PUBLIC VALUE OF E-GOVERNANCE: A STUDY OF SELECT CITIZEN CENTRIC PROJECTS

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DECLARATION

I, hereby certify that the thesis titled **"Public Value of E-Governance: A Study of Select Citizen Centric Projects"** and submitted in fulfilment of the requirements for the award of the degree of Doctor of Philosophy is an authentic record of my research work carried out under the guidance of Prof. P.K. Suri. Any material borrowed or referred to is duly acknowledged.

The matter presented in this thesis has not been submitted elsewhere in part or fully to any other University or Institute for the award of any degree.

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CERTIFICATE

This is to certify that the thesis entitled **"Public Value of E-Governance: A Study of Select Citizen Centric Projects"**, being submitted by Ms. Parul Jain Gupta to the Delhi Technological University for the award of the degree of Doctor of Philosophy (Ph.D.) is a record of bona fide research work carried out by her. She has worked under my guidