streams. It strengthens the TOE framework by incorporating governance-specific constructs and empirically testing their relationships in a developing country context. It also advances participatory governance theory by demonstrating the operational mechanisms through which digital engagement influences institutional behavior. The integration of trust as both a variable and a condition within the framework adds to institutional trust literature, particularly in public sector innovation. Moreover, by linking digital public service delivery to governance legitimacy, the study enriches service-dominant logic in the domain of public administration.

The practical implications of this research are manifold. For policymakers and public administrators, the study provides a strategic blueprint for designing and implementing digital transformation initiatives. It advocates for a holistic approach that combines technical infrastructure development with organizational restructuring and citizen-centric process design. Specific recommendations include: developing interoperable and scalable digital platforms, ensuring data transparency through dashboards and open APIs, integrating grievance redressal with real-time response systems, and embedding digital literacy programs to bridge usage gaps. Furthermore, institutionalizing digital governance requires re-skilling bureaucracies, setting performance benchmarks through digital KPIs, and fostering cross-departmental collaboration.

Despite its contributions, the thesis acknowledges several limitations. Its cross-sectional design limits the ability to observe long-term impacts or causality over time. The focus on selected schemes may restrict the generalizability of findings to all sectors or tiers of government. Moreover, while the study adopts a quantitative approach to establish empirical relationships, it does not delve into the experiential or contextual nuances that qualitative methods might reveal. Future research should explore longitudinal models, inter-state comparisons, and multi-level governance structures. Additionally, examining the role of political leadership, change management, and organizational culture can provide richer insights into the enablers and barriers of digital transformation.

In conclusion, this thesis advances the scholarly and practical understanding of how digital transformation can serve as a vehicle for governance reform in complex public sector environments. By unpacking the interplay between technology, institutions, and citizens, it offers a comprehensive model for leveraging digital tools to foster inclusive, transparent, and effective governance. In a world increasingly shaped by digital realities, the findings underscore the imperative for governments to move beyond technology deployment toward institutional transformation and citizen empowerment. This research, thus, contributes not only to academic knowledge but also to the strategic discourse on public sector innovation and democratic deepening in the digital age.

LIST OF PUBLICATIONS

Published Papers

- Research paper titled “Digital Transformation in Governance: Preconditions for Achieving Good Governance” accepted for publication in Electronic Government, an International Journal (ESCI, Scopus Indexed)
- Research paper titled “The Impact of Digital Transformation on Governance: Evidence from India” accepted for publication in Public Policy and Administration (SSCI IF- 3.5, ABDC- B, SCOPUS Indexed) DOI: 10.1177/09520767251355715
- Case study published titled “Doorstep Delivery Mechanism of Public Services: Success Story of Delhi”. SAGE Publications: SAGE Business Cases Originals. DOI: https://doi.org/10.4135/9781071927984

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF ABBREVIATIONS

Abbreviation/Short Form		Full Form
AI	:	Artificial Intelligence
ABDM	:	Ayushman Bharat Digital Mission
API	:	Application Programming Interface
Aadhaar	:	Aadhaar (Unique Identification Number issued by UIDAI)
CSC	:	Common Service Centre
CPGRAMS	:	Centralized Public Grievance Redress and Monitoring System
DBT	:	Direct Benefit Transfer
DPI	:	Digital Public Infrastructure
DT	:	Digital Transformation
E-Governance	:	Electronic Governance
e-District	:	Electronic District Services Platform
e-NAM	:	Electronic National Agriculture Market
e-PDS	:	Electronic Public Distribution System
G2C	:	Government to Citizen
GIS	:	Geographic Information System
ICT	:	Information and Communication Technology
IoT	:	Internet of Things
INR	:	Indian Rupee
IT Act	:	Information Technology Act
JAM Trinity	:	Jan Dhan–Aadhaar–Mobile Trinity
KPI	:	Key Performance Indicator
ML	:	Machine Learning
NGO	:	Non-Governmental Organization
OECD	:	Organisation for Economic Co-operation and Development
OTP	:	One-Time Password
PLS-SEM	:	Partial Least Squares – Structural Equation Modelling
PPP	:	Public–Private Partnership
PRAGATI	:	Pro-Active Governance and Timely Implementation
RTGS	:	Real-Time Governance Society
RTI	:	Right to Information
SEM	:	Structural Equation Modelling
SLR	:	Systematic Literature Review

Abbreviation/Short Form		Full Form
SMS	:	Short Message Service
TOE	:	Technology–Organization–Environment Framework
UIDAI	:	Unique Identification Authority of India
UMANG	:	Unified Mobile Application for New-age Governance
UNDP	:	United Nations Development Programme
UNESCAP	:	United Nations Economic and Social Commission for Asia and the Pacific
UPI	:	Unified Payments Interface
WoS	:	Web of Science
AVE	:	Average Variance Extracted
CB-SEM	:	Covariance-Based Structural Equation Modelling
CR	:	Composite Reliability
HTMT	:	Heterotrait–Monotrait Ratio
IF	:	Impact Factor
OLS	:	Ordinary Least Squares
R^2	:	Coefficient of Determination
SRMR	:	Standardized Root Mean Square Residual
VIF	:	Variance Inflation Factor

CHAPTER 1

INTRODUCTION

1.1 Introduction

This study embarks on an inquiry by exploring the interplay between digital transformation and governance within selected state government schemes in India, with a keen focus on service delivery, citizen trust, and institutional accountability (Janowski, 2015). The study examines how digital interventions improve governance outcomes such as service delivery, transparency, citizen trust, accountability, and inclusiveness, and also examines whether digitalization, i.e., going beyond mere automation, is leading to a more responsive, participatory, and citizen-centric model of governance (Twizeyimana & Andersson, 2019).

To develop a comprehensive understanding, the study integrates conceptual, analytical, and empirical approaches. It reviews the literature systematically, develops a conceptual framework, and carries out an empirical analysis within a structured research design. It applies the Technology Organization–Environment (TOE) framework to identify the essential preconditions for successful digital transformation (DePietro et al., 1990) and develops a governance performance model to evaluate outcomes such as transparency, responsiveness, and service delivery (Dwivedi et al., 2019).

The subsequent section provides an overview of the study's background, whereas Section 3 dives into the reason for carrying out this research. Sections 4 and 5, respectively, introduce the research questions and research objectives. Section 6 elaborates on the study's scope, and Section 7 gives an account of the methodology employed. The next section describes the thesis arrangement.

1.2 Background of the Study

Governments across the world are increasingly relying on digital technologies to enhance their governance frameworks (Dunleavy et al., 2006). India, with its demographic diversity and federal structure, has been at the forefront of adopting and adapting digital governance initiatives with the aim to improve and optimise public service delivery, to reduce bureaucratic inefficiencies, and to foster citizen

engagement (Bhatnagar, 2004). From the ambitious *Digital India* mission to state-specific e-governance initiatives, the country is witnessing a paradigm shift in the way public administration functions. This transformation is not merely technological it signifies a broader change in governance philosophy, shifting from process-centric models to citizen-centric ones (Chandran & Prakash, 2021).

Yet, as we celebrate the reach of Aadhaar-enabled services, direct benefit transfers (DBTs), and mobile governance, a critical question lingers *to what extent have these digital transformations led to better governance outcomes*? Despite the proliferation of digital infrastructure and platforms, challenges persist in areas such as transparency, inclusivity, accountability, and citizen trust (Heeks, 2018). This study aims to explore this intersection where digital transformation meets the ethos of good governance, with a special focus on state-level schemes in India (Singh et al., 2020). The intent is to assess whether digitalization has moved beyond being a tool for automation and evolved into an enabler of democratic, responsive, and ethical governance (Misuraca et al., 2020).

Being personally part of the governance in a state in India provided an invaluable opportunity to gain exposure to different crucial aspects of governance right from the collecting, analysing and understanding the problems and requirements of the citizens to the processes (or lack thereof) in governments to address them (Grimmelikhuijsen & Meijer, 2014). As any initiatives taken up by governments (need to) undergo scrutiny both pre and post implementation, there exists an implicit requirement for justification in terms of the specific verifiable benefits to the citizens or internal processes (Margetts & Dunleavy, 2013). Exposure to the latest advancements in technology and a firsthand experience of the constraints faced during implementation of several innovative schemes and service delivery mechanisms provided motivation to undertake this research -- to explore in a formal manner the ways to quantify benefits resulting from the adoption or implementation of governance initiatives (Heeks, 2018).

1.3 The Concept of Governance

Governance, in its broadest sense, refers to the institutional processes, relationships, and structures through which public affairs are managed and collective goals are pursued (Kooiman, 2003). It goes beyond the conventional boundaries of government and encapsulates the mechanisms through which public authority is exercised, and

public resources are allocated and monitored. According to the United Nations Development Programme (UNDP, 1997), governance is "the exercise of political, economic and administrative authority in the management of a country's affairs at all levels." This definition highlights the multidimensional nature of governance, encompassing not only state institutions but also interactions with civil society, private sector actors, and citizens.

Modern scholarship has increasingly moved away from viewing governance as a top-down governmental function, instead conceptualizing it as a dynamic, interactive, and multi-actor process (Rhodes, 1996). Rhodes (1996) introduced the notion of "network governance," emphasizing the horizontal interactions among various stakeholders, while Pierre and Peters (2000) identified governance as the steering of society by political institutions, often through partnerships and coordination rather than direct control. These perspectives recognize the growing role of non-state actors in shaping policy decisions and delivering services, thereby expanding the traditional understanding of governance to include normative dimensions such as transparency, accountability, inclusion, and responsiveness (Stoker, 2018).

In the Indian federal structure, governance operates through a dual mechanism of central policy formulation and state-level implementation (Singh, 2015). While the Union Government lays down overarching developmental frameworks and allocates financial resources, the operational responsibility for executing schemes, ensuring last-mile service delivery, and managing local administration largely rests with state governments. As Mathew and Buch (2000) observed, state-level governance becomes the operational theatre where policies translate into citizen outcomes, thereby making state capacity a critical determinant of governance quality. The diversity across Indian states in terms of political commitment, administrative innovation, institutional maturity, and technological readiness adds complexity to this governance landscape (Kapur & Mehta, 2005).

Importantly, the evolving nature of governance in India is characterized by increasing decentralization, citizen engagement, and digital enablement (Sharma & Singh, 2021). The role of technology, particularly in the form of e-Governance and digital

platforms, has redefined the scope and speed of public service delivery (Chadwick & May, 2003). Initiatives like Aadhaar, Direct Benefit Transfers (DBT), and state-specific digital dashboards reflect how digital transformation is being harnessed to improve governance outcomes (Bhatnagar, 2004). These developments signify a shift from government-centric administration to a more participatory and technologically augmented model of governance (Norris, 2001).

State governments are, therefore, not merely administrative arms of the centre but serve as pivotal nodes where governance innovation, contextual adaptation, and citizen interface are most visible. Their capacity to design, adopt, and institutionalize digital interventions has a direct bearing on the effectiveness of governance and the realization of development objectives (Chakrabarty & Bhattacharya, 2008). Moreover, the success of centrally sponsored schemes often depends on the digital infrastructure, bureaucratic efficiency, and citizen trust established at the state level (Kapur & Mehta, 2005).

In sum, governance today is a complex, multi-scalar, and co-produced activity that integrates the formal institutions of the state with informal societal mechanisms and technological systems (Torfing et al., 2012). The term encompasses far more than administrative control it embodies the quality of interaction between state and society, the legitimacy of decision-making processes, and the effectiveness of service delivery mechanisms. This study, situated at the intersection of governance and digital transformation, particularly focuses on how selected Indian states have navigated this evolving terrain through the implementation of state-level schemes, and what this reveals about the changing architecture of public governance in the digital era (Misuraca et al., 2020).

1.3.1 Good Governance

Good governance is a multidimensional and normative concept that refers to the manner in which public institutions conduct public affairs and manages public resources in ways that are transparent, accountable, inclusive, and responsive to citizens' needs (Grindle, 2004). Unlike governance, which may merely denote the act of governing, *good governance* carries an ethical dimension it is not only about the

"how" of governance, but also about the "why" and "for whom." It signifies the presence of democratic values, rule of law, citizen empowerment, and efficient public service delivery, all harmonized to promote the public good (Rothstein & Teorell, 2008).

Over the past two decades, good governance has emerged as a central policy discourse in India (Mehrotra, 2019). It gained further momentum with the introduction of reforms under slogans such as "Minimum Government, Maximum Governance" and "Digital India," which aim to enhance administrative efficiency and citizen-centricity (Mehrotra, 2019). Notable policy initiatives such as the JAM Trinity (Jan Dhan–Aadhaar–Mobile), the PRAGATI platform (Pro-Active Governance and Timely Implementation), and Direct Benefit Transfers (DBT) are explicitly aligned with the principles of good governance, focusing on reducing leakages, improving accountability, and streamlining access to welfare services (Kumar & Sinha, 2021). However, while technology is often the enabler, good governance requires more than digital tools. It necessitates a shift in institutional culture, regulatory practices, and citizen–state relationships (Heeks, 2018).

As India transitions from a government-centric to a governance-centric model, it becomes critical to assess whether these initiatives truly embody the principles of good governance or simply digitize existing bureaucratic systems. The distinction lies in outcomes whether they lead to inclusivity, empowerment, and justice, or merely automate inefficiencies (Misuraca et al., 2020).

1.3.2 Pillars of Good Governance

The foundational pillars of good governance, as identified by prominent global institutions such as the World Bank (1994), UNDP (1997), and OECD (2001), offer a coherent and holistic framework for assessing the quality of governance systems (Andrews, 2010). These principles are not standalone benchmarks; rather, they are interdependent and mutually reinforcing, shaping the architecture of a governance system that is inclusive, equitable, transparent, and effective.

Transparency is a fundamental element of good governance (Hollyer et al., 2011). It ensures that decisions are made in accordance with established rules and that information is openly accessible to the public. This visibility reduces the scope for corruption, enhances trust in institutions, and enables citizens to engage in informed discourse. In the context of digital governance, transparency is exemplified through real-time data dashboards, proactive disclosure under the Right to Information Act, and open government data initiatives (Janssen et al., 2012).

Accountability complements transparency by making officials answerable for their actions and outcomes (Bovens, 2007). Institutions must be able to justify their decisions to citizens and to oversight bodies. Tools such as citizen charters, third-party evaluations, social audits, and e-governance portals have institutionalized accountability mechanisms (Fox, 2015). The emergence of digital grievance redressal platforms and performance-based dashboards has further streamlined the process of holding public officials accountable in real time (UNDP, 1997).

Participation, another critical pillar, ensures that governance processes are inclusive and democratic (Fung, 2006). It implies that citizens regardless of their socio-economic background have opportunities to influence decisions that affect their lives (Arnstein, 1969). This is operationalized through public consultations, decentralized decision-making processes, and digital feedback loops. The rise of mobile governance platforms and social media has dramatically expanded participatory channels, particularly for youth and marginalized groups (UNESCAP, 2009).

Equity and inclusiveness are essential to ensure that governance serves all citizens fairly, especially the vulnerable and underrepresented (Sabbagh et al., 2022). The digital divide, however, poses challenges to equitable governance (van Dijk, 2020). Efforts such as the establishment of Common Service Centres (CSCs), digital literacy programs, and targeted mobile governance initiatives have been pivotal in addressing these gaps (Aiyar & Bhattacharya, 2016).

Effectiveness and efficiency highlight the importance of timely, cost-effective, and outcome-oriented service delivery (Pollitt & Bouckaert, 2017). Governance systems must be responsive to public needs while optimizing resource utilization. Digital

innovations like e-offices, e-procurement, and direct benefit transfers (DBTs) have reengineered bureaucratic processes, significantly improved service delivery speed and reducing systemic leakages (World Bank, 1994).

The rule of law underpins governance legitimacy (Tamanaha, 2004). It mandates that legal frameworks be fair, consistently applied, and protective of fundamental rights. In digital governance, safeguarding data privacy, cyber security, and ensuring legal backing for digital identity systems are critical (Bhatia et al., 2021). Laws such as the Information Technology Act and the Aadhaar Act have sought to address these dimensions, although concerns about surveillance and data misuse persist (Singh & Jain, 2020).

Responsiveness ensures that institutions react swiftly and effectively to public needs (Vigoda, 2002). The growing adoption of real-time service delivery platforms such as the UMANG app and CPGRAMS has enhanced institutional agility. AI-based service desks and real-time tracking mechanisms have created new standards for citizen-centric governance, reinforcing the relevance of this pillar in the digital era (Misuraca et al., 2020).

Together, these pillars form the evaluative compass for this study. Their interplay with digital interventions lies at the heart of examining whether the transformation triggered by technology is indeed deep-rooted, or whether it is merely digitizing outdated structures without fundamentally reforming governance culture (Heeks, 2018).

1.3.3 Concept of Digital Transformation in Governance

Digital transformation in governance signifies a paradigm shift in how governments design, deliver, and monitor public services through the strategic adoption of digital technologies (Vial, 2019). It goes beyond the mere digitization of government services or the automation of administrative tasks; instead, it reimagines institutional functioning, policy frameworks, and citizen-government interactions through data-driven and technology-enabled mechanisms (Mergel et al., 2019). This transformation involves taking advantage of rapid advancements in cloud computing and big data

analytics while also integrating emerging technologies like Artificial Intelligence (for backend data management and analysis as well as citizen facing communication channels), Block chain (for transparent and immutable management of public records) into decision-making, service delivery, and citizen engagement. Importantly, it requires a reorientation of organizational structures, employee capabilities, and public sector values to ensure that technology adoption leads to better governance outcomes (Dwivedi et al., 2023).

In India, digital transformation is prominently visible in flagship initiatives such as the *Digital India* campaign, which aims to empower citizens through technology-led governance (Chandran & Prakash, 2021). Initiatives like e-NAM (electronic National Agriculture Market), e-PDS (electronic Public Distribution System), Direct Benefit Transfer (DBT), Ayushman Bharat Digital Mission (ABDM), and Chief Minister Helplines have redefined the contours of service delivery by improving efficiency, reducing leakages, and enabling real-time grievance redressal (Bhatnagar, 2004). State-specific innovations, such as Rajasthan's Jan Soochna portal or Andhra Pradesh's Real-Time Governance Society (RTGS), exemplify how digital tools are being tailored to regional governance needs (Sharma & Singh, 2021). However, the success of these interventions is often contingent on the presence of enabling infrastructure, digital literacy among beneficiaries, and the willingness of bureaucratic systems to adapt to new digital workflows (Gupta & Nayak, 2023). Thus, digital transformation is not just a technical endeavour but a socio-organizational process that must address existing structural inequities to become truly inclusive and transformative (Heeks, 2018).

1.3.4 Digital Transformation and Good Governance

The interface between digital transformation and good governance is increasingly gaining scholarly and policy attention, particularly in developing economies like India (Heeks, 2018). At its core, digital transformation holds the potential to reinforce the foundational pillars of good governance transparency, accountability, participation, equity, responsiveness, and rule of law by embedding technology into governance practices (UNDP, 2018). For instance, transparency is enhanced through open-data

portals, real-time performance dashboards, and digital public procurement systems that reduce information asymmetry (Janssen et al., 2012). Accountability is reinforced via traceable digital audit trails and automated grievance redressal platforms like CPGRAMS (Centralized Public Grievance Redress and Monitoring System) or Lok Samvaad platforms at the state level (Bovens & Zouridis, 2002).

Citizen participation is augmented by mobile apps, digital forums, and participatory budgeting tools that allow two-way interaction between governments and the public (Smith, 2009). Initiatives like MyGov, digital town halls, and interactive rural governance platforms enable citizens to co-create policies and monitor implementation. Inclusiveness is strengthened through Aadhaar-enabled services, GIS-mapped beneficiary tracking, and multilingual e-governance platforms that target vulnerable and remote populations (World Bank, 2022). Responsiveness improves as digital systems enable proactive service delivery, real-time alerts, and agile decision-making based on predictive analytics (Misuraca et al., 2020). Furthermore, the digitization of land records, court proceedings, and welfare entitlements contributes to the rule of law by ensuring fairness, standardization, and legal traceability (Tamanaha, 2004).

With the proliferation of smart computing devices (phones and tablets for example) and thus of messaging applications like WhatsApp, several governments consider these applications as the most suitable for both dissemination of information as well as offering of services without requiring the citizens to wade through and familiarise themselves with websites involving relatively complicated (for a lay person) authentication and other workflows (Mann, 2018). Usages of AI bots which can efficiently handle unstructured requests from citizens play an important role in adoption of such messaging applications for delivery of government services (Wirtz et al., 2019). While all services provided by a government may not directly be offered through such channels, the familiarity of conversational interfaces lets governments support simple and moderately complex interactions.

For services where physical verification of any documents or the physical presence of the citizen is required at a designated government office because of statutory

requirements fully-online processes have not been feasible. Also, citizens who are not technologically proficient have a dependency on others for availing of services even if they are available online (van Deursen & van Dijk, 2019). However, a few states, innovating further, started offering citizens doorstep delivery of services where in an authorised representative of the government visits the citizen's residence and aids them in the registration for availing services. Utilising widely adopted technological processes like Aadhar-based biometric verification along geo-tagging requirements of identification/verification of the citizen as well as Address verification are carried out without requiring citizens to change their daily schedules and plan visits (several visits in case of some services) to government offices (Kumar et al., 2020).

For citizens falling in the lower income brackets where even taking a break of half a day implies loss of wages and thus impacts sustenance of their families, planning visits to government offices with the uncertainty of multiple visits due to incomplete documentation or details is a risk they cannot afford. As the citizen is empowered to book an appointment as per their convenience before or after working hours such doorstep delivery of services, made possible with adoption of different digital technologies and innovation by governments, save the time of citizens while also avoiding the stress involved with an otherwise strenuous process (Heeks, 2018).

Despite major improvements and advancements, about 800 million Indians are still dependant on food grains provided by the government as per the National Food Security Act. Supply of ration is one of the services involving collaboration between the central government and state governments -- with the central government funding the purchase/provision of food grains while the state governments fulfil delivery of the food grains to citizens. To avoid leakages in the distribution system, the citizens are required to verify themselves during collection of food grains through the Aadhar biometric verification requiring them to visit a designated ration distribution centre (Drèze et al., 2017).

Since the beneficiaries fall under the economically weaker sections, taking a day off from work to plan a visit to the distribution centre, waiting in the queues at the distribution centre and then getting a full month's ration for the entire family carried to

their residence not just costs them the lost wages/salary for a day but also involves additional expenses for transportation. To address these concerns, some of the states adopted the innovative doorstep delivery mechanism, where in the ration entitled to a household is delivered at their doorstep taking the aid of mobile Aadhar-based biometric authentication devices as well as geo-tagging to ensure that the distribution of ration happens to the right beneficiaries and at their residence (Khera, 2017). As with the doorstep delivery of services, the delivery of ration at doorstep utilising digital advancements provides a much-needed relief to the most marginalised of the society.

However, the transformative impact of digital technologies on governance is not automatic. Scholars caution against techno-determinism the belief that technology alone can solve systemic governance problems (Heeks, 2018). Without an enabling ecosystem comprising robust legal frameworks, institutional capacities, ethical data practices, and digital trust technology may exacerbate digital divides or entrench bureaucratic control (Zuboff, 2019). There is also growing concern about algorithmic opacity, surveillance risks, and the erosion of accountability in AI-driven governance (Zuboff, 2019). Thus, the challenge lies in designing digital transformation processes that are participatory, rights-based, and context-sensitive, ensuring that technology remains a tool of empowerment and not exclusion (Misuraca et al., 2020).

1.4 Motivation for the Current Research

The impetus for this research emerges from a growing dissonance between the theoretical promise of digital governance and its empirical evaluation in the Indian context (Heeks, 2018). While policy documents and strategic roadmaps extol the virtues of digital transformation often framing it as a panacea for inefficiency, opacity, and corruption the academic discourse and field-level evidence remain inconclusive, fragmented, and often uncorrelated with governance outcomes (Twizeyimana & Andersson, 2019). Against this backdrop, the present study seeks to offer a triangulated contribution theoretical, empirical, and policy-oriented toward deepening our understanding of the intersection between digital innovation and governance quality.

Theoretically, the study bridges two strands of literature that have evolved in silos: the digital transformation discourse, which has largely focused on technological adoption, infrastructure, and institutional digitization (Janowski, 2015), and the good governance paradigm, which prioritizes values like transparency, responsiveness, inclusiveness, accountability, and rule of law (Grindle, 2004). By synthesizing these domains, this research develops a conceptual lens through which the effectiveness of digital governance can be assessed not merely as a matter of IT deployment, but as an enabler of deeper governance reform (Mergel et al., 2019).

Empirically, the study evaluates real-world state-level initiatives across multiple schemessuch as public welfare distribution, health service delivery, grievance redressal, or citizen feedback systems to assess whether digital interventions have improved governance outcomes on the ground (Yin, 2018). Unlike many prior studies that rely solely on government-reported KPIs or technology provider data, this research integrates citizen perceptions, bureaucratic perspectives, and policy design analysis to offer a 360-degree view of implementation success and failure (World Bank, 2023). It uses comparative case analysis across different Indian states to uncover patterns that are generalizable yet contextually grounded (George & Bennett, 2005).

From a policy standpoint, the study offers actionable insights for improving state-level digital governance. India's federal structure gives state governments significant autonomy in implementing centrally sponsored digital initiatives (Singh, 2015). This diversity creates an opportunity to learn from both innovation and inertia. By identifying the institutional enablers and constraints that shape digital transformation success such as leadership commitment, administrative capacity, stakeholder engagement, and user-centric design the research generates evidence-based recommendations that go beyond surface-level diagnostics. It is particularly timely as governments seek to scale and replicate digital public infrastructure (DPI) models like Aadhaar, UPI, and Digi Locker at the subnational level (NITI Aayog, 2024). In sum, the current research contributes a more grounded, comparative, and theoretically informed understanding of digital governance in India. It goes beyond celebratory narratives or technological critiques, offering a nuanced inquiry into what works, what

doesn't, and most crucially why. By doing so, it aspires to inform not only scholarly debates but also the evolving practices of digital public management in India's democratic and developmental journey (Misuraca et al., 2020).

1.5 Research Questions

As India moves towards a more digitally enabled governance landscape, it becomes imperative to systematically assess how these digital interventions are shaping the quality and inclusiveness of governance (Janowski, 2015). While numerous initiatives have been launched under the broader umbrella of Digital India and state-level e-governance programs, their actual impact remains uneven and under-studied (Twizeyimana & Andersson, 2019). There is a growing need to understand whether these digital reforms are translating into tangible improvements in service delivery, citizen trust, responsiveness, and accountability (Heeks, 2018). In particular, evaluating these outcomes through the lens of selected state government schemes allows for a grounded, comparative, and contextual analysis of both potential and pitfalls. This research is motivated by this pressing need to bridge the knowledge gap between digital innovation and governance outcomes, especially in diverse state-level implementations (Bhatnagar, 2004).

Research Aim: To examine how digital transformation impacts the quality of governance, particularly through the lens of selected state government schemes in India.

Research Questions

1. How does digital transformation influence governance outcomes such as service delivery, trust, and accountability?
2. What progress has been made in transparency and citizen engagement through digital means?
3. Does digital transformation lead to better and more inclusive public services?
4. What are the necessary preconditions for digital transformation to result in good governance?

1.6 Scope of the Study

This study is confined to understanding the impact of digital transformation on governance of the selected state government schemes in India. The core of the research is the assessing changes in service delivery, transparency, accountability, responsiveness, inclusiveness, and citizen trust which result from the implementation of digital transformation (Mergel et al., 2019). Though e-governance in India is a bigger horizon, the study has been narrowed down to the state-level initiatives where the effect of digital transformation can be seen and felt by the citizens directly (Singh, 2015).

1.7 Methodological overview

This research implements a multi-stage methodological strategy that combines systematic literature analysis, conceptual development, and empirical assessment (Creswell & Poth, 2018). Initially, it comprises a systematic literature review based on the Technology-Organization-Environment (TOE) framework (DePietro et al., 1990). This review aims to identify the technological, organizational, and environmental factors that facilitate digital transformation in governance effectively. The second stage is devoted to conceptualizing a governance performance model that illustrates how digital transformation leads to the essential governance outcomes (Dwivedi et al., 2019). The third stage involves an empirical study through the use of structured data collection and analytical procedures aimed at ascertaining to what extent digital interventions in the chosen state schemes have resulted in improved governance performance (Yin, 2018). The methods described include model development, measurement validation, and statistical analysis to evaluate the hypothesized relationships.

Individually, these approaches represent a logical and comprehensive plan for answering the research objectives and questions, but collectively, they form a coherent and rigorous framework (Creswell & Poth, 2018).

1.8 Thesis Structure

The thesis is organized into four main chapters, each contributing incrementally to addressing the research objectives and questions.

- **Chapter 1: Introduction** Sets the context for the study by providing the background, defining key concepts such as governance, good governance, and digital transformation, and establishing the relationship between digital transformation and governance (Creswell & Poth, 2018). It presents the research problem, research gaps, rationale for the study, research aim and questions, key terms, and the overall thesis structure.

- **Chapter 2: LITERATURE REVIEW** Reviews the conceptual background of digital transformation adoption in governance, with specific reference to the Technology–Organization–Environment (TOE) framework (DePietro et al., 1990). It details the research methodology for the systematic literature review, outlines inclusion and exclusion criteria, search strategies, and morphological analysis. The chapter presents findings on technological, organizational, and environmental preconditions, with a conclusion highlighting the implications (both theoretical and practical) and also the limitations as well as directions for further research (Snyder, 2019).

- **Chapter 3: Digital Transformation and Its Impact on Governance Performance** Examines the status of digital transformation in India and its role in transforming government operations and enabling good governance (Mergel et al., 2019). It develops hypotheses and a research model, describes the sampling, measurement development, and data collection process, and presents the data analysis and results (Yin, 2018). The chapter discusses the findings in relation to theoretical and practical implications, and identifies limitations and avenues for future research.

- **Chapter 4: Research Design:** This chapter presents the research design and methodology adopted to examine the role of digital transformation in shaping government transformation and good governance. It outlines the conceptual framework grounded in the TOE model, defines key research constructs, and develops hypotheses based on an extensive review of literature. The chapter

further explains the sampling strategy, data collection process, and measurement development. Finally, it details the analytical approach using structural equation modelling to empirically test the proposed relationships.

- **Chapter 5: Empirical testing and Validation of the research model:** This chapter empirically tests and validates the proposed research model using PLS-SEM to examine the relationships among digital transformation, government transformation, and good governance. It presents the results of measurement and structural model analyses, establishing reliability, validity, and hypothesis support. The findings demonstrate the significant roles of digital transformation, citizen engagement, trust and confidence, and public service delivery in transforming government. Overall, the chapter provides robust empirical evidence supporting the conceptual framework and theoretical assumptions of the study.

- **Chapter 6: Conclusion and Future Research** Revisits the research questions and summarizes how each has been addressed (Creswell & Poth, 2018). It outlines the theoretical and practical contributions of the study, acknowledges its limitations, and proposes future research directions. The chapter concludes with final remarks on the significance of digital transformation for achieving good governance (Misuraca et al., 2020).

1.9 Key Terms

To ensure conceptual clarity and consistency throughout the study, this section defines key terms relevant to the research context:

- **Governance**: Refers to the processes, institutions, and traditions that determine how power is exercised, how citizens are given a voice, and how decisions are made and implemented (Kooiman, 2003). It includes both governmental and non-governmental actors.

- **Good Governance**: A normative concept implying governance that is participatory, transparent, accountable, effective, equitable, and responsive to

the needs of citizens (Grindle, 2004). It serves as the benchmark for assessing the quality of governance.

- **Digital Transformation**: The process through which governments leverage digital technologies such as AI, big data, mobile platforms, and cloud computing to improve operations, service delivery, and citizen engagement (Vial, 2019).
- **E-Governance**: The application of Information and Communication Technologies (ICT) for delivery of government services, exchange of information, and facilitation of transactions with stakeholders including citizens, businesses, and other government entities (Bhatnagar, 2004).
- **Citizen Trust**: The degree to which citizens believe public institutions are reliable, competent, and act in the public interest (Grimmelikhuijsen & Knies, 2017). Trust is a crucial outcome of good governance and a key variable in evaluating digital initiatives.
- **Accountability**: A foundational principle of governance where government actors are held responsible for their actions and performance, particularly in public service delivery and policy implementation (Bovens, 2007).
- **Transparency**: The availability and accessibility of accurate and timely information to the public (Hollyer et al., 2011). It is a core feature of good governance and is often enhanced through digital platforms.
- **Service Delivery**: Refers to the provision of public goods and services to citizens (Pollitt & Bouckaert, 2017). This research evaluates how digital transformation influences the efficiency, accessibility, and quality of such services.
- **Inclusivity**: The extent to which governance mechanisms and digital platforms are accessible to all citizens, regardless of geography, literacy, gender, or socio-economic status (Sabbagh et al., 2022).
- **Digital Public Infrastructure (DPI)**: Digital platforms - such as Aadhaar for identity, UPI for payments, and Digi Locker for digital document access - that

provide the foundation to enable scalable and interoperable service delivery in a secure and inclusive manner (World Bank, 2022).

- **Institutional Readiness**: The degree to which governmental institutions possess the capacity technical, human, procedural, and cultural to adopt and sustain digital reforms (Baker, 2012).
- **Digital Divide**: The disparity in access to digital technologies, reliable internet connectivity, and digital literacy between different population groups, often influenced by socio-economic, geographic, and educational factors (van Dijk, 2020).

1.10 Expected knowledge outcomes:

- The study identifies technological, organizational and environmental factors which create conditions for the effective implementation of digital solutions in state government schemes (DePietro et al., 1990).
- This study can be used as a conceptual framework that links the digital transformation efforts with the core principles of good governance such as transparency, efficiency and responsiveness (Mergel et al., 2019).
- The research conveys the proof of the impact of chosen digital initiatives on governance results at the local level, thus showing the progress made as well as the challenges that still exist (Heeks, 2018).
- The results of the survey are intended to assist local governments in capacity-building through improving the management and execution of digital governance projects so that they can be more accessible and oriented towards citizens (Misuraca et al., 2020).

1.11 Concluding remarks

- This chapter has introduced the context, conceptual foundations, and rationale for the study, along with its scope, research questions, and methodological orientation (Creswell & Poth, 2018). As digital transformation becomes

progressively central to governance reform in India, assessing its effect on the quality of governance is a very timely and important question (Mergel et al., 2019). The research intends to provide significant understanding of how the digital means can be used to improve public service delivery and thereby enhance citizen trust (Grimmelikhuijsen & Knies, 2017). The next chapter will be a step further in this direction by going through the related literature and undertaking a systematic literature review (Snyder, 2019).

CHAPTER 2

LITERATURE REVIEW

2.1. Introduction

This chapter synthesizes the previous work in the research area of the study by investigating the following research question: What are the preconditions for adopting digital transformation to foster good governance in developing countries? To achieve this, the study will explore the technological, organizational, and environmental factors necessary for the adoption of digital transformation in governance (Gil-Garcia et al., 2018). By employing a mixed-method approach, including a systematic literature review and morphological analysis, existing literature will be examined to derive insights applicable to developing countries' governments (Snyder, 2019). The systematic literature review will ensure a comprehensive understanding of the current state of research, while morphological analysis will help identify and categorize the critical preconditions for digital transformation in governance (Zwicky, 1969).

The structure of the chapter is as follows: the next section describes Conceptual background of Digital Transformation in Governance, Digital Transformation Adoption Decision and TOE framework. Further, a systematic literature review and morphological analysis section is included for in depth literature review of the existing studies to identify the gaps in this realm.

2.2. Conceptual Background

2.2.1. Digital Transformation in Governance

Digital transformation in governance signifies a fundamental shift in utilizing advanced technology to revamp administrative processes and redefine the operational models of governmental institutions (Vial, 2019). This concept has evolved from the basic digitization of administrative tasks in the 1960s to more comprehensive digitalization initiatives in the 1990s, ultimately culminating in the transformative approach known as digital transformation in the 2010s (Janowski, 2015). This progression underscores an ongoing journey toward harnessing technology's full potential to modernize governance practices (Mergel et al., 2019).

At its core, digital transformation in governance encompasses various components aimed at enhancing different facets of public administration (Twizeyimana & Andersson, 2019). One primary objective is to improve the delivery of public services to citizens by digitizing services, developing online platforms for service delivery, and adopting digital channels for citizen engagement (Weerakkody et al., 2016). Additionally, digital transformation seeks to enhance transparency and accountability within government institutions by increasing the visibility of operations and facilitating citizen access to information (Grimmelikhuijsen & Meijer, 2014). Platforms such as open data portals and online budget transparency systems play a crucial role in this endeavor (Janssen et al., 2012). Moreover, digital technologies provide avenues for citizens to participate in decision-making processes, give feedback on government policies and services, and collaborate with government agencies (Fung, 2006).

The rapid advancements in technology, changing citizen expectations, and global trends are key drivers of digital transformation in governance (Heeks, 2018). These factors have prompted governments worldwide to embrace digital transformation initiatives to innovate, operate more efficiently, and meet citizens' evolving needs and preferences (Dunleavy et al., 2006). Overall, digital transformation in governance offers numerous benefits, including increased efficiency, innovation, transparency, accountability, and citizen engagement, thereby enhancing the effectiveness of government operations and services (Misuraca & Viscusi, 2020).

2.2.2. Digital Transformation Adoption Decision

The decision to adopt digital transformation in governance is influenced by a multitude of factors encompassing technological, organizational, and environmental dimensions (Baker, 2012). Understanding these factors is essential for policymakers and government leaders to make informed decisions regarding the adoption and implementation of digital transformation initiatives.

From a technological perspective, the availability and maturity of digital technologies play a crucial role in shaping the adoption decision (Dwivedi et al., 2020). Factors such as the accessibility of digital infrastructure, the affordability of technology

solutions, and the level of technological literacy among stakeholders influence the feasibility and effectiveness of digital transformation efforts (Heeks, 2018). Additionally, considerations regarding data security, privacy, and interoperability are paramount to ensure the successful integration of digital systems into governance processes (Bhatia et al., 2021).

Organizational readiness and capacity are critical determinants of adoption decisions (Andrews, 2010). Factors such as leadership commitment, organizational culture, and the presence of supportive policies and regulations impact the extent to which government agencies can effectively leverage digital technologies (Pollitt & Bouckaert, 2017). Furthermore, the availability of skilled personnel and the ability to manage change and overcome resistance within bureaucratic structures are essential for successful adoption and implementation (Fernández & Rainey, 2017)..

2.2.3. The TOE Framework and Digital Transformation

Environmental factors, including political, economic, and social contexts, also influence the decision-making process surrounding digital transformation in governance (Grindle, 2004). Political will and support from key stakeholders, such as elected officials and government leaders, are essential for driving digital transformation agendas and securing resources for implementation (Rothstein & Teorell, 2008). Economic considerations, such as budgetary constraints and cost-benefit analyses, shape decisions regarding investment in digital infrastructure and technology solutions (World Bank, 2022). Additionally, social factors such as citizen expectations, demands for transparency and accountability, and concerns regarding digital divides and exclusion influence the design and implementation of digital transformation initiatives (van Dijk, 2020).

2.2.4 The TOE Framework and Digital Transformation

The Technology-Organization-Environment (TOE) framework, developed by Tornatzky and Fleischer (1990), provides a structured approach to analysing technological innovation adoption. In digital governance, the TOE framework has been widely applied to examine how technological, organizational, and environmental factors influence adoption decisions and governance outcomes (Baker, 2012).

However, its application has primarily focused on developed countries, overlooking the unique socio-political and economic challenges faced by developing nations.

Jane Fountain (2001) extended the TOE framework to digital governance by highlighting how technology reshapes governance structures, emphasizing institutional and bureaucratic influences. Unlike traditional TOE applications, which focus on generic technological adoption, Fountain's approach considers the interplay between digital technologies and governance institutions, underscoring the role of institutional embeddedness in shaping digital transformation processes.

Despite these advancements, the TOE framework still lacks sufficient contextualization for developing countries, where resource constraints, governance inefficiencies, and socio-political instability introduce distinct challenges and opportunities (Heeks, 2018). The table 2.1. below summarize the key TOE dimensions and their application in digital governance.

Table 2.1: The TOE Framework in Digital Governance

Dimension	Traditional TOE Application (Tornatzky and Fleischer, 1990)	TOE in Digital Governance (Fountain, 2001; Piderit and Jojozi, 2017)	Challenges in Developing Countries (Hoblos et al., 2023; Kumar, 2023; Sanina et al., 2023; Mettler et al., 2024)
Technology	Focus on technology availability, affordability, and compatibility	Examines how digital tools reshape governance structures	Limited infrastructure, digital divide, reliance on legacy systems
Organization	Emphasis on firm size, leadership, and internal resources	Explores bureaucratic structures and institutional resistance	Lack of digital skills, resistance to change, political barriers
Environment	Examines regulatory frameworks and competitive pressure	Considers government regulations and public-private interactions	Political instability, corruption, weak regulatory enforcement

This study adopts a combination of morphological analysis and Systematic Literature Review(SLR) - a dual-method approach - to investigate the preconditions for adopting digital transformation in governance, particularly within developing countries. The SLR ensures a transparent and rigorous synthesis of academic literature, while morphological analysis offers a structured framework to categorize and interpret key findings (Zwicky, 1969; Snyder, 2019). Together, these methods facilitate a comprehensive understanding of technological, organizational, and environmental drivers underpinning digital governance initiatives.

2.3 Systematic Literature Review

The systematic literature review (SLR) is a well-established methodology for identifying, evaluating, and synthesizing relevant research (Tranfield et al., 2003). It is widely used in public administration and digital governance research to examine technological adoption, policy implementation, and governance transformations (Janowski, 2015; Mergel et al., 2019). This approach is well-suited and particularly effective for a deeper understanding and exploration of emergent themes within a focused area of interest. In this study, the SLR methodology is applied to systematically identify and analyse the preconditions necessary for digital transformation in governance. This study adopts a combination of morphological analysis and Systematic Literature Review (SLR) - a dual-method approach - to investigate the preconditions for adopting digital transformation in governance, particularly within developing countries. The SLR ensures a transparent and rigorous synthesis of academic literature, while morphological analysis offers a structured framework to categorize and interpret key findings. Together, these methods facilitate a comprehensive understanding of technological, organizational, and environmental drivers underpinning digital governance initiatives.

2.3.1 Inclusion and Exclusion Criteria

The selection of research articles was based on inclusion and exclusion criteria which aid in improving the relevance of the selected articles. Only full-text, English-language articles from 2017 to 2024 were considered, ensuring the majority of recent scientific developments in digital transformation were covered (Snyder, 2019). Studies from 2017 to 2024 were selected to capture the most recent advancements in digital transformation. This period reflects the latest technologies, trends, and challenges, ensuring that the research is relevant and up-to-date (Dwivedi et al., 2020). Earlier studies may not accurately represent current capabilities and practices in digital governance. Articles relevant to the research objectives were included, determined by reading titles, abstracts, and keywords. Exclusion criteria, in order to maintain academic rigor, ruled out retracted sources whether they be publications or editorials or conference papers or newspaper articles.

2.3.2 Data Sources and Search Strategies

Identification of relevant literature involved a systematic search across both Scopus and Web of Science (WoS) databases. These databases were selected based on their comprehensive coverage of high-quality, peer-reviewed academic publications and their widespread acceptance in systematic literature reviews (Hahn & Kühnen, 2013). Scopus and WoS offer multidisciplinary access to scholarly articles across fields such as technology, public administration, management, and social sciences. Their inclusion ensures broader coverage and enhances the credibility and rigor of the review process (Snyder, 2019). The search was conducted in June 2024 and covered articles published between 2017 and 2024, capturing recent advancements in digital transformation within governance contexts. Key search terms included: "digital transformation," "electronic government," "digitization," "digitalization," "governance," "transparency," "citizen engagement," and "public services." This broad and inclusive set of keywords ensured that literature from various perspectives within the digital governance domain was captured (Janowski, 2015). By incorporating both Scopus and Web of Science, the study minimizes selection bias and provides a more balanced and representative overview of the field.

2.3.3 Data Extraction and Selection

The initial database search yielded a total of 396 research articles, as presented in Table 2.2. These included 186 articles from Web of Science and 210 from Scopus, ensuring a comprehensive and multidisciplinary coverage of peer-reviewed literature relevant to digital transformation in governance. Applying the predefined inclusion and exclusion criteria limiting to English-language, full-text, peer-reviewed journal articles published between 2017 and 2024resulted in the exclusion of 92 articles, primarily due to their publication type or being outside the specified timeframe. Next, 84 duplicate articles found across both databases were removed, reducing the total to 220 unique articles. Relevance to the objectives of the research was assessed by screening of the articles based on the titles, abstracts and keywords. Articles not directly related to public sector digital transformation such as those focused on legal frameworks, private-sector innovation, or unrelated technological contexts were excluded, eliminating 167 articles. The remaining 53 articles were examined through full-text reading to ensure alignment with the research focus on identifying preconditions and influencing factors for digital transformation in governance. This

final screening step led to the exclusion of 23 articles that did not meet the analytical criteria. Thus, 30 articles were finally selected for in-depth analysis and thematic synthesis. These studies form the foundation of this research's systematic review. The article selection process is depicted in Figure 2.1

Table 2.2: Systematic Literature Review Results

Database	Articles
Web of Science	186
Scopus	210
Total	396

2.3.4 Data Synthesis

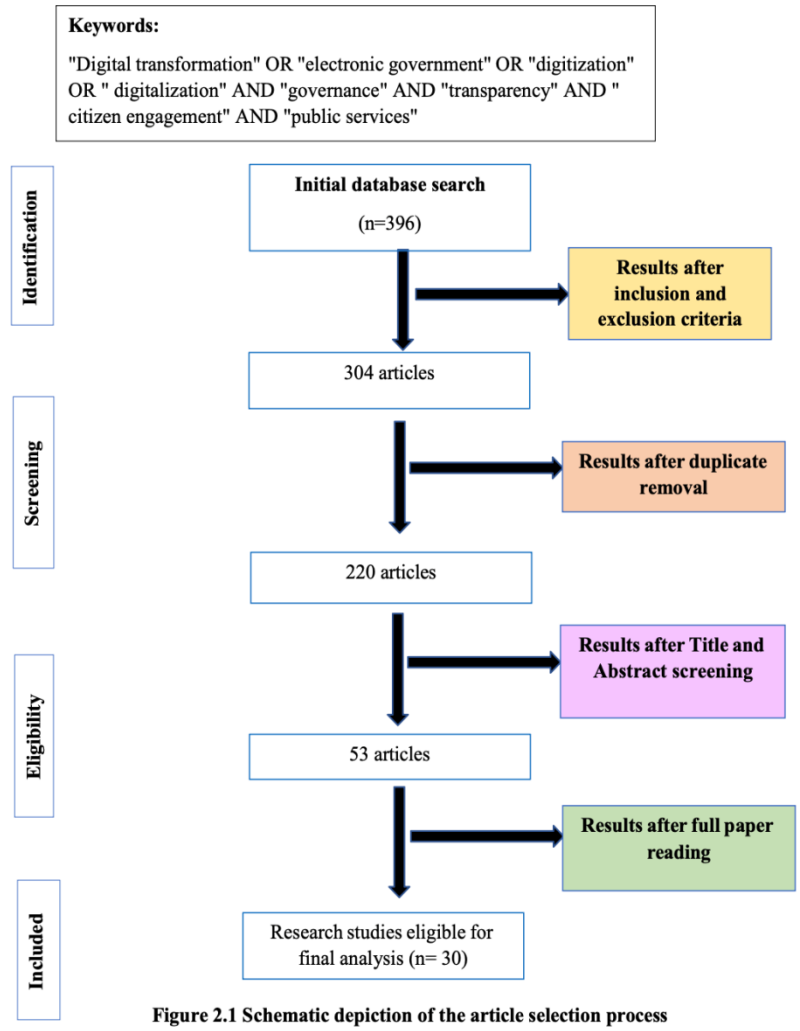

Figure 2.1 Schematic depiction of the article selection process

Data extraction and synthesis were performed on the 30 selected publications for the identification of key themes as well as findings related to the preconditions for adopting digital transformation for good governance (see Table 2.3). The analysis revealed several significant insights. One key finding is the critical importance of robust ICT infrastructure. Reliable and modern computing resources, including high-speed internet, were consistently identified as fundamental for the successful implementation and operation of digital platforms and services in public administration (Heeks, 2018). This infrastructure facilitates efficient service delivery and enables the adoption of various digital tools essential for transformation.

The review also highlighted a significant lack of consensus and clarity in defining the preconditions for adopting digital transformation in public administration. While several studies refer to enabling conditions, terminologies and frameworks varied widely across the literature (Mergel et al., 2019), indicating the need for further empirical investigation to understand how public administrators make decisions regarding digital transformation and its implications for good governance. This inconsistency underscores the necessity for clear frameworks that can guide implementation in diverse contexts.

Moreover, the systematic literature review demonstrated that systematic adoption of digital technologies opens up possibilities for significant pathbreaking improvements in public governance (Twizeyimana & Andersson, 2019). These tools have been shown to enhance transparency, accountability, and citizen engagement (Grimmelikhuijsen & Meijer, 2014; Fung, 2006). While the benefits of digital transformation are widely recognized, several studies emphasized that the specific preconditions for success especially in developing countries remain underexplored and context-dependent (Heeks, 2018). These include socio-political factors such as digital literacy, bureaucratic readiness, and policy coherence. Overall, these findings indicate that while digital transformation holds substantial promise for enhancing governance, clearer frameworks and context-sensitive empirical data are necessary to guide its effective implementation (Misuraca & Viscusi, 2020). This study addresses this gap by providing a structured overview of the identified preconditions, categorizing them into technological, organizational, and environmental dimensions.

Table 2.3: Preconditions for Digital Transformation in Governance

Context	Preconditions/Determinants	Key References
Technological	ICT Infrastructure Readiness	Chen et al. (2024); Darusalam et al. (2023)
	Cybersecurity Measures	Thompson et al. (2020); Ackom et al. (2022); Gebremeskel et al. (2023)
	Interoperability of Systems	Sebo and Gel (2023); Nawaflesh and Khasawneh (2024)
	Technological Adaptability	Whitford et al. (2020); Bokhari and Myeong (2023)
Organizational	Leadership Commitment	Yuan et al. (2023); Piderit and Jojozi (2017)
	Change Management Strategies	Lee (2024); Urs and Spoaller (2022)
	Staff Training and Development	Bindu et al. (2019); Yan and Lyu (2023)
	Organizational Culture	Qiu et al. (2023); Puspitasari and Kurniawan (2023)
	Resource Allocation	Chen et al. (2024); De Classe et al. (2021)
Environmental	Regulatory Framework	Wukich et al. (2017); Gao and Tan (2020)
	Public Trust and Engagement	Iuliano et al. (2024); Van den Berg et al. (2020)
	Socioeconomic Conditions	Alcaide–Muñoz et al. (2017); Wirtz and Kurtz (2017); Sanina et al. (2021)
	Collaboration with Private Sector	Hien et al. (2024); Piderit and Jojozi (2017)
	Availability of Funding and Investment	Liao et al. (2023); Widhiasthini et al. (2023)

Note: The studies above explore factors influencing digital transformation. Detailed methodology and findings for each study are provided in Appendix A.

2.4 Morphological Analysis of Preconditions for Digital Transformation Adoption

The morphological analysis conducted in this section provides a systematic approach to identifying and categorizing the preconditions necessary for adopting digital transformation in governance. Morphological analysis is a method that examines complex, multidimensional problems by breaking them down into core components and systematically exploring all possible relationships among those components (Zwicky, 1969). In the context of digital transformation in governance, this analysis

involves dissecting the various preconditions into three main categories technological, organizational, and environmental each of which can act as enablers or inhibitors. The analysis is grounded in a comprehensive review of recent studies on digital transformation, particularly in governance contexts (Baker, 2012; Gil-Garcia et al., 2018). The use of morphological analysis allows for an integrative review of the literature by systematically categorizing findings and aligning them with preconditions for successful digital transformation.

This method is particularly useful for analysing digital transformation because it can accommodate the complexity and diversity of factors influencing success or failure in public sector digitalization (Zwicky, 1969). By analysing literature and case studies, the morphological analysis identifies patterns of preconditions that recur across different governance contexts (Snyder, 2019). These preconditions are then mapped into a morphological grid, where each factor is categorized based on its role as an enabler or inhibitor, and possible recommendations for overcoming obstacles or leveraging strengths are proposed. This approach allows for a deeper understanding of the interactions between different factors, helping policymakers to develop tailored strategies for successful digital transformation.

The morphological analysis employed here follows a structured process that consists of several steps, ensuring that the complexities of digital transformation preconditions are fully captured and analyzed:

•**Identification of Preconditions:** Based on a thorough review of existing literature and empirical studies, key preconditions that influence digital transformation adoption are identified. These preconditions are grouped into three categories: technological, organizational, and environmental (Baker, 2012).

•**Categorization of Preconditions:** Each precondition is categorized based on its influence whether it acts as an enabler or an inhibitor of digital transformation. For example, the availability of robust ICT infrastructure is classified as a technological enabler, while the lack of such infrastructure would be an inhibitor (Heeks, 2018).

•**Morphological Grid Development:** A morphological grid is constructed to map out all identified preconditions. Each precondition is positioned within the grid according

to its category (technological, organizational, or environmental) and its status as an enabler or inhibitor. The grid is an essential tool for visualizing and understanding the interdependencies between various factors influencing digital transformation (Zwicky, 1969).

•**Analysis of Relationships:** The morphological grid is used to analyse how different preconditions interact with one another. For instance, the interaction between organizational leadership and technological infrastructure may either strengthen or weaken the potential for successful digital transformation (Andrews, 2010). This step involves examining various combinations of preconditions and assessing their collective impact on the adoption process.

•**Recommendations:** Based on the analysis, practical recommendations are made to address inhibitors and enhance enablers. These recommendations provide guidance for overcoming challenges such as limited technological infrastructure or resistance to change within organizational cultures (Fernández & Rainey, 2017).

This approach provides clarity on how technological, organizational, and environmental factors have been discussed in the literature, making it easier for researchers and practitioners to understand the most critical drivers of success (Snyder, 2019). Therefore, in the morphological grid presented in Table 2.4, each precondition is accompanied by a detailed analysis of its enablers, inhibitors, and corresponding recommendations.

Table 2.4: Digital Transformation Preconditions: Enablers, Inhibitors, and Recommendations

Context	Preconditions/ Determinants	Enablers	Inhibitors	Recommendations
Technological preconditions of digital transformation adoption in governance	ICT Infrastructure Readiness (+)	- Accessible ICT infrastructure: Availability of reliable internet connectivity, hardware devices, and software applications facilitates digital initiatives.	- Insufficient technological infrastructure: Outdated hardware or inadequate internet connectivity hinders digital adoption.	- Invest in upgrading technological infrastructure to meet current and future needs.
	Cybersecurity Measures (+)	- Robust cybersecurity protocols: Implementation of effective security	- Vulnerability to cyber threats: Inadequate security measures expose	- Enhance cybersecurity awareness and training programs to

Context	Preconditions/ Determinants	Enablers	Inhibitors	Recommendations
		measures ensures protection against cyber threats, fostering trust in digital systems.	systems to risks and undermine confidence in digital platforms.	mitigate risks and address vulnerabilities.
	Interoperability of Systems (+)	- Seamless integration of systems: Compatibility and interoperability between digital platforms enable efficient data exchange and collaboration.	- Compatibility issues between systems: Incompatibility hinders data sharing and integration, leading to fragmented processes.	- Establish interoperability standards and protocols to facilitate seamless integration across systems.
	Technological Adaptability (+)	- Flexibility in technology adoption: Agility in adopting new technologies enables organizations to respond to changing needs and opportunities.	- Resistance to technological change: Organizational inertia or fear of change impedes the adoption of new technologies and innovation.	- Foster a culture of innovation and continuous learning to embrace technological advancements.
Organizational preconditions of digital transformation adoption in governance	Leadership Commitment (+)	- Strong support from leadership: Leadership endorsement provides direction, resources, and motivation for digital transformation initiatives.	- Lack of leadership buy-in: Absence of top-level support undermines the prioritization and allocation of resources for digital projects.	- Develop leadership training programs to cultivate digital leadership capabilities and promote a culture of innovation.
	Change Management Strategies (+)	- Effective change management plans: Well-planned strategies mitigate resistance, manage risks, and ensure smooth transitions during digital transformation.	- Resistance to organizational change: Inadequate change management leads to employee resistance and disrupts implementation efforts.	- Invest in change management expertise and communication strategies to foster employee engagement and alignment with digital objectives.
	Staff Training and Development (+)	- Skilled and trained workforce: Equipping employees with digital skills enhances their capacity to utilize technology effectively and drive innovation.	- Skills gap and training deficiencies: Lack of digital literacy or outdated skillsets hinder employee adoption of digital tools and platforms.	- Implement comprehensive training programs to address skill gaps and promote lifelong learning in digital competencies.
	Organizational Culture (+)	- Supportive and innovative culture: A culture that encourages experimentation, collaboration, and risk-taking fosters innovation and digital adoption.	- Resistance to cultural change: Entrenched norms or fear of failure inhibit organizational agility and adaptability to digital	- Cultivate a culture of openness, trust, and empowerment to embrace change and drive digital innovation.

Context	Preconditions/ Determinants	Enablers	Inhibitors	Recommendations
			transformation.	
	Resource Allocation (+)	- Sufficient budget allocation: Adequate funding supports investment in digital infrastructure, talent development, and innovation initiatives.	- Resource constraints: Limited budgetary allocations restrict the scale and pace of digital transformation initiatives.	- Prioritize digital investments and allocate resources strategically to maximize impact and minimize risks.
Environmental preconditions of digital transformation adoption in governance	Regulatory Framework (+)	- Clear regulatory guidelines: Transparent and supportive regulations provide clarity, guidance, and incentives for digital innovation and compliance.	- Regulatory hurdles: Ambiguous or outdated regulations create barriers to entry and hinder experimentation with new digital technologies.	- Engage stakeholders to review and update regulatory frameworks to align with digital transformation objectives and promote innovation.
	Public Trust and Engagement (+)	- High level of public trust: Trust in government institutions fosters citizen engagement, collaboration, and support for digital initiatives.	- Lack of public engagement: Limited involvement or skepticism among citizens undermines adoption and effectiveness of digital services.	- Foster transparency, accountability, and participatory governance to build trust and enhance citizen engagement in digital transformation efforts.
	Socioeconomic Conditions (+)	- Favorable socioeconomic factors: Economic stability, educational attainment, and digital infrastructure access create conducive environments for digital adoption.	- Economic disparities: Digital divides and social inequalities exacerbate exclusionary practices and limit access to digital opportunities.	- Implement targeted interventions to bridge digital divides, promote digital literacy, and ensure equitable access to digital resources and opportunities.
	Collaboration with Private Sector (+)	- Effective partnerships: Collaborations leverage resources, expertise, and innovation from the private sector to accelerate digital transformation initiatives.	- Conflict of interest: Divergent objectives and lack of trust hinder effective collaboration between public and private sector stakeholders.	- Establish clear governance mechanisms and mutual agreements to address conflicts, align interests, and foster sustainable partnerships.
	Availability of Funding and Investment (+)	- Access to funding sources: Financial resources support digital infrastructure development, capacity building, and innovation projects.	- Financial constraints: Limited funding availability constrains investment in digital transformation initiatives and innovation efforts.	- Explore diverse funding mechanisms, such as public-private partnerships and grants, to mobilize resources and overcome financial barriers to digital transformation.

2.4.1 Technological Preconditions of Digital Transformation Adoption in Governance

The analysis captures technological, organizational, and environmental factors that either enable or inhibit the adoption and long-term viability of digital transformation initiatives. The findings are categorized accordingly, offering a comprehensive understanding of the multidimensional elements that drive or constrain digital change in governance systems.

Technological infrastructure is foundational for digital governance (Heeks, 2018). Key enablers include robust ICT systems, cybersecurity mechanisms, system interoperability, and technological adaptability.

ICT Infrastructure Readiness is universally recognized as a fundamental enabler (Dwivedi et al., 2020). The availability of broadband internet, secure networks, modern computing devices, and cloud platforms supports the full spectrum of digital governance services (Heeks, 2018). Countries or regions with reliable power supply, nationwide digital connectivity, and cloud-enabled service delivery have reported higher success rates in implementing digital platforms. Conversely, weak or uneven infrastructure particularly in rural or economically disadvantaged areas acts as a significant inhibitor, leading to project failure or limited scalability (van Dijk, 2020).

Cybersecurity Measures are critical for ensuring trust and platform resilience (Bhatia et al., 2021). Threats such as data breaches, identity theft, and cyberattacks have eroded citizen confidence in many instances. Governments that adopted multi-layered security protocols encryption, secure authentication, access control, and active monitoring experienced enhanced platform stability and user trust (Bhatia et al., 2021). In contrast, digital initiatives without strong cybersecurity frameworks were more vulnerable to attacks and service disruptions, becoming inhibitors to user participation and system reliability.

System Interoperability the capacity of different governmental systems to communicate and share data is another major success factor (Janssen et al., 2012). Integrated platforms that employ centralized databases, standardized protocols, and APIs have enabled seamless service delivery and improved inter-agency coordination.

Lack of interoperability, on the other hand, often results in duplicated efforts, fragmented services, and citizen frustration acting as a significant inhibitor.

Technological Adaptability supports long-term transformation by enabling institutions to integrate emerging tools such as AI, blockchain, IoT, and machine learning (Mergel et al., 2019). Modular ICT architecture, agile procurement processes, and environments for piloting innovations (like sandboxes) serve as key enablers. Conversely, rigid legacy systems and inflexible procurement policies hinder the ability to respond to technological shifts, becoming inhibitors to sustained digital evolution.

2.4.2 Organizational Preconditions of Digital Transformation Adoption in Governance

Internal governance dynamics ranging from leadership to organizational culture play a pivotal role in the successful adoption of digital initiatives.

Leadership Commitment is repeatedly identified as a principal enabler. Visionary leaders with digital literacy and political will can push for reforms, mobilize resources, and guide strategic direction (Yuan et al., 2023; Piderit and Jojozi, 2017). Digital transformation initiatives led by high-level champions, including those with dedicated digital portfolios, achieve faster implementation and inter-ministerial coherence. Conversely, absence of leadership backing results in fragmented efforts and policy inertia, serving as a strong inhibitor.

Change Management Strategies are essential for facilitating smooth transitions. Proactive communication, restructuring of roles, and performance incentives mitigate resistance and foster buy-in (Lee, 2024; Urs and Spoaller, 2022). Governments that embed formal change plans into digital reforms experience reduced employee resistance and project fatigue. Where such strategies are absent, digital initiatives encounter pushback, underutilization of tools, and eventual stagnation key inhibitors.

Staff Training and Development directly influences adoption success. Digital literacy and ongoing upskilling through blended learning formats-learning modules, workshops, and certifications contribute to higher system usage, fewer operational errors, and improved innovation (Bindu et al., 2019; Yan and Lyu, 2023). The absence

of structured training leads to limited digital capacity, poor system adoption, and resistance from employees, all of which act as inhibitors.

Organizational Culture significantly affects transformation outcomes. Cultures that promote innovation, flexibility, and collaboration are strong enablers (Qiu et al., 2023). Supportive environments where experimentation and inter-departmental collaboration are encouraged through initiatives like innovation labs or cross-functional teams see faster and more sustainable transformation. In contrast, hierarchical and risk-averse cultures restrict experimentation and slow digital progress (Puspitasari and Kurniawan, 2023), making them clear inhibitors.

Resource Allocation both financial and humanise vital. Governments that commit dedicated digital budgets, invest in technical expertise, and ensure long-term planning realize better scalability and sustainability (Chen et al., 2024; De Classe et al., 2021). Inconsistent funding, fragmented budget lines, or reliance on short-term grants serve as major inhibitors, often resulting in program discontinuation or compromised quality.

2.4.3 Environmental Preconditions of Digital Transformation Adoption in Governance

The broader ecosystem including legal structures, socioeconomic conditions, and stakeholder partnerships shapes the environment in which digital governance unfolds.

Regulatory Frameworks that are supportive and adaptive act as critical enablers. Legal provisions around data privacy, e-signatures, digital identities, and procurement provide the scaffolding for scalable digital initiatives (Wukich et al., 2017; Gao and Tan, 2020). Countries with flexible legal systems accelerate innovation cycles and reduce implementation delays. In contrast, outdated or rigid regulations act as inhibitors, introducing legal uncertainties and delaying project rollout.

Public Trust and Engagement serve both as outcomes and preconditions for digital adoption. Mechanisms that promote transparency real-time service dashboards, feedback systems, and grievance redressal platforms boost user trust and participation (Iuliano et al., 2024; Van den Berg et al., 2020). Where transparency and engagement are lacking, public scepticism and non-usage increase, undermining the very objectives of digital governance major inhibitor.

Socio economic Conditions heavily influence access and adoption. High levels of digital divide, income inequality, and low literacy constrain participation and digital capability (Alcaide–Muñoz et al., 2017; Wirtz and Kurtz, 2017; Sanina et al., 2021). Inclusive design choices like multilingual interfaces, offline functionality, and digital kiosks are key enablers in such settings. Without these adaptations, digital services fail to reach underserved or marginalized communities, becoming inhibitors of inclusive governance.

Private Sector Collaboration offers valuable technical innovation, financial support, and agility. Structured Public–Private Partnerships (PPPs), co-creation platforms, and innovation labs have accelerated scaling and experimentation (Hien et al., 2024; Piderit and Jojozi, 2017). However, misaligned goals, poor contract design, and lack of trust may result in vendor lock-ins or misdirection emerging as inhibitors of project efficiency and public accountability.

Funding and Investment Availability is another determinant of sustainability. Long-term, performance-linked funding whether through domestic budgets or international aid ensures continuity and systemic integration (Liao et al., 2023; Widhiasthini et al., 2023). In contrast, projects that depend on sporadic or one-time grants often experience rollbacks, discontinuity, and eventual public disengagement, acting as critical inhibitors.

A cross-analysis of the findings revealed several critical patterns that transcend individual categories:

•**Leadership:** Technology Linkage: Strong leadership commitment drives targeted investments in infrastructure and system upgrades, accelerating digital transformation efforts.

•**Culture:** Training Synergy: An innovation-driven culture enhances the uptake and impact of staff training and capacity-building programs.

•**Trust:** Regulation Feedback Loop: Transparent and adaptive regulatory systems build public trust, which in turn improves citizen engagement and system legitimacy.

•**Funding:** Private Sector Collaboration: Stable funding environments facilitate meaningful collaboration with private partners, promoting innovation and long-term scalability.

These findings affirm that digital transformation is not a linear or standalone process. Success is contingent on the synergistic alignment of technological capacity, organizational readiness, and environmental support systems. The simultaneous presence of enablers across these dimensions significantly increases the probability of successful digital governance outcomes, while the presence of inhibitors in any one dimension may undermine the entire transformation process. Figure 2.2 depicts the Framework for Digital Transformation Adoption Preconditions in Good Governance, developed based on the integrated findings of this study.

This study extends the Technology-Organization-Environment (TOE) framework by applying it explicitly to the domain of digital governance. By categorizing preconditions into technological, organizational, and environmental dimensions, the study provides a structured and multidimensional approach to analyse the adoption of digital transformation initiatives in the public sector. This application affirms the relevance of the TOE framework in governance settings while enhancing its explanatory power by incorporating public-sector-specific conditions.

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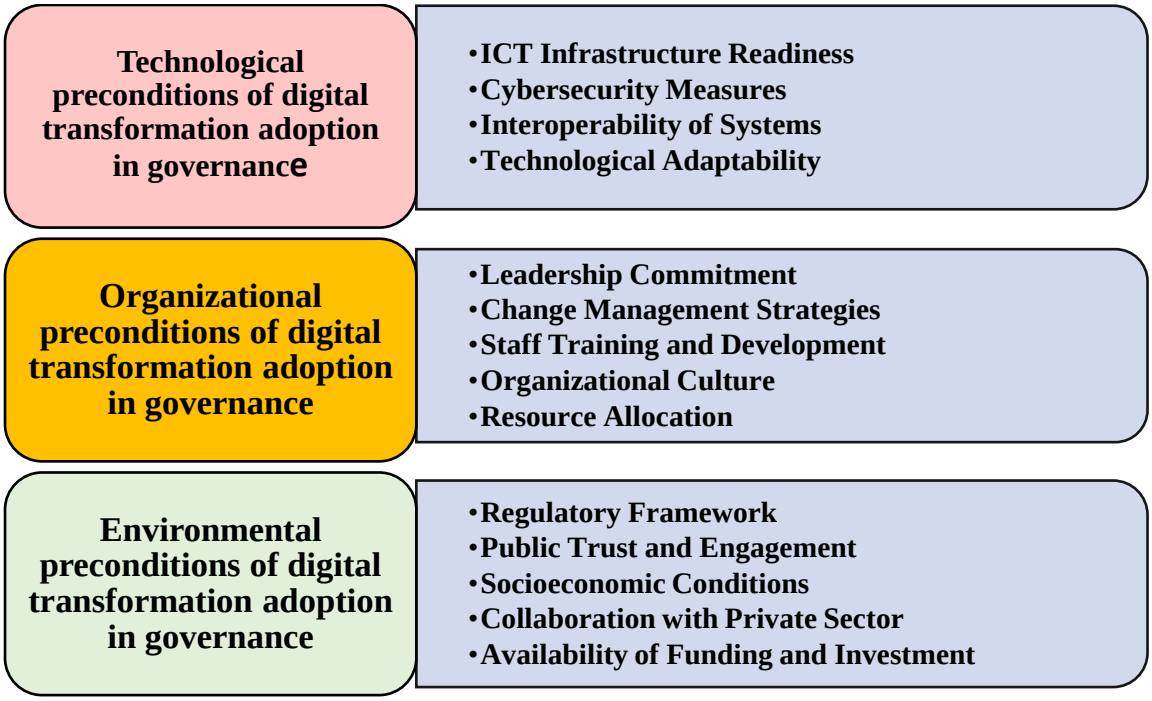

Figure 2.2: Framework for Digital Transformation Adoption Preconditions in Good Governance

2.5 Research gaps

•The literature review shows that although digital transformation is widely discussed as a driver of improved governance, there is limited empirical research directly linking digital initiatives to outcomes such as service delivery, trust, or accountability, as many studies focus on adoption readiness rather than governance results (Mergel, Edelmann & Haug, 2019; Misuraca & Viscusi, 2020).

•The review also reveals that transparency and citizen engagement are frequently cited as benefits of digital governance, yet few studies provide systematic evidence on how digital platforms actually enhance openness or participatory processes, indicating a gap between theoretical claims and measurable progress (Singh & Bhatnagar, 2021; Baviskar & Ray, 2022).

•Although inclusiveness is recognized as a core principle of good governance, existing studies offer limited evaluation of whether digital transformation leads to more equitable and accessible public services, particularly for marginalized or digitally excluded populations (Aiyar & Bhattacharya, 2016; Jha & Bhattacharya, 2020; World Bank, 2022).

•The literature identifies several technological, organizational, and environmental preconditions for digital transformation, but these preconditions are seldom empirically validated in government settings, especially within the context of developing countries and subnational administrative structures (Bharadwaj et al., 2021; Gupta & Nayak, 2023; Dwivedi et al., 2023).

•The review further highlights a geographical and contextual gap, as much of the existing digital governance scholarship is either global or national in scope, with very few studies examining state-level implementations in India, even though states are the primary sites of service delivery and administrative reform (Chakrabarty & Bhattacharya, 2008; Mehta & Shah, 2022; Misra & Rajeev, 2023).

2.6 Concluding remarks

This research seeks to advance the empirical understanding of transformations brought by digital technologies and innovations in governance, specifically focusing

on the critical preconditions necessary for successful implementation in developing countries (Heeks, 2018). By identifying these preconditions, this study aspires to provide a foundation for future research and practical applications in the realm of digital governance. The findings will offer actionable insights for policymakers and practitioners, helping them navigate the complexities of digital transformation in governance (Misuraca & Viscusi, 2020). Additionally, this research will enhance the academic discourse by providing a framework for understanding how contextual factors influence digital governance initiatives (Gil-Garcia et al., 2018). Ultimately, this study aims to foster enhanced governance effectiveness through informed digital transformation initiatives, making it a significant addition to the literature on governance in developing contexts.

The next chapter builds on the understanding developed through the literature review presented in this chapter and examines the technological, organizational, and environmental preconditions necessary for achieving good governance through digital transformation. It systematically analyses the existing research to identify the key factors that enable or hinder effective digital adoption in government settings (Baker, 2012). Further, the chapter synthesizes these insights to propose a conceptual framework that explains how digital transformation can strengthen governance outcomes across different state-level contexts.

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CHAPTER 3

REVIEW OF DIGITAL GOVERNANCE SCHEMES OF SELECTED INDIAN STATES

3.1. Introduction

Digital governance has emerged as a central pillar of public sector reform in India, driven by the objectives of transparency, efficiency, inclusiveness, and citizen-centric service delivery (OECD, 2020; World Bank, 2016). With the launch of the Digital India initiative, state governments have increasingly adopted information and communication technologies (ICTs) to redesign governance processes and improve access to public services (Government of India, 2015). These initiatives represent a shift from traditional, department-centric administrative models to digitally enabled, citizen-focused governance frameworks (Heeks, 2006).

Indian states, functioning as laboratories of governance innovation, have implemented diverse digital governance schemes tailored to their administrative capacities, demographic profiles, and developmental priorities. While some states have emphasized online service delivery through integrated portals, others have gone a step further by adopting doorstep delivery models to address digital divides and last-mile access challenges. This chapter examines selected state-level digital governance schemes to understand their design, implementation mechanisms, and contribution to improved governance outcomes (Heeks, 2006).

The chapter focuses on prominent initiatives such as the Delhi Doorstep Delivery of Public Services, Punjab's Bhagwant Mann Sarkar Tuhade Dwaar, Karnataka's Seva Sindhu, and Telangana's MeeSeva, offering a comparative perspective on digital governance practices across states. Through this analysis, the chapter highlights how digital transformation is operationalized at the sub-national level and how it supports the broader goals of good governance (Heeks & Bailur, 2007).

3.2 Overview of Selected State Digital Governance Schemes

3.2.1 Delhi Doorstep Delivery of Public Services

Delhi's Doorstep Delivery of Public Services represents one of India's most visible experiments in re-orienting public administration toward citizen convenience. Launched in 2018, the initiative institutionalizes a simple but consequential idea: instead of requiring citizens to visit government counters, the government will proactively visit citizens to accept applications, collect documents, and—wherever possible—deliver final documents to the doorstep (Government of NCT of Delhi, 2019). The core mechanism combines a centralised call centre (toll-free 1076), trained field agents known as Mobile Sahayaks, and an integrated digital backend that enables tracking, OTP verification and inter-departmental processing. This chapter provides a detailed account of the scheme's design, implementation, performance, governance arrangements, technological architecture, observed outcomes, and the operational challenges that have emerged since inception.

3.2.1.1 Rationale and Policy Objectives

The Doorstep Delivery initiative was conceptualised to reduce transaction costs, eliminate needless queues, curtail petty corruption associated with multiple office visits, and expand access to essential documents (for example, domicile, income, caste certificates, driving licences and other civil documents) especially for those who face mobility constraints (OECD, 2020). It fits within a broader Digital India and good-governance narrative: digital systems combined with a human interface could both automate processes and ensure last-mile reach (Government of India, 2015). The explicit policy goals are time-bound service delivery, simplification of Government-to-Citizen (G2C) processes, increased transparency through auditable digital trails, and improved citizen trust through verifiable service channels (OECD, 2020).

3.2.1.2 Design and Operational Model

At the heart of the model are three interacting components:

Front-end access — Citizens book services by dialing the toll-free number 1076 or by accessing the Doorstep portal; call centre staff register requests, assign an

appointment slot and allocate a Mobile Sahayak **(Government of NCT of Delhi, 2019)**.

Field delivery- Mobile Sahayaks are trained facilitators who visit the applicant's home at the scheduled time, assist with form filling, collect and scan physical documents if required, and submit applications into the relevant departmental workflow. A nominal facilitation fee (commonly reported as INR 50 per service) is charged to the citizen (Government of NCT of Delhi, 2019).

Back-end processing - Submitted applications are routed through the government's e-district and department-specific systems; citizens can track progress using application numbers, receive SMS updates and obtain digital receipts. OTP verification and audit logs are used to strengthen accountability and reduce risks of fraudulent transactions (OECD, 2020).

The scheme was intentionally designed as a hybrid: it leverages information technology for routing, verification and audit, but preserves a human interface through Mobile Sahayaks to address access barriers and to institutionalize assistance in completing bureaucratic procedures (Heeks, 2006).

3.2.1.3 Technological and Administrative Architecture

Delhi's Doorstep model integrates several technological and administrative features:

Centralised Call Centre & Workflow Management: The 1076 helpline is a central intake point that feeds requests into a scheduling and monitoring system; call centre staff, supervisors and dealing assistants coordinate allocation and grievance handling (Government of NCT of Delhi, 2019).

Integration with e-District and Departmental Systems: Services delivered via doorstep requests ultimately interface with departmental back-ends (e.g., revenue, transport), leveraging existing digital portals (e-District) for processing and certificate generation (Government of NCT of Delhi, 2019).

Verification and Audit Trail: Operational safeguards include OTP verification of appointments, digital receipts and application tracking to create an auditable trail that reduces the scope for discretionary decision-making (OECD, 2020).

Human Resources & Field Logistics: The initiative mobilised a cadre of Mobile Sahayaks, supervisors and coordinators; early reporting indicated the scheme operated with dozens to hundreds of field staff supported by call centre operatives and technical teams (Government of NCT of Delhi, 2019).

This layered architecture central intake, field facilitation, departmental processing—enabled both scalability and the possibility of continuous improvement in case management and citizen feedback loops (Heeks & Bailur, 2007).

3.2.1.4 Citizen Experience and Equity Considerations

One of the principal advantages of the Doorstep model is its potential to enfranchise digitally marginalised or mobility-constrained citizens (elderly, differently-abled, those with caregiving responsibilities, or those who cannot afford work-leave to visit offices). The Mobile Sahayak's role—document collection, form completion, submission and return delivery—directly addresses the administrative burden on such groups (World Bank, 2016). Moreover, the nominal fee is intended to keep the service affordable while also formalising and institutionalising a facilitation mechanism that might otherwise take the form of informal and opaque brokerage. Early media reports, government briefings and third-party assessments have highlighted improved convenience and time savings for many users (Government of NCT of Delhi, 2019).

A core claim of the Doorstep model is that auditable digital traces (OTP confirmations, SMS alerts, status tracking and digital receipts) can reduce corrupt practices and discretionary leverage that often accompany in-person visits (OECD, 2020). In practice, this requires robust implementation of end-to-end audit trails, effective public grievance channels and openness in service standards and fees. Early reports indicate that the programme instituted many of these features and that citizens could monitor progress through application numbers **(Government of NCT of Delhi, 2019)**. However, the long-term accrual of trust also depends on consistent service

quality, departmental responsiveness and visible sanctioning of malpractices—areas that depend on stronger institutional governance beyond the initial technological envelope **(Heeks & Bailur, 2007)**.

3.2.2 Punjab: Bhagwant Mann Sarkar Tuhade Dwaar (Doorstep Delivery of Government Services)

The launch of Bhagwant Mann Sarkar Tuhade Dwaar in 2023 marks a significant milestone in the evolution of digital governance in India. Conceived as a large-scale doorstep delivery initiative, the scheme reflects the Punjab government's commitment to citizen-centric administration, transparency, and inclusive access to public services. Drawing inspiration from the Delhi Doorstep Delivery of Public Services model, Punjab expanded the concept substantially in scale, scope, and institutional integration. With coverage of more than 450 services across 26 government departments at the time of launch, (Government of Punjab, 2023) the initiative represents the most extensive statewide doorstep delivery programme implemented in India to date.

The scheme embodies a shift in governance philosophy—from a department-centric, office-based system to a citizen-oriented, on-demand service delivery model. By bringing government services directly to citizens' homes, Sarkar Tuhade Dwaar seeks to dismantle structural barriers that have traditionally limited access to public services, particularly for rural populations, elderly citizens, women, and persons with disabilities (Bhattacharya & Kumar, 2022).

3.2.2.1 Policy Context and Rationale

Punjab's administrative landscape is characterised by a large rural population, diverse socio-economic conditions, and varying levels of digital literacy and infrastructure. While the state had made considerable progress in digitising services through platforms such as Sewa Kendras and e-Sewa portals, access challenges persisted. Citizens often faced long travel distances, multiple office visits, procedural complexity, and dependence on informal intermediaries to obtain basic government services.

Against this backdrop, Sarkar Tuhade Dwaar was conceptualised as a corrective intervention to ensure that the benefits of digital governance extend beyond digitally literate and urban populations. The scheme aligns with national priorities under the Digital India and Minimum Government, Maximum Governance frameworks (Government of India, 2015), while addressing state-specific concerns related to equity, trust deficit, and administrative efficiency.

The underlying policy rationale is threefold. First, the scheme aims to reduce transaction costs—both monetary and non-monetary—incurred by citizens in accessing government services. Second, it seeks to enhance administrative efficiency by standardising workflows and integrating digital systems across departments. Third, it aspires to strengthen transparency and public trust by embedding accountability mechanisms such as digital audit trails, OTP verification, and real-time tracking (OECD, 2020).

3.2.2.2 Objectives of the Scheme

The objectives of Bhagwant Mann Sarkar Tuhade Dwaar are explicitly citizen-centric and governance-oriented. The primary goal is to ensure universal access to public services by delivering them at citizens' doorsteps in a time-bound and hassle-free manner. This is complemented by a strong emphasis on reducing procedural complexity, as the scheme consolidates services offered by multiple departments and platforms into a single access framework.

Another key objective is the enhancement of service efficiency and responsiveness. By digitising document collection, application submission, and backend processing, the scheme aims to shorten service delivery timelines and reduce administrative delays. Simultaneously, the initiative seeks to promote transparency and accountability through digitally verifiable processes, minimising discretionary power and opportunities for corruption (OECD, 2020).

Importantly, the scheme explicitly prioritises equity and inclusion. By targeting rural households, senior citizens, women, and persons with disabilities, Sarkar Tuhade Dwaar addresses the digital divide that often accompanies technology-driven

governance reforms (World Bank, 2016). In doing so, it positions digital transformation not merely as a technological upgrade but as a social inclusion strategy.

3.2.2.3 Operational Design and Service Delivery Mechanism

The operational architecture of Sarkar Tuhade Dwaar is designed around simplicity, accessibility, and integration. Citizens can book doorstep service appointments through multiple channels, including the toll-free 1076 helpline, the Connect Punjab portal, and WhatsApp-based interfaces. This multi-channel approach ensures that citizens with varying levels of digital access and literacy can engage with the scheme effectively (Government of Punjab, 2023).

Once a request is registered, a trained field representative known as a Sewa Sahayak is assigned to the citizen. The Sewa Sahayak visits the citizen's residence at the scheduled time and performs several critical functions. These include explaining documentation requirements, assisting with form filling, collecting and digitising physical documents, submitting applications through integrated e-Sewa systems, and providing acknowledgements and receipts. Where applicable, the Sewa Sahayak also facilitates the delivery of certificates or service outcomes once approved (Government of Punjab, 2023).

This doorstep interaction significantly alters the citizen–state interface. Instead of navigating complex bureaucratic procedures independently, citizens receive guided assistance in a familiar and convenient environment. The role of the Sewa Sahayak thus becomes central to the scheme's success, functioning as both a facilitator and a bridge between citizens and digital governance systems (Bhattacharya & Kumar, 2022).

A distinctive feature of the Punjab model is its deep institutional integration with the state's existing network of Sewa Kendras, which number over 500 across urban and rural areas. Rather than creating a parallel administrative structure, Sarkar Tuhade Dwaar leverages this established ecosystem to ensure backend continuity, data integrity, and administrative oversight (Government of Punjab, 2023).

Applications collected through doorstep visits are routed through integrated e-Sewa systems and processed by the relevant departments using existing workflows. This integration ensures that doorstep delivery does not bypass departmental accountability but instead complements it. The Sewa Kendras serve as processing hubs, grievance redressal points, and monitoring nodes, thereby strengthening institutional capacity and sustainability (Government of Punjab, 2023).

Technologically, the scheme incorporates digital dashboards, workflow automation, and real-time status tracking. Citizens receive SMS notifications and digital receipts, enabling them to monitor progress and reducing uncertainty regarding service outcomes. OTP-based verification of doorstep visits further enhances transparency and prevents misuse (OECD, 2020).

3.2.2.4 Implications for Digital Governance and Good Governance

From a digital governance perspective, Sarkar Tuhade Dwaar illustrates how technology can be harnessed to re-engineer administrative processes while retaining a strong human interface (Heeks, 2006). The scheme demonstrates that digital transformation need not be synonymous with impersonal or exclusionary governance. Instead, when embedded within inclusive design principles, digital tools can enhance both efficiency and empathy in public administration (Bhattacharya & Kumar, 2022).

The initiative contributes to good governance by strengthening transparency, accountability, responsiveness, and inclusiveness. Digital audit trails and standardised workflows reduce discretionary decision-making, while doorstep delivery enhances responsiveness to citizen needs (OECD, 2020). By visibly bringing government services into citizens' homes, the scheme also strengthens the legitimacy of the state and fosters trust in public institutions (Heeks & Bailur, 2007).

Moreover, the programme aligns with participatory governance ideals by empowering citizens to engage with government on their own terms. The reduction in dependence on informal intermediaries further supports ethical governance and reduces opportunities for rent-seeking behaviour (World Bank, 2016).

One of the most significant contributions of Sarkar Tuhade Dwaar lies in its focus on social equity. Digital-only governance platforms often risk excluding those without access to devices, internet connectivity, or digital skills. By contrast, Punjab's doorstep model actively mitigates these risks through assisted service delivery (Bhattacharya & Kumar, 2022).

Rural households, elderly citizens, women with caregiving responsibilities, and persons with disabilities benefit disproportionately from the scheme, as it removes mobility and access barriers. The home-based delivery of services also has symbolic value, signalling state responsiveness and care, particularly for vulnerable populations (World Bank, 2016).

In this sense, the scheme exemplifies inclusive digital governance, where technology serves as an enabler rather than a gatekeeper. This has important implications for how future e-governance initiatives are designed and evaluated (OECD, 2020).

Bhagwant Mann Sarkar Tuhade Dwaar represents a bold and transformative step in India's digital governance journey. By scaling up doorstep delivery across an unprecedented range of services and departments, Punjab has demonstrated how digital transformation can be aligned with equity, trust, and citizen convenience (Government of Punjab, 2023). The scheme redefines the citizen–state relationship, shifting governance from a reactive, office-bound model to a proactive, service-oriented approach.

While challenges related to cost, coordination, and sustainability remain, the initiative offers valuable lessons for policymakers and scholars alike. It underscores that the success of digital governance lies not merely in technological sophistication but in the thoughtful integration of technology, institutions, and human agency (Heeks, 2006). As such, Sarkar Tuhade Dwaar stands as a compelling example of people-first digital governance in practice.

3.2.3 Karnataka: Seva Sindhu

Karnataka's Seva Sindhu represents one of India's most comprehensive and technologically advanced digital governance platforms at the state level. Launched in

2018 by the Government of Karnataka, Seva Sindhu was designed as a unified digital gateway to deliver a wide range of government services to citizens through a single, integrated portal. The platform consolidates services offered by multiple departments, enabling citizens to apply online, submit documents digitally, track application status, and receive digitally signed certificates (Government of Karnataka, 2018) without the need for repeated physical visits to government offices.

As a flagship initiative under Karnataka's broader e-governance and digital transformation agenda, Seva Sindhu reflects a platform-centric model of digital governance, prioritizing administrative efficiency, interoperability, and scalability. Unlike doorstep delivery initiatives adopted by states such as Delhi and Punjab, Karnataka's approach relies primarily on self-service digital access, with limited assisted or doorstep components (Heeks & Bailur, 2007).

3.2.3.1 Policy Context and Rationale

Karnataka has historically been at the forefront of information technology adoption in public administration, owing in part to its strong ICT ecosystem and administrative capacity. Prior to Seva Sindhu, the state operated multiple department-specific portals and service delivery mechanisms, which often resulted in fragmentation, duplication, and inconsistent service standards. Citizens were required to navigate different websites, authentication systems, and documentation processes depending on the service sought.

Seva Sindhu was conceptualized to address these challenges by creating a single-window digital service delivery platform. The primary policy rationale was to streamline service access, reduce administrative overhead, and enhance transparency by standardizing workflows across departments (Heeks, 2006). By leveraging digital identity verification, centralized databases, and automated workflows, the platform sought to improve service turnaround times and reduce manual intervention.

The initiative aligns closely with the objectives of the Digital India programme and the principles of Digital Era Governance, which emphasize integration, user-centric design, and data-driven administration (Government of India, 2015). However, the

emphasis in Karnataka's case is clearly on digital self-service rather than proactive outreach.

3.2.3.2 Design and Functional Architecture

Seva Sindhu operates as an integrated digital portal that provides access to approximately 300 government services spanning departments such as Revenue, Transport, Labour, Social Welfare, Urban Development, and Rural Development (Government of Karnataka, 2018). Citizens can access the platform using Aadhaar-based or mobile-based authentication, ensuring secure and standardized identity verification.

The functional architecture of Seva Sindhu includes the following core components:

Online Application Submission: Citizens can complete application forms digitally, upload required documents, and submit requests without visiting government offices (Government of Karnataka, 2018).

Workflow Automation: Applications are routed electronically to the relevant departments and officials, reducing processing time and administrative duplication (Heeks, 2006).

Status Tracking: Real-time application tracking allows citizens to monitor progress and receive updates via SMS or the portal interface (Government of Karnataka, 2018).

Digital Certificates: Approved services result in the issuance of digitally signed certificates, which can be downloaded and reused across departments (Government of Karnataka, 2018).

This architecture significantly reduces paperwork, minimizes physical interface points, and enhances process consistency. From an administrative perspective, it allows departments to monitor service volumes, turnaround times, and bottlenecks through centralized dashboards **(Heeks & Bailur, 2007)**.

One of Seva Sindhu's most significant contributions to digital governance is its emphasis on inter-departmental interoperability. The platform integrates backend

databases and service workflows across departments, enabling data sharing and reducing the need for citizens to submit the same information repeatedly (Government of Karnataka, 2018).

The standardization of service workflows also ensures uniform service standards across districts and administrative units. From a governance perspective, this reduces discretion at the frontline level and promotes rule-based administration (Heeks, 2006).

3.2.3.3 Governance Orientation and Administrative Outcomes

Seva Sindhu exemplifies a technology-driven governance approach, where digital platforms serve as the primary interface between citizens and the state. The platform has contributed significantly to administrative efficiency by reducing manual processing, standardizing service delivery, and enabling data-driven monitoring (Heeks, 2006).

From a governance standpoint, the platform enhances transparency through digital records, status tracking, and time-stamped workflows. These features limit opportunities for rent-seeking and improve accountability within departments (OECD, 2020). Moreover, the availability of digitally signed certificates enhances trust in service outcomes and reduces the need for physical verification (Government of Karnataka, 2018).

However, the governance model prioritizes efficiency and scale over relational or personalized engagement. Citizen interaction with the state is largely transactional and mediated through digital interfaces, which may not fully address trust deficits or access barriers among marginalized groups (Heeks & Bailur, 2007).

A critical limitation of the Seva Sindhu model lies in its reliance on digital self-service. While Karnataka has relatively high levels of digital infrastructure and literacy compared to many states, disparities persist along rural–urban, gender, and socio-economic lines (World Bank, 2016).

Citizens without smartphones, reliable internet access, or digital skills may find it difficult to fully benefit from the platform. Although assisted service centers provide

some support, the absence of a systematic doorstep delivery mechanism limits the platform's inclusiveness (Bhattacharya & Kumar, 2022).

In contrast to Punjab and Delhi, where doorstep models actively mitigate digital exclusion, Karnataka's approach assumes a baseline level of digital capability. This highlights an important trade-off in digital governance design: efficiency versus inclusivity (Heeks & Bailur, 2007).

3. 2.4 Telangana: MeeSeva

Tilangana (United Andhra Pradesh that time) MeeSeva, launched in 2011, stands as one of India's earliest and most institutionalized digital governance platforms. Conceived as a citizen-centric initiative under the broader National e-Governance Plan (NeGP), MeeSeva was designed to bring government services closer to citizens by combining digital platforms with a widespread network of physical service centers (Government of Telangana, 2011). Over time, the platform has evolved into a comprehensive service delivery ecosystem offering a wide range of government-to-citizen (G2C) and business-to-government (B2G) services across the state.

MeeSeva occupies a distinctive position in India's digital governance landscape. Unlike doorstep delivery models that emphasize household-level outreach, or portal-centric systems that rely primarily on self-service digital access, MeeSeva represents a hybrid governance model. It integrates digital infrastructure, centralized databases, and online service workflows with franchise-based service centers that provide assisted access (Heeks, 2006).

3.2.4.1 Policy Context and Rationale

The origins of MeeSeva can be traced to the need for administrative reform in a context characterized by high population density, diverse service demands, and uneven digital literacy. Prior to its launch, citizens were required to visit multiple government offices to access routine services, leading to delays, high transaction costs, and opportunities for rent-seeking behavior (World Bank, 2016). MeeSeva was conceptualized to address these challenges by offering a single-window service

delivery mechanism that would be accessible across urban, semi-urban, and rural areas.

The platform was also intended to promote public–private collaboration in service delivery. By adopting a franchise-based model, the government leveraged private operators to manage service centers while retaining control over service standards, pricing, and backend processes (Government of Telangana, 2011). This approach enabled rapid geographic expansion and reduced the administrative burden on government departments.

MeeSeva aligns with the principles of Digital Era Governance and New Public Management, emphasizing efficiency, standardization, and service orientation (Heeks & Bailur, 2007). At the same time, it reflects an early recognition that purely digital portals may not adequately serve populations with limited digital access, necessitating assisted service delivery (Heeks, 2006).

3.2.4.1 Operational Architecture and Service Delivery Mechanism

MeeSeva operates through a dual architecture consisting of a centralized digital platform and a decentralized network of physical service centers. The digital backbone integrates departmental databases, application workflows, and payment gateways, while MeeSeva centers act as the primary citizen-facing interface (Government of Telangana, 2011).

Citizens can access services by visiting a nearby MeeSeva center, where trained operators assist with application submission, document scanning, fee payment, and service tracking. The platform supports a wide array of services, including certificates, licenses, land records, utility payments, and business-related approvals. In addition to G2C services, MeeSeva facilitates B2G interactions, such as registrations and compliance-related filings (Government of Telangana, 2011).

To complement center-based access, the government has introduced mobile and online applications such as T-App Folio, which enable citizens to submit applications, track status, and receive notifications remotely. This multi-channel access strategy enhances convenience while preserving the assisted service model (OECD, 2020).

3.2.4.2 Technological Integration and Standardization

A defining feature of MeeSeva is its emphasis on standardized service workflows. Applications submitted through MeeSeva centers or online interfaces are routed through centralized systems to the relevant departments. This standardization ensures uniform service delivery across districts and minimizes discretionary decision-making at the frontline level (Heeks, 2006).

The platform integrates online payment systems, enabling transparent fee collection and reducing cash handling. Digital receipts and acknowledgements provide citizens with proof of transaction and facilitate grievance redressal (OECD, 2020). From an administrative perspective, centralized dashboards allow departments to monitor service volumes, processing times, and performance indicators (Government of Telangana, 2011).

MeeSeva's technological architecture thus contributes significantly to administrative consistency and process transparency. By formalizing service delivery through digital workflows, the platform strengthens rule-based governance and reduces opportunities for informal mediation (Heeks & Bailur, 2007).

3.2.4.3 Governance Orientation and Outcomes

From a governance perspective, MeeSeva exemplifies a service standardization and efficiency-oriented model. By centralizing service delivery processes and decentralizing access points, the platform achieves a balance between administrative control and citizen convenience (Heeks, 2006).

Transparency is enhanced through digital tracking, standardized fees, and time-stamped workflows. These features reduce discretion and contribute to improved accountability (OECD, 2020). Moreover, the availability of service data supports evidence-based administrative decision-making and performance management (Government of Telangana, 2011).

However, the model emphasizes transactional efficiency over relational engagement. Interaction with the state occurs primarily through service center operators rather than direct household-level engagement, limiting opportunities for personalized governance or proactive outreach (Heeks & Bailur, 2007).

MeeSeva has played a crucial role in expanding access to digital services, particularly in urban and semi-urban contexts. Assisted access through service centers mitigates some digital divide concerns by providing support to citizens who lack digital skills or devices (World Bank, 2016).

Nevertheless, the model has limitations in addressing last-mile accessibility. Citizens in remote areas or those with mobility constraints must still travel to a MeeSeva center. Unlike doorstep delivery models, MeeSeva does not systematically eliminate physical access barriers (World Bank, 2016).

This highlights a key trade-off: while franchise-based centers improve access compared to purely digital portals, they do not fully resolve issues of mobility and convenience for the most vulnerable populations (Heeks, 2006).

3.5 Digital Governance Highlights across Selected States: A Comparative Analysis

To systematically examine the nature and effectiveness of digital governance initiatives across states, a comparative assessment of selected schemes was undertaken. The comparison focuses on key dimensions of digital governance, including citizen-centricity, technological integration, transparency mechanisms, inclusiveness, and governance orientation. Table 3.1 presents a structured comparison of the major state-level initiatives.

Table 3.1: Comparative Overview of Digital Governance Schemes across States

Dimension	Delhi: Doorstep Delivery of Public Services	Punjab: Bhagwant Mann Sarkar Tuhade Dwaar	Karnataka: Seva Sindhu	Telangana: MeeSeva
Governance Model	Doorstep, on-demand service delivery	Statewide doorstep delivery	Integrated digital service portal	Hybrid digital–physical service centers
Citizen Interface	Helpline (1076) and online portal	Helpline (1076), portal, WhatsApp	Online portal	Franchise-based MeeSeva centers
Extent of Doorstep Services	High (home visits by Mobile Sahayaks)	Very high (450+ services across departments)	Limited (select pilots)	Minimal (center-based delivery)
Technological Integration	High (biometrics, OTP, real-time tracking)	Very high (e-Sewa backend, OTP verification, dashboards)	High (inter-departmental workflow automation)	Moderate to high (portal and app integration)
Transparency Mechanisms	Digital receipts, SMS alerts, tracking dashboards	OTP-verified visits, digital audit trails, receipts	Online status tracking, digital certificates	Application tracking, standardized service fees
Inclusiveness	Strong (urban poor, elderly, women)	Very strong (rural, remote, elderly, PwDs)	Moderate (digital access dependent)	Moderate (access via physical centers)
Governance Orientation	Service-outreach-centric	Service-outreach-centric with institutional scale	Platform-centric	Platform-centric with physical access points
Innovation Focus	Last-mile service delivery	Universal access and scale	Administrative efficiency and integration	Service standardization and scalability

A comparative assessment of these initiatives reveals divergent governance philosophies. Doorstep delivery models emphasize inclusiveness and trust-building, while platform-centric and hybrid models prioritize efficiency and scalability. Evidence suggests that digital governance outcomes are optimized when technological integration is complemented by human facilitation and institutional accountability (OECD, 2020; Heeks & Bailur, 2007).

3.5 Concluding Remarks

This chapter examined key digital governance schemes implemented by selected Indian states, illustrating how technology-driven initiatives are reshaping public service delivery and governance practices. The analysis demonstrates that while integrated digital portals improve efficiency and scalability, doorstep delivery models significantly enhance inclusiveness, trust, and citizen satisfaction by addressing last-mile challenges (World Bank, 2016).

As states continue to expand digital initiatives, aligning them with principles of good governance—transparency, responsiveness, equity, and participation—will be critical (OECD, 2020). These state-level innovations provide valuable lessons for scaling digital governance across India and strengthening democratic administration in the digital age (Heeks, 2006).

The next chapter details the research design to quantitatively measure the impact of digital transformation on digital governance.

CHAPTER 4

RESEARCH DESIGN

4.1 Introduction

This research adopts a multi-stage methodological strategy integrating systematic literature analysis, conceptual model development, and empirical validation. The study begins with a systematic literature review grounded in the Technology–Organization–Environment (TOE) framework, which provides a robust lens for examining digital transformation in public sector organizations. The TOE framework enables the identification of technological, organizational, and environmental factors influencing the successful implementation of digital governance initiatives (Tornatzky & Fleischer, 1990; Baker, 2012).

The second stage focuses on conceptual model development to explain how digital transformation mechanisms contribute to governance outcomes such as transparency, accountability, efficiency, responsiveness, and citizen trust. The final stage involves an empirical investigation using structured data collection and advanced statistical analysis to assess the effectiveness of digital interventions implemented in selected state schemes. Collectively, this methodological approach ensures analytical rigor, theoretical grounding, and empirical robustness in addressing the research objectives.

4.2 Research Construct

Based on the analysis conducted in the preceding chapters, the following research constructs were identified and are discussed below:

1. Digital Transformation (DF)

Digital transformation refers to the integration and application of digital technologies to enhance governmental processes, service delivery, and citizen experience. In public sector contexts, digital transformation emphasizes system usability, information quality, interoperability, and responsiveness (Vial, 2019; Mergel et al., 2019). These dimensions shape citizens' perceptions of the effectiveness of digital governance platforms, including ease of use, reliability, personalization, and cross-platform service integration.

Empirical research indicates that digital transformation improves public service performance by streamlining administrative processes, reducing transaction costs, and increasing accessibility (Gil-Garcia et al., 2018). These characteristics reflect the modernization of governance systems through digital innovation.

2. Citizen Engagement (CE)

Citizen engagement refers to the active involvement of citizens in governance processes through digital platforms that facilitate participation, collaboration, and accountability. Digital engagement enhances civic awareness, empowers citizens to contribute to decision-making, and promotes collaborative governance (Gaventa & Barrett, 2012; Meijer, 2011).

Studies demonstrate that e-participation tools such as online consultations, grievance redressal platforms, and social media channels strengthen democratic legitimacy by enabling two-way interaction between governments and citizens (Bonsón et al., 2017). These mechanisms expand opportunities for inclusive participation and enhance government responsiveness.

3. Trust and Confidence (TC)

Trust and confidence are critical psychological determinants of citizens' acceptance and use of digital government services. Trust reflects citizens' belief in the integrity, benevolence, and competence of government institutions, while confidence relates to perceptions of government capability and reliability (McKnight et al., 2002; Grimmelikhuijsen et al., 2013).

Empirical evidence suggests that transparent digital services, consistent performance, and service quality significantly enhance citizens' trust and confidence in government, thereby increasing engagement and support for governance reforms (Morgeson et al., 2011).

4. Public Service Delivery (PSD)

Public service delivery refers to the efficiency, accessibility, transparency, and reliability of services provided by government institutions. Digital transformation

improves service delivery by automating administrative processes, reducing bureaucratic delays, and minimizing corruption risks (Cordella & Bonina, 2012).

Research indicates that effective digital public services reduce transaction time, enhance service accuracy, and increase citizen satisfaction when supported by adequate infrastructure and institutional capacity (Lindgren & Jansson, 2013).

5. Transformation of Government (TOG)

Transformation of government represents the institutional capacity to adapt to change, promote innovation, and respond flexibly to evolving societal needs. Organizational transformation in the public sector is characterized by adaptability, responsiveness, and openness to innovation (Fernandez & Rainey, 2006).

Digitally transformed governments exhibit improved inter-departmental coordination, faster decision-making, and enhanced responsiveness to citizen demands (Moynihan et al., 2012).

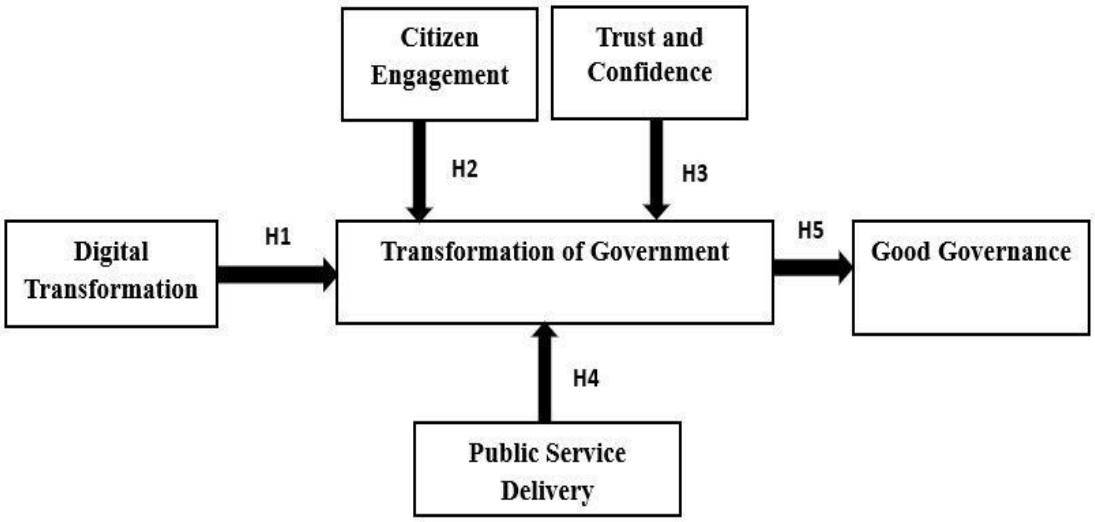
6. Good Governance (GG)

Good governance encompasses transparency, accountability, participation, responsiveness, equity, and legitimacy in public administration. Digital governance strengthens these principles by enhancing information access, facilitating citizen participation, and improving accountability mechanisms (Meijer et al., 2012).

Empirical studies confirm that digital platforms contribute to improved governance outcomes when inclusiveness and institutional accountability are prioritized (Bertot et al., 2010).

4.3. Conceptual research framework

Figure 4.1 illustrates the conceptual framework proposed in this study, depicting the relationships between digital transformation, transformation of government, and good governance. The framework is grounded in the TOE framework and digital governance literature (Tornatzky & Fleischer, 1990; Mergel et al., 2019).



Source: Author's own creation

Figure 4.1: Proposed Conceptual Model

4.4 Hypotheses Development

4.4.1. Digital Transformation and Transformation of Government

Digital transformation has emerged as a pivotal force reshaping governance structure by integrating advanced technologies such as cloud computing, artificial intelligence, big data analytics, and blockchain. These technologies have the potential to enhance efficiency, responsiveness, and transparency in government operations, yet their actual impact on government transformation remains contingent on various factors, including existing technological infrastructure, digital literacy among government officials, and the institutional willingness to adopt and implement digital initiatives effectively (Lin et al., 2024). Governments that effectively leverage digital tools tend to enhance operational efficiency, reduce bureaucratic delays, and improve public service delivery (Arrnaud et al., 2024). However, many governments struggle with outdated infrastructures and resistance to change, which can limit the full potential of digital transformation in governance (MacLean and Titah, 2022).

In India, digital transformation has progressed at an uneven pace, with significant advancements in some areas while others remain underdeveloped. For instance, financial transactions through Unified Payments Interface (UPI) have revolutionized digital payments and financial accessibility. However, e-governance adoption across

public sectors, particularly in rural regions, remains inconsistent due to varying levels of infrastructure development and digital literacy (Latupeirissa et al., 2024). This disparity underscores the need for further examination of how digital transformation facilitates broader governmental change. Understanding the extent to which digital transformation influences government transformation is essential for optimizing policy interventions and addressing implementation gaps. Therefore, the following hypothesis is proposed:

H1: Digital transformation positively influences the transformation of government.

4.4.2. Citizen Engagement and Transformation of Government

Citizen engagement is widely recognized as a crucial factor in fostering effective governance, particularly in democratic societies where legitimacy is reinforced through public participation. The integration of digital technologies into governance has introduced new mechanisms for engagement, such as e-governance platforms, online public consultations, grievance redressal systems, and social media channels, all of which allow citizens to directly interact with government institutions (Tejedo-Romero et al., 2022). Through such platforms, governments can enhance responsiveness, transparency, and accountability in decision-making processes (Tangi et al., 2021).

However, while digital engagement tools exist, their effectiveness depends on factors such as accessibility, usability, and the responsiveness of government institutions to citizen inputs (Mishra, 2020; Singh et al., 2022). In India, platforms such as MyGov, which was launched to facilitate direct citizen-government interaction, have had mixed success. While they have increased participation in policymaking, concerns about bureaucratic responsiveness, digital literacy gaps, and uneven access to these platforms remain (Tangi et al., 2021; Choudhary and Bansal, 2022). Consequently, it is essential to explore whether increased citizen engagement through digital means translates into substantive governmental transformation or if challenges related to implementation hinder its effectiveness. A deeper investigation is required to assess whether digital engagement truly fosters greater transparency, accountability, and

inclusiveness in governance, thereby driving government transformation. Thus, the following hypothesis is proposed:

H2: Increased citizen engagement positively influences the transformation of government.

4.4.3. Citizens Trust and Confidence and Transformation of Government

Trust and confidence in government are fundamental to the success of digital governance initiatives. While both concepts are related, they represent distinct dimensions of citizen-government interaction. Trust refers to the belief that the government will act in the public's best interest with integrity, transparency, and accountability (Mahmood and Weerakkody, 2020). In contrast, confidence reflects citizens' perceptions of the government's technical capability, efficiency in service delivery, and ability to implement policies effectively (Alam et al., 2023). For digital governance to be successful, both trust and confidence must be present. Trust fosters citizen willingness to engage with digital platforms, knowing that their data is secure and that governance processes are transparent. Confidence, on the other hand, ensures that citizens perceive government digital services as reliable, efficient, and responsive (Pandey, 2023). Without trust, skepticism regarding government intentions may lead to disengagement, while low confidence in digital infrastructure may prevent citizens from utilizing e-governance services effectively (Alam et al., 2023).

In India, a trust deficit remains a significant barrier to digital governance adoption. Corruption, bureaucratic inefficiencies, and concerns over data privacy and cybersecurity breaches contribute to public hesitation in fully embracing digital initiatives (Pandey, 2023). Additionally, poor digital service reliability, inconsistent user experiences, and past failures of certain e-governance projects have diminished citizens' confidence in digital transformation efforts (Yang et al., 2024). Addressing these barriers is essential to ensuring that trust and confidence contribute to a larger transformation of government systems. Therefore, the following hypothesis is proposed:

H3: Increased citizens' trust and confidence in government positively influence

the transformation of government.

4.4.4. Improved Public Service Delivery and Transformation of Government

Public service delivery is a fundamental governmental function, and improving its efficiency is a key goal of governance reforms (MacLean and Titah, 2022; Latupeirissa et al., 2024). Digital transformation has the potential to streamline public service delivery by automating administrative processes, reducing bureaucratic inefficiencies, and minimizing opportunities for corruption. For example, e-governance platforms enable citizens to access services such as tax payments, document issuance, and government benefit applications online, thereby improving accessibility and reducing delays (Malodia et al., 2021).

However, the impact of digital transformation on service delivery depends on several factors, including technological infrastructure, government commitment, and the adaptability of public institutions. In India, e-District platforms were introduced to enhance service accessibility at the district level, but inconsistent implementation, lack of interoperability across departments, and technical challenges have limited their effectiveness (Latupeirissa et al., 2024). To determine whether improved public service delivery leads to overall governmental transformation, it is necessary to examine how digital service improvements influence government accountability, citizen trust, and administrative efficiency. Thus, the following hypothesis is proposed:

H4: Improved public service delivery positively influences the transformation of government.

4.4.5. Transformation of government and Good Governance

The transformation of government is ultimately aimed at achieving good governance, which is characterized by transparency, accountability, efficiency, responsiveness, and inclusiveness (Fang et al., 2023; Sari, 2023). A digitally transformed government, when effectively implemented, is expected to embody these principles by leveraging digital tools to enhance decision-making, reduce corruption, and improve service accessibility. However, achieving good governance requires addressing existing

challenges such as digital inequality, resistance to change, and policy enforcement issues (Sari, 2023).

In India, digital transformation efforts have made strides in improving governance, yet challenges persist in ensuring equitable access to e-governance services, enhancing regulatory frameworks, and fostering institutional accountability (Fang et al., 2023). To assess whether government transformation significantly contributes to good governance, it is important to analyze the relationship between policy effectiveness, digital service efficiency, and governance outcomes. Therefore, the following hypothesis is proposed:

H5: The transformation of government positively influences good governance.

4.5 Research Methodology:

This research adopts a multi-stage methodological strategy that integrates systematic literature analysis, theoretical model building, and empirical validation to address the research objectives in a comprehensive manner (Vial, 2019; Gil-Garcia, Dawes, & Pardo, 2018).

The first stage involves conducting a Systematic Literature Review (SLR) guided by the Technology–Organization–Environment (TOE) framework, which serves as a robust analytical lens for understanding digital transformation in the public sector (Tornatzky & Fleischer, 1990; Baker, 2012). This review systematically identifies and synthesizes existing scholarship to determine the key technological enablers (such as digital infrastructures and interoperability), organizational factors (including leadership, capacity, and readiness for change), and environmental influences (policy support, citizen expectations, and institutional pressures) that shape the effectiveness of digital transformation initiatives in governance (Mergel, Edelmann, & Haug, 2019; Gil-Garcia et al., 2018). By grounding the study in established theoretical foundations, the SLR provides a strong conceptual basis for further investigation.

The second stage focuses on conceptual model development, wherein insights gathered from the SLR are used to construct a governance performance model. This model outlines the pathways through which digital transformation practices translate

into essential governance outcomes such as transparency, accountability, responsiveness, efficiency, and citizen trust (Meijer, Curtin, & Hillebrandt, 2012; Bertot, Jaeger, & Grimes, 2010). The conceptualization process clarifies the causal logic connecting digital interventions with governance performance, identifies relevant constructs, and formulates testable hypotheses, consistent with theory-driven research design principles (Gregor, 2006).

The third stage entails conducting an empirical investigation using structured data collection instruments and rigorous analytical procedures. This phase aims to empirically assess the extent to which digital interventions implemented in selected state schemes have contributed to measurable improvements in governance performance. Key methodological components include the development and refinement of measurement scales, assessment of construct validity and reliability, and the application of appropriate statistical techniques such as regression analysis, structural equation modelling (SEM), or path analysis to examine the hypothesized relationships (Hair, Hult, Ringle, & Sarstedt, 2019; Fornell & Larcker, 1981). These analytical procedures enable the study to provide evidence-based insights into the real-world effectiveness of digital transformation efforts.

Individually, each of these methodological components offers a logical and systematic approach to answering specific research questions. Collectively, they form a coherent, rigorous, and well-integrated research framework that ensures both conceptual depth and empirical robustness, thereby strengthening the credibility and validity of the study's findings (Vial, 2019; Gil-Garcia et al., 2018).

4.5.1 Sampling and Data Collection

The study utilized a structured survey to collect data from a diverse group of respondents to explore the relationship between digital transformation, government transformation, and good governance. Survey-based research methods are particularly suitable for capturing perceptions, attitudes, and experiences related to public sector reforms and digital governance initiatives (Podsakoff, MacKenzie, & Podsakoff, 2012). The survey targeted government officials, public sector employees, and digital transformation experts across

various departments, including information technology, public administration, finance, and service delivery. These individuals play crucial roles in implementing and overseeing digital initiatives within governmental frameworks and offer valuable insights into how these initiatives impact governance and institutional transformation (Gil-Garcia et al., 2018).

A total of 400 respondents participated in the study, selected using a convenience sampling method. This approach was chosen to ensure broad representation from different regions and sectors, reflecting the varying degrees of digital transformation and governance practices across India, and is commonly employed in large-scale public administration and governance studies where access to respondents is constrained (Etikan, Musa, & Alkassim, 2016). To enhance the geographic diversity of the sample, respondents were drawn from multiple states and union territories, representing northern, southern, eastern, western, and central India. Additionally, efforts were made to include participants from both urban (65%) and rural (35%) areas to assess differences in digital transformation adoption and governance experiences. The inclusion of respondents from both well-developed and emerging digital landscapes strengthened the study's ability to capture a comprehensive range of perspectives (Table 4.1).

The data collection process was conducted through a combination of online and offline methods, a strategy recommended to reduce coverage bias and enhance inclusiveness in survey research (Bethlehem & Biffignandi, 2012). Online surveys were distributed via email to public sector officials, and Google Form links were shared through professional networks such as LinkedIn. To reach respondents with limited digital access, in-person surveys were administered during governmental conferences and workshops, maximizing participation and ensuring the inclusion of diverse viewpoints. A total of 500 questionnaires were initially distributed, of which 400 valid responses were retained for analysis, resulting in a response rate of 80%. To maintain data integrity, 50 responses were excluded due to incompleteness or inconsistencies.

To analyse the collected data, the study employed structural equation modelling (SEM), a statistical technique widely used to assess complex relationships among latent variables in governance and information systems research (Hair et al., 2019). SEM was chosen to examine both direct and indirect effects of digital transformation on government transformation and good governance, allowing for a robust and comprehensive evaluation of the proposed conceptual model. This analytical approach provided deeper insights into the interdependencies among the study variables and enhanced the validity of the findings. By ensuring transparency in the research methodology, this study enhances its credibility and provides a framework that can be replicated in future research exploring similar governance contexts (Podsakoff et al., 2012).

Table 4.1: Respondents' Demographics and Professional Distribution

Category	**Subcategory**	**Number of Respondents**	**Percentage (%)**
	Information Technology	140	35.0%
	Public Administration	100	25.0%
Department	Finance	60	15.0%
	Social Services	50	12.5%
Other (e.g., Education, Healthcare)		50	12.5%
IT and E-Governance Specialists		140	35.0%
Public Administration Officials		100	25.0%
Role	Finance Managers	60	15.0%
	Social Service Coordinators	50	12.5%
ducators, Healthcare Admins)		50	12.5%
Experience	1-5years	100	25.0%
	6-10years	150	37.5%
	11-15years	80	20.0%
	16+years	70	17.5%
Education	Bachelor's Degree	120	30.0%
	Master's Degree	200	50.0%
	Doctorate	80	20.0%
Gender	Male	240	60.0%
	Female	160	40.0%
Geographic Distribution	Urban	260	65.5%
	Rural	140	35.0%

Source(s): Primary data

4.5.2. Measurement Development

Consistent with best practices and existing research, the measurement items (Table 4.2) were adapted from rigorously validated and widely accepted scales with specific attention to alignment with the study's objectives. To assess the agreement levels of the participants with each statement, a five-point Likert scale was utilized. This scale ranged from 1(for 'strongly disagree') to 5(for 'strongly agree') providing a consistency to the capture of responses across individuals. The Digital Transformation construct was measured using eight items adapted from the work of Abhi Chandani et al. (2005), focusing on aspects such as user-friendliness, information accuracy, task efficiency, service integration, and the overall impact on public service delivery. Citizen Engagement was assessed through six items derived from Gaventa and Barrett (2012), capturing the extent to which digital platforms have enhanced civic and political participation, community collaboration, and accountability. Trust and Confidence in government transformation efforts were measured using a five-item scale adapted from McKnightetal. (2002) and Morgeson etal. (2011), which evaluated citizens' trust in the alignment of government initiatives with public interests, as well as their confidence in the government’s reliability and efficiency. Public Service Delivery was measured with five items adapted from Naz (2009), focusing on the perceived improvements in accuracy, reliability, transparency, and citizen engagement brought about by digital transformation. The Transformation of Government construct was assessed using five items from Patterson et al. (2005), measuring the adaptability, responsiveness, and flexibility of government departments in embracing new ideas and changes. Lastly, Good Governance was measured with eight items adapted from Pomeranz and Stedman (2022), evaluating the impact of digital platforms on transparency, accountability, inclusiveness, and the legitimacy of government processes (Table 4.2). To ensure the clarity and relevance of these measurement items, a pre-test was conducted with 50 Ph.D. scholars, followed by a pilot study involving five practitioners with specialized knowledge in digital governance. The feedback from these preliminary studies helped refine the final survey instrument, ensuring its suitability for the research objectives. The rigor applied in developing these measurement scales contributes to the reliability and validity of the constructs examined in this study.

Table 4.2: Measurement Items used for Data Collection

Construct	**Scale Items**	**Source**
Digital Transformation (DF)	1. Government websites and digital platforms are user-friendly and easy to navigate. 2. I find the information provided on government digital platforms to be accurate and useful. 3. Digital tools offered by the government help me accomplish tasks efficiently. 4. The design and organization of government websites enhance my experience in accessing services. 5. Government digital platforms allow me to easily track and save my transaction details for future reference. 6. I can customize how I receive notifications and updates from government services (e.g., email, SMS). 7. I find that different government services are well-integrated and connected through digital platforms. 8. Government digital services have improved the efficiency and responsiveness of public service delivery.	Abhichandani et al. (2005)
Citizen Engagement (CE)	1. Digital platforms have increased my awareness of civic and political issues. 2. I feel more empowered to participate in community decision-making through digital tools. 3. I actively engage in civic activities and discussions through online platforms. 4. I collaborate with others in my community to address shared concerns. 5. Digital services have made it easier for me to collaborate with others on community issues. 6. The use of digital tools has improved my ability to hold public officials accountable.	Gaventa and Barrett (2012)
Trust and Confidence (TC)	1. I trust that the government's transformation efforts are aligned with the best interests of citizens. 2. I believe that the government's efficiency in fulfilling its duties has improved through digital transformation. 3. I am confident that the government is reliable in meeting its obligations due to recent changes. 4. I feel assured that the government will effectively fulfill its role in public service delivery. 5. I believe that the government's transformation will lead to better service delivery in the future.	McKnight et al. (2002); Morgeson et al. (2011)
Public Service Delivery (PSD)	1. Digital services have made public service delivery more accurate and reliable. 2. The implementation of digital platforms has reduced the time taken to receive services. 3. Digital transformation has increased transparency and reduced corruption in public services. 4. I find it easier to access public services through digital	Naz (2009)

	means. 5. The use of digital tools in public services has enhanced citizen participation and engagement.	
Transformation of Government (TOG)	1. Government departments are proactive in embracing new ideas. 2. Management in government departments quickly recognizes the need for change. 3. Government departments respond swiftly when changes are necessary. 4. There is flexibility in government departments, allowing them to adapt procedures quickly to new conditions and solve problems effectively. 5. Support for developing new ideas is readily available in government departments.	Patterson et al. (2005)
Good Governance (GG)	1. Digital platforms have improved transparency in government decision-making processes. 2. Government officials communicate decisions and policies more effectively through digital channels. 3. Digital tools have made it easier for citizens to hold government officials accountable. 4. The use of digital platforms has increased citizen trust in government actions and policies. 5. Digital transformation has enabled more inclusive participation in government decisions. 6. Government services have become more efficient and responsive due to digital innovations. 7. Digital governance has ensured that the needs of all community members are considered fairly. 8. I believe that digital tools have strengthened the legitimacy of government processes and decisions.	Pomeranz and Stedman (2022)

4.6 Concluding remarks

This chapter outlined the overall research design employed in the study, with the selection of the design directly aligned with the stated research objectives. This methodological framework not only supports a nuanced understanding of digital governance but also ensures that the empirical analysis is grounded in strong theoretical and operational foundations.

The next chapter advances this inquiry by presenting the results of the structural equation modelling (SEM) conducted on the survey data. These findings provide empirical validation of the proposed conceptual framework and offer deeper insights into the direct and indirect relationships among the key variables studied

CHAPTER 5

EMPIRICAL TESTING AND VALIDATION OF THE RESEARCH MODEL

5.1. Introduction

The previous chapter elaborated on the research design of the study. Based on the conceptual research framework and hypotheses of the study presented in the last chapter, a research model of is proposed and empirically tested in the quantitative study of this chapter.

The findings of the structural equation modelling-based analysis are presented and the chapter ends with the discussion and concluding remarks in the last two sections.

5.2. Data Analysis and Results

The data analysis for the research model was conducted using Partial Least Squares Structural Equation Modelling (PLS-SEM), a robust, component-based methodology particularly well-suited for studies which are exploratory in nature. PLS-SEM also enables effective management of models comprising numerous latent variables and is effective in assessing reflective measurement models. SmartPLS 3.2.7 was used as the analytical tool for its ability to examine latent variable relationships while accommodating non-normal data distributions, making it appropriate for the study's context (Hair et al., 2019).

The analysis was executed with 5000 bootstrap resamples to enhance the robustness of the results. Given the nature of the research model and the study's sample size, PLS was deemed the most appropriate method for validating both the measurement and structural models. This approach provided a comprehensive examination of the relationships among the constructs, enabling a deeper understanding of how digital transformation influences government transformation and good governance. Furthermore, Smart PLS facilitated multicollinearity checks, reliability, and validity assessments, ensuring that the model results were both statistically and theoretically sound.

5.2.1. Measurement Model

The measurement model analysis was conducted to evaluate the reliability and validity of the constructs in the study. The results demonstrated high internal consistency, as evidenced by Cronbach's alpha values ranging from 0.921 to 0.967, which exceeded the recommended threshold of 0.70. Similarly, the composite reliability values, ranging from 0.941 to 0.972, were also above the 0.70 threshold, further confirming the reliability of the measurement model. Convergent validity was established through the Average Variance Extracted (AVE) values, all of which exceeded the benchmark of 0.50, with values ranging from 0.760 to 0.833. This indicates that a substantial portion of the variance in the indicators was explained by the latent constructs. Additionally, the item loadings for all indicators were robust, ranging from 0.834 to 0.935, providing additional support for both internal consistency and convergent validity **(Table 5.1).**

Discriminant validity was assessed during both the Fornell and Larcker criterion and the HTMT (hetero trait – mono trait) ratio. The Fornell and Larcker criterion results (Table 5.2) indicated that the square roots of the AVE values for each construct were greater than the correlations between the constructs, confirming discriminant validity. Furthermore, the HTMT values (Table 5.3) were all below the threshold of 0.90, which provided additional evidence of discriminant validity (Henseler et al., 2015). These findings demonstrate that the constructs in the model are distinct from one another, supporting the validity of the measurement model.

Table 5.1: Results of measurement model

Construct	Indicator	Item loadings >0.70	Cronbach's α (CA) >0.70	Composite Reliability (CR) >0.70	Average Variance Extracted (AVE) >0.50
DF	DF1 DF2	0.913	0.967	0.972	0.812
	DF3 DF4	0.911			
	DF5 DF6	0.879			
	DF7 DF8	0.922			
CE	CE1 CE2	0.886			
	CE3 CE4	0.911			
	CE5 CE6	0.896			
TC	TC1 TC2	0.888	0.953	0.962	0.809
	TC3 TC4	0.887			
	TC5	0.886			
PSD	PSD1 PSD2	0.909	0.921	0.941	0.760
	PSD3 PSD4	0.918			
	PSD5	0.902			
TOG	TOG1	0.896	0.950	0.961	0.833
	TOG2	0.879			
	TOG3	0.869			
	TOG4	0.874			
	TOG5	0.834			
GG	GG1	0.902	0.945	0.958	0.820
	GG2	0.931			
	GG3	0.905			
	GG4	0.890			
	GG5	0.906			
	GG6	0.930			
	GG7	0.913	0.966	0.972	0.810
	GG8	0.885			
		0.903			
		0.889			
		0.935			
		0.925			
		0.919			
		0.922			
		0.892			
		0.885			
		0.861			
		0.884			
		0.909			

Source: Author's own creation

Table 5.2: Fornell and Larcker criterion

	DT	CE	TC	PSD	TOG	GG
DT	**0.901**					
CE	0.870	**0.899**				
TC	0.850	0.857	**0.872**			
PSD	0.872	0.887	0.864	**0.913**		
TOG	0.852	0.856	0.841	0.856	**0.905**	
GG	0.879	0.880	0.838	0.872	0.860	**0.900**

Table 5.3: Hetero trait and Mono trait (HTMT) criteria

	CE	DT	GG	PSD	TOG
CE					
DT	0.865				
GG	0.878	0.886			
PSD	0.893	0.881	0.887		
TOG	0.861	0.877	0.884	0.868	
TC	0.872	0.883	0.876	0.879	0.886

Source: Author's own creation

5.2.2. Structural Model

After validating the measurement model, the analysis proceeded to evaluate the structural model, focusing on the relationships between the constructs. Several key indicators, including path coefficients (β), t-values, and p-values, were analyzed to assess the significance and relevance of these relationships. A summary of the results is presented in Table 5.4.

The results of hypothesis testing using the structural equation model indicated that digital transformation has a significant and positive impact on the transformation of government ($\beta = 0.317$, $p<0.001$), supporting Hypothesis 1. Similarly, citizen engagement was found to positively influence the transformation of government ($\beta = 0.302$, $p = 0.001$), providing support for Hypothesis 2. Trust and confidence also showed a significant positive effect on the transformation of government ($\beta = 0.386$, $p < 0.001$), confirming Hypothesis 3. Furthermore, public service delivery significantly contributed to the transformation of government ($\beta = 0.472$, $p < 0.001$), supporting Hypothesis 4.

Moreover, the transformation of government was found to have a strong positive impact on good governance ($\beta = 0.960$, $p < 0.001$), thus supporting Hypothesis 5. These findings collectively underscore the importance of digital transformation, citizen engagement, trust and confidence, and public service delivery in driving the transformation of government, which in turn enhances good governance. All hypotheses (H1-H5) were supported by the results of the structural model analysis.

Table 5.4: Structural Model Results

Hypotheses	Relation	Beta	t values	P values	Findings
H1	DT→TOG	0.317	4.912	0.000	Supported
H2	CE→TOG	0.302	3.220	0.001	Supported
H3	TC→TOG	0.386	4.178	0.000	Supported
H4	PSD→TOG	0.472	2.440	0.000	Supported
H5	TOG→GG	0.960	2.843	0.000	Supported

Source: Author's own creation

5.3. Discussion

The findings of this study provide critical insights into the intricate relationships between digital transformation, the transformation of government, and good governance within the Indian public sector. The results underscore the importance of leveraging digital technologies to drive meaningful changes in governmental structures and processes, ultimately leading to enhanced governance outcomes. This section discusses the implications of the results, situates them within the broader literature, and outlines their practical relevance for policymakers and public sector leaders.

The study's results affirm the significant positive impact of digital transformation on the transformation of government (H1). The beta coefficient ($\beta = 0.317$, $p < 0.001$) suggests that as government entities increasingly adopt digital tools and platforms, they become more adaptable, responsive, and efficient in their operations. This finding aligns with existing literature, which posits that digital transformation is a catalyst for modernizing public administration, enabling more agile and citizen-centric service delivery (Mergel et al., 2019). The high path coefficient reflects the substantial influence of digital initiatives in reshaping governmental functions, supporting the argument that technology can bridge gaps in service delivery, improve transparency, and enhance public trust in government (Wirtz et al., 2019).

The positive relationship between citizen engagement and the transformation of government (H2) was also supported ($\beta = 0.302$, $p = 0.001$). This result indicates that active citizen participation, facilitated by digital platforms, contributes to the transformation of government by fostering a more inclusive and participatory

governance model. Digital tools that enhance civic engagement, such as e-participation platforms, empower citizens to play a more active role in decision-making processes. This finding is consistent with the view that engaging citizens through digital means can lead to more responsive and accountable governance, as it amplifies the voices of diverse stakeholders (Sandoval-Almazan & Gil-Garcia, 2012). For policymakers, this underscores the need to develop robust digital engagement strategies that encourage citizen participation.

The study also found a significant positive effect of trust and confidence on the transformation of government (H3), with a beta coefficient of 0.386 ($p < 0.001$). This finding highlights the critical role of public trust and confidence in the success of government transformation efforts. Trust in government is crucial for the effective implementation of digital initiatives, as it influences citizens' willingness to engage with and utilize digital services (Welch et al., 2005). Similarly, confidence in government institutions plays an essential role in fostering public support for digital governance, as citizens are more likely to engage when they perceive government services as reliable, secure, and competent (Tolbert & Mossberger, 2006). This result emphasizes the need for governments to build and maintain both trust and confidence through transparent, accountable, and effective digital service delivery.

Public service delivery was found to significantly contribute to the transformation of government (H4) ($\beta = 0.472$, $p < 0.001$), making it the most influential factor in the model. This finding suggests that improvements in public service delivery, driven by digital transformation, are paramount in driving government transformation. Efficient and reliable service delivery enhances citizens' perceptions of government performance, fostering greater trust and engagement (Grimmelikhuijsen & Feeney, 2017). The strong relationship between public service delivery and government transformation underscores the importance of focusing digital transformation efforts on improving service quality, accessibility, and responsiveness. This aligns with the broader literature, which argues that digital tools can revolutionize public service delivery by making it more efficient and citizen-cantered (Twizeyimana & Andersson, 2019).

The transformation of government was found to have a profound impact on good governance (H5), as indicated by the exceptionally high beta coefficient (β=0.960, p<0.001). This finding supports the hypothesis that transforming government structures and processes through digital means significantly enhances the principles of good governance, including transparency, accountability, and responsiveness (Bertot et al., 2010). The strong linkage between government transformation and good governance reinforces the argument that digital governance can serve as a powerful tool for improving public sector performance and fostering democratic governance (Heeks, 2008). To translate these findings into actionable strategies, policymakers should integrate digital literacy programs, enhance interoperability between government agencies, and institutionalize feedback loops that allow citizens to actively contribute to policy evaluation and service improvement.

Therefore, this study contributes to both theoretical and practical discussions on digital transformation and governance. By providing empirical evidence on the impact of digital transformation on governmental processes, the findings offer valuable insights for scholars while also equipping policymakers with actionable recommendations. Governments should view digital transformation not merely as a technological upgrade but as a strategic initiative that aligns with broader governance objectives. Investing in digital inclusion, trust-building mechanisms, and innovative citizen engagement models will be critical for ensuring that digital governance efforts translate into sustainable improvements in governance outcomes.

Table 5.5: Key Findings on Digital Transformation and Governance Implications

Hypotheses	Finding	Beta Coefficient (β)	Significance (p-value)	Governance Implications
H1: Digital Transformation → Transformation of Government	Supported	0.317	p < 0.001	Digital adoption enhances government efficiency, adaptability, and service delivery. Investments in digital infrastructure are essential.
H2: Citizen Engagement → Transformation of Government	Supported	0.302	p = 0.001	Digital platforms foster inclusive governance by amplifying citizen participation. Strengthening e-

				participation strategies is necessary.
H3: Trust & Confidence → Transformation of Government	Supported	0.386	$p < 0.001$	Public trust is a key driver of digital governance success. Transparency, cybersecurity, and data protection must be prioritized.
H4: Public Service Delivery → Transformation of Government	Supported	0.472	$p < 0.001$	Efficient service delivery enhances public trust in government. AI-driven automation and streamlined services should be emphasized.
H5: Transformation of Government → Good Governance	Strongly Supported	0.960	$p < 0.001$	Digital transformation leads to greater transparency, accountability, and legitimacy. Digital literacy programs and feedback loops should be institutionalized.

5.4. Concluding remarks

This chapter presented the empirical testing and validation of the proposed research model, offering robust evidence for the transformative role of digital technologies in reshaping governance structures. Through comprehensive measurement and structural model analysis using PLS-SEM, the study confirmed that digital transformation, citizen engagement, trust and confidence, and public service delivery significantly influence the transformation of government. The findings not only validate the theoretical relationships outlined in the model but also reinforce the growing relevance of digital governance in the Indian public sector. Collectively, this chapter establishes a solid empirical foundation for the subsequent discussion and policy recommendations, demonstrating that strategic digital initiatives can meaningfully strengthen governance outcomes and citizen–government interactions.

The next chapter presents the key findings derived from both the qualitative and quantitative inquiries of the study. It further discusses the implications for research and practice, outlines the study's limitations, and offers directions for future research.

CHAPTER 6

CONCLUSION AND FUTURE RESEARCH

6.1 Introduction

This chapter synthesizes the key findings of the study, revisiting the research objectives and questions articulated in Chapter 1 and drawing together the theoretical, empirical, and practical strands explored in earlier chapters. The purpose here is not only to summarise the results but also to situate them within the broader discourse on digital transformation and governance, particularly in the context of India's public sector (Vial, 2019; Mergel, Edelmann, & Haug, 2019).

The chapter begins by revisiting each research question and mapping the corresponding empirical insights to the conceptual framework developed at the outset of the study. It then articulates the theoretical and practical contributions, highlighting how this research advances existing scholarship on digital governance and provides actionable insights for policymakers, administrators, and practitioners (Dunleavy, Margetts, Bastow, & Tinkler, 2006).

In doing so, the chapter also critically acknowledges the inherent limitations of the research both methodological and contextual so as to frame the scope within which the findings should be interpreted. This transparency provides a foundation for identifying meaningful avenues for future inquiry that can build upon, extend, or challenge the present work (Bannister & Connolly, 2014).

The final section outlines potential research directions, encouraging further empirical and conceptual work that captures the evolving nature of digital transformation, governance structures, and citizen–state interactions in emerging economies. By weaving together conclusions, implications, and prospects for further exploration, this chapter reinforces the study's core proposition: that digital transformation, when embedded strategically within governance frameworks, can act as a catalyst for institutional reform, citizen empowerment, and the realization of good governance principles (OECD, 2020).

6.2 Research Questions Revisited

The core aim of this study was to examine how digital transformation reshapes governance in the Indian public sector. By employing a Structural Equation Modeling (SEM) approach and using validated constructs, the study empirically tested five key hypotheses aligned with five research questions. The findings, based on responses from beneficiaries and stakeholders of state-level e-governance schemes, support all hypothesized relationships, consistent with prior empirical studies on digital government transformation (Mergel et al., 2019; Vial, 2019).

6.2.1 What is the effect of digital transformation on the transformation of government operations?

The study finds that digital transformation has a statistically significant and positive impact on the transformation of government operations. Digital transformation operationalized through process automation, ICT infrastructure, digital service portals, and backend integration enhances administrative responsiveness, transparency, and efficiency (Heeks, 2006; Dunleavy et al., 2006).

The results indicate that digital transformation plays a catalytic role in shifting government functioning from hierarchical, paper-based systems to agile, integrated, and citizen-centric models. This transformation extends beyond technical change to institutional and behavioural restructuring, reshaping workflows, accountability mechanisms, and interdepartmental coordination (Bannister & Connolly, 4).

Thus, the findings affirm that digital technologies are not ends in themselves but instruments that initiate deep structural change in governance systems, aligning with digital-era governance and institutional transformation theories (Dunleavy et al., 2006).

6.2.2 How does citizen engagement influence the transformation of government?

The study provides robust evidence that citizen engagement significantly contributes to the transformation of government. The SEM results indicate that active citizen participation through digital feedback mechanisms, grievance redressal systems, and

participatory platforms fosters transparency, inclusiveness, and responsiveness (West, 2004; OECD, 2017).

Qualitative observations further suggest that digital interfaces such as mobile applications, online portals, and SMS-based feedback systems enhance two-way communication, particularly in welfare service delivery. These mechanisms strengthen administrative accountability and facilitate bottom-up innovation in public service design (Noveck, 2015).

Overall, the findings confirm that digital citizen engagement fosters institutional transformation rather than merely improving service efficiency, consistent with participatory governance and open government paradigms (OECD, 2017).

6.2.3 To what extent do trust and confidence in public institutions affect government transformation?

Trust and confidence in public institutions emerge as critical enablers of government transformation. The empirical analysis confirms that citizen trust positively and significantly influences government transformation, reinforcing the role of trust in shaping citizens' willingness to engage with digital services (Grimmelikhuijsen, Porumbescu, Hong, & Im, 2013).

The findings indicate that when public institutions are perceived as transparent, fair, and reliable, citizens are more likely to participate in digital governance initiatives. Trust thus functions as a social lubricant, facilitating adoption, collaboration, and co-creation between the government and citizens (OECD, 2017).

Importantly, the results suggest that trust is both reciprocal and cumulative, as increased transparency and responsiveness enabled by digital governance deepen institutional trust, further accelerating transformation (Grimmelikhuijsen et al., 2013).

6.2.4 What is the impact of public service delivery on the transformation of government?

Public service delivery is shown to have a direct and positive influence on the transformation of government. The results demonstrate that improvements in service efficiency, accessibility, and grievance redressal enabled through digital platforms are strongly associated with perceptions of transformational governance (Heeks, 2006;

Margetts & Dunleavy, 2013).

Schemes offering integrated services through single-window portals, real-time service tracking, and digital verification mechanisms are perceived as more transformative. Effective digitization of public services signals a shift from bureaucratic inertia toward proactive, data-driven, and citizen-centric governance (Margetts & Dunleavy, 2013).

6.2.5 Does the transformation of government lead to improved good governance outcomes?

The study establishes that the transformation of government has a significant and positive impact on good governance outcomes. The good governance construct including transparency, accountability, responsiveness, participation, and rule of law show strong empirical association with transformed governance structures (OECD, 2020).

These findings confirm the central proposition that digital transformation is not merely a technological upgrade but a strategic pathway for strengthening democratic governance and public value creation (Moore, 1995; Vial, 2019).

6.3 Theoretical and Practical Contributions

6.3.1 Theoretical Contributions

This study makes substantive theoretical contributions to the growing body of literature on digital transformation and public sector governance, particularly within the context of developing economies such as India. The central theoretical contribution lies in empirically validating a comprehensive and integrative model that conceptualizes digital transformation as a foundational enabler of government transformation and good governance, rather than as a standalone technological intervention.

First, the study strengthens theories of administrative modernization by demonstrating that digital transformation catalyses deep institutional change. The findings confirm that when digital technologies are strategically embedded within public sector

organizations, they reshape bureaucratic structures, decision-making processes, and accountability mechanisms. This reinforces the argument that digital transformation constitutes an institutional reform process capable of enhancing organizational agility, responsiveness, and efficiency.

Second, the research extends participatory governance theory by empirically substantiating the role of digital citizen engagement in driving government transformation. The study demonstrates that digital platforms facilitating feedback, grievance redressal, and participatory interaction serve as institutional channels through which citizen voices influence governance processes. This contribution is particularly significant in developing country contexts, where traditional participatory mechanisms are often constrained by administrative and logistical barriers.

Third, the study advances institutional trust theory by validating trust and confidence in public institutions as both antecedents and outcomes of digital governance. The empirical findings highlight trust as a mediating force that enables citizen engagement, technology adoption, and collaborative governance. By demonstrating the reciprocal relationship between digital transparency and institutional trust, the study deepens theoretical understanding of how trust evolves within digitally mediated governance environments.

Fourth, the research contributes to service-dominant logic in the public sector by positioning digitally enabled public service delivery as both a driver and an indicator of government transformation. The findings emphasize that improvements in service efficiency, accessibility, and responsiveness are not merely outcomes of digital reform but also mechanisms through which institutional transformation is perceived and legitimized by citizens.

Finally, by empirically establishing a direct and significant relationship between the transformation of government and good governance outcomes, the study integrates governance transformation theory with good governance frameworks. This integration offers a nuanced conceptualization of digital transformation as a pathway to broader democratic, institutional, and societal change.

6.3.2 Practical Implications

From a practical standpoint, this study provides valuable insights for policymakers, administrative leaders, and digital governance practitioners seeking to design and implement effective digital transformation strategies. The findings underscore that digital transformation should be approached as a core element of public sector reform rather than as a peripheral technological upgrade.

One key implication is the need for governments to invest in robust and interoperable digital infrastructure that supports seamless data sharing, integrated service delivery, and cross-departmental coordination. Such investments must be complemented by initiatives aimed at enhancing digital literacy among citizens and public officials to ensure inclusive access and effective utilization of digital services.

Citizen engagement emerges as a critical pillar of successful digital transformation. Governments should prioritize the design of e-participation platforms that are accessible, responsive, and capable of facilitating meaningful two-way interaction. Mechanisms such as digital grievance redressal systems, online consultation portals, and participatory feedback tools can strengthen civic trust and enhance democratic legitimacy when embedded within institutional decision-making processes.

The study also highlights the importance of trust-building in digital governance. Practical strategies to foster trust include ensuring transparency in digital processes, safeguarding personal data, maintaining ethical standards in algorithmic decision-making, and communicating clearly with citizens regarding policy objectives and service outcomes. Trust should be treated not as a secondary outcome but as a central design principle of digital governance systems.

Additionally, the findings suggest that innovation in public service delivery should be aligned with organizational readiness. The adoption of digital tools must be supported by capacity-building initiatives, change management strategies, and adaptive regulatory frameworks to sustain transformation over time. Without institutional preparedness, technological interventions risk becoming superficial or underutilized.

Overall, the study provides an actionable framework for achieving digitally enabled, citizen-centric, and outcome-oriented governance in the public sector.

6.4 Limitations and Future Research Avenues

Despite its comprehensive scope and methodological rigor, this study is subject to certain limitations that should be acknowledged when interpreting the findings and that also offer valuable directions for future research.

First, the study employed a cross-sectional research design, which limits the ability to make definitive causal inferences. While the structural equation modelling approach provides robust evidence of relationships among constructs, future research could adopt longitudinal designs to capture how digital transformation, citizen engagement, trust, and governance outcomes evolve over time.

Second, the empirical analysis was confined to selected state-level e-governance initiatives in India. This contextual focus, while appropriate for the study's objectives, may limit the generalizability of the findings to other governance levels or national contexts. Future studies could conduct comparative analyses across central, state, and local governments to examine whether similar transformation patterns emerge across different administrative settings.

Third, the study treated key constructs as relatively uniform across regions and schemes. However, contextual factors such as variations in digital literacy, infrastructural capacity, cultural norms, and socio-economic conditions may influence the strength and direction of the observed relationships. Future research could incorporate moderation or multi-group analyses to explore these contextual effects in greater depth.

Fourth, the study primarily relied on quantitative survey data, which, while statistically robust, may not fully capture the nuanced experiences and perceptions of citizens and public officials involved in digital governance initiatives. Integrating qualitative methods such as interviews, focus groups, or case studies could enrich future research by providing deeper insights into the behavioural and institutional dynamics underlying digital transformation.

Fifth, the role of political leadership, bureaucratic culture, and resistance to change was not explicitly examined in the research model. These factors are widely recognized as critical determinants of reform success and merit closer investigation in future studies to enhance explanatory power.

Finally, as the study was conducted during a period of accelerated digital adoption influenced by the COVID-19 pandemic, the findings reflect governance dynamics under exceptional circumstances. Replicating the study in post-pandemic contexts or in other developing economies would help assess the robustness and transferability of the proposed model.

6.5 Concluding Remarks

This study set out to examine the complex pathways through which digital transformation influences governance outcomes in the Indian public sector. Drawing on a strong conceptual framework and rigorous empirical analysis, the findings confirm that digital transformation, when strategically embedded within governance structures, serves as a powerful catalyst for institutional reform.

The research demonstrates that digital transformation significantly enhances government operations by streamlining administrative processes, improving efficiency, and fostering inter-departmental coordination. It further establishes that digital citizen engagement platforms play a pivotal role in strengthening participatory governance by enabling more inclusive, responsive, and accountable interactions between the state and citizens.

A central contribution of the study lies in validating the critical role of trust and confidence in public institutions. Trust is shown to be both an enabler and an outcome of successful digital governance, reinforcing the need for transparency, ethical governance practices, and citizen-centric design in digital initiatives. Additionally, the study highlights that digitally enabled public service delivery functions as both a driver and a visible indicator of government transformation.

Ultimately, the findings confirm that the transformation of government acts as a mediating mechanism through which digital interventions translate into improved

good governance outcomes. By establishing strong empirical links between government transformation and governance principles such as accountability, transparency, inclusiveness, and responsiveness, the study provides compelling evidence that good governance in the digital age is an achievable and sustainable goal.

In conclusion, this thesis contributes a nuanced and empirically grounded understanding of how digital transformation can be leveraged to strengthen governance in developing economies. It offers practical guidance for policymakers and administrators while advancing theoretical debates on digital governance. Rather than representing an endpoint, this research serves as a foundation for continued scholarly inquiry into the evolving relationship between technology, institutions, and democratic governance.

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APPENDIX A

EMPIRICAL CONTEXT AND METHODOLOGY OF REVIEWED STUDIES

Study	Research Question	Methodology	Empirical Context	Main Findings
Chen et al. (2024)	How does ICT infrastructure readiness impact e-government services?	Quantitative analysis	Survey data from local governments in Shanghai	ICT readiness significantly enhances citizen compliance and satisfaction.
Darusalam et al. (2023)	How does ICT infrastructure readiness impact e-government services?	Quantitative analysis	Survey data from local governments in Malaysia	Reliable ICT infrastructure is essential for successful digital transformation.
Thompson et al. (2020)	What is the impact of cybersecurity measures on e-government adoption?	Cross-country analysis	Comparative study of Australia and Thailand	Strong cybersecurity measures increase e-government adoption rates.
Ackom et al. (2022)	What is the impact of cybersecurity measures on e-government adoption?	Mixed-method approach	Case studies in Ghana and Kenya	Cybersecurity concerns influence trust in digital governance services.
Gebremeskel et al. (2023)	What is the impact of cybersecurity measures on e-government adoption?	Survey research	Ethiopian public sector institutions	Stronger cybersecurity policies lead to higher adoption rates of digital services.
Sebo & Gel (2023)	How does system interoperability affect the effectiveness of e-government services?	Mixed-method approach	Case studies from various government agencies	Improved interoperability leads to enhanced service delivery in e-government.
Nawaflesh & Khasawneh (2024)	How does system interoperability affect the effectiveness of e-government services?	Qualitative case studies	Middle Eastern municipal e-government projects	Interoperability enhances data sharing and administrative efficiency.
Whitford et al. (2020)	What factors contribute to technological adaptability in government services?	Empirical analysis	Analysis of government responses during the COVID-19 pandemic	High adaptability correlates with effective government responses to crises.
Bokhari & Myeong (2023)	What factors contribute to technological adaptability in government services?	Case study analysis	South Korean e-government initiatives	Governments with agile digital strategies adapt more efficiently.
Yuan et al. (2023)	How does leadership commitment influence the implementation of e-government?	Qualitative case studies	Case studies of e-government initiatives in South Africa	Strong leadership commitment enhances the likelihood of successful e-government implementation.

Study	Research Question	Methodology	Empirical Context	Main Findings
Piderit & Jojozi (2017)	How does leadership commitment influence the implementation of e-government?	Document analysis	Public sector digital projects in South Africa	Leadership vision is crucial for driving digital reforms.
Lee (2024)	What change management strategies are most effective in facilitating e-government initiatives?	Qualitative interviews	Analysis of change management in Romanian cities	Effective change management strategies are essential for smooth transitions to e-government.
Urs & Spoaller (2022)	What change management strategies are most effective in facilitating e-government initiatives?	Policy review	European Union digital transformation projects	Gradual implementation and staff involvement improve success rates.
Bindu et al. (2019)	How does staff training impact the success of e-government services?	Mixed-method approach	Surveys and interviews with government employees	Adequate training and development significantly improve service delivery in e-government.
Yan & Lyu (2023)	How does staff training impact the success of e-government services?	Experimental study	Digital skill development programs in China	Practical training enhances digital adoption in government institutions.
Qiu et al. (2023)	What role does organizational culture play in the implementation of e-government?	Qualitative and quantitative analysis	Organizational case studies in China and Indonesia	A supportive organizational culture enhances the effectiveness of e-government initiatives.
Puspitasari & Kurniawan (2023)	What role does organizational culture play in the implementation of e-government?	Thematic content analysis	Indonesian public administration	Digital-friendly cultures foster innovation and public sector efficiency.
Chen et al. (2024)	How does resource allocation affect the quality of e-government services?	Quantitative analysis	Case studies of local government initiatives	Adequate resource allocation is critical for successful e-government implementation.
De Classe et al. (2021)	How does resource allocation affect the quality of e-government services?	Budgetary review	Financial planning of e-government projects in Brazil	Resource prioritization affects the sustainability of digital initiatives.
Wukich et al. (2017)	What impact does the regulatory framework have on e-government services?	Policy analysis	Analysis of regulatory frameworks in China	A strong regulatory framework positively influences e-government services.
Gao & Tan (2020)	What impact does the regulatory framework have on e-government services?	Comparative study	Digital policies in China and Singapore	Regulatory clarity enhances compliance with digital governance standards.
Iuliano et al. (2025)	How does public trust influence engagement	Survey	Surveys conducted across	Higher levels of public trust lead to

Study	Research Question	Methodology	Empirical Context	Main Findings
	with e-government services?	research	Europe	increased citizen engagement with e-government services.
Van den Berg et al. (2020)	How does public trust influence engagement with e-government services?	Public opinion analysis	Citizen perception of digital government in the Netherlands	Transparent communication fosters greater trust in e-government.
Alcaide–Muñoz et al. (2017)	How do socioeconomic conditions affect the implementation and success of e-government?	Mixed-method analysis	Case studies from various socioeconomic contexts	Socioeconomic conditions significantly influence citizen usage intentions for e-government.
Wirtz & Kurtz (2017)	How do socioeconomic conditions affect the implementation and success of e-government?	Longitudinal study	Digital service adoption trends in Europe	Higher income levels correlate with increased e-government adoption.
Sanina et al. (2021)	How do socioeconomic conditions affect the implementation and success of e-government?	Cross-national comparison	Emerging economies' digital governance models	Socioeconomic gaps affect access and participation in e-government.
Hien et al. (2024)	What is the impact of collaboration with the private sector on e-government services?	Case studies	Analysis of public-private partnerships in Vietnam	Collaborations with the private sector enhance the efficiency and effectiveness of e-government.
Piderit & Jojozi (2017)	What is the impact of collaboration with the private sector on e-government services?	Qualitative interviews	South African digital projects with corporate partnerships	Joint initiatives drive innovation in digital governance.
Liao et al. (2025)	How does the availability of funding impact the development of e-government services?	Quantitative and qualitative analysis	Analysis of funding sources for e-government initiatives	Availability of funding and investment is critical for the sustainability of e-government services.
Widhiasthini et al. (2023)	How does the availability of funding impact the development of e-government services?	Financial impact assessment	Digital infrastructure projects in Southeast Asia	Stable funding sources ensure long-term digital transformation success.

APPENDIX B

QUESTIONNAIRE FOR DATA COLLECTION

This questionnaire is designed to understand how digital transformation influences governance quality, public service delivery, and citizen engagement across different sectors.

SECTION A: Respondent Demographics and Professional Background

Please select the most appropriate options.

A1. Department / Sector

☐ Information Technology
☐ Public Administration
☐ Finance
☐ Social Services
☐ Other (Education, Healthcare, etc.) – Please specify: _____

A2. Current Role / Designation

☐ IT and E-Governance Specialist
☐ Public Administration Official
☐ Finance Manager
☐ Social Service Coordinator
☐ Other (Educator, Healthcare Administrator, etc.) – Please specify: _____

A3. Years of Professional Experience

☐ 1–5 years
☐ 6–10 years
☐ 11–15 years
☐ 16+ years

A4. Educational Qualification

☐ Bachelor’s Degree
☐ Master’s Degree
☐ Doctorate

A5. Gender

☐ Male

☐ Female

A6. Geographic Location

☐ Urban

☐ Rural

SECTION B: Measurement Constructs

Please read each statement carefully and indicate your response on the following scale:

1 – Strongly Disagree
2 – Disagree
3 – Neutral
4 – Agree
5 – Strongly Agree

Your responses will remain confidential and will be used only for academic research.

B1: Digital Transformation (DF)

Item Code	Statement	Response (1–5)
DF1	Government websites and digital platforms are user-friendly and easy to navigate.	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5
DF2	The information available on government digital platforms is accurate and useful.	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5
DF3	Digital tools offered by the government help me complete tasks efficiently.	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5
DF4	The design and structure of government websites improve my service experience.	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5
DF5	Government platforms allow me to track and save my transaction details easily.	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5
DF6	I am able to customise how I receive notifications from government services (email/SMS).	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5
DF7	Different government services are well-integrated across digital platforms.	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5
DF8	Government digital services have improved efficiency and responsiveness in service delivery.	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

B2: Citizen Engagement (CE)

Item Code	Statement	Response (1–5)
CE1	Digital platforms have increased my awareness of civic and policy issues.	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5
CE2	Digital tools make me feel more empowered to participate in decision-making.	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5
CE3	I engage in civic activities and discussions through online platforms.	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5
CE4	I collaborate with community members to address common concerns.	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5
CE5	Digital services make collaboration on community issues easier.	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5
CE6	Digital tools have improved my ability to hold officials accountable.	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

B3: Trust and Confidence (TC)

Item Code	Statement	Response (1–5)
TC1	I trust that digital transformation efforts reflect citizens' best interests.	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5
TC2	Government efficiency has improved through digital transformation.	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5
TC3	I am confident that the government reliably fulfils its obligations.	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5
TC4	I believe the government will deliver services effectively due to recent changes.	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5
TC5	Digital transformation will improve service delivery in the future.	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

B4: Public Service Delivery (PSD)

Item Code	Statement	Response (1–5)
PSD1	Digital services have made public service delivery more accurate and reliable.	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5
PSD2	Digital platforms reduce the time required to receive services.	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5
PSD3	Digital transformation has improved transparency and reduced corruption.	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5
PSD4	I find it easier to access public services digitally.	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5
PSD5	Digital tools have enhanced citizen participation and engagement.	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

B5: Transformation of Government (TOG)

Item Code	Statement	Response (1–5)
TOG1	Government departments are proactive in adopting new ideas.	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5
TOG2	Department leaders recognise the need for change quickly.	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5
TOG3	Departments respond promptly when changes are required.	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5
TOG4	The government is flexible and adapts procedures to new conditions effectively.	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5
TOG5	Support for developing new ideas is easily available within departments.	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

B6: Good Governance (GG)

Item Code	Statement	Response (1–5)
GG1	Digital platforms have increased transparency in decision-making processes.	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5
GG2	Government officials communicate policies more effectively through digital channels.	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5
GG3	Digital tools make it easier for citizens to hold officials accountable.	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5
GG4	Digital platforms have increased citizen trust in government actions.	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5
GG5	Digital transformation enables more inclusive participation in government decisions.	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5
GG6	Government services have become more efficient due to digital innovations.	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5
GG7	Digital governance ensures fair consideration of all community members' needs.	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5
GG8	Digital tools have strengthened the legitimacy of government decisions.	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

Thank you for your time and valuable responses.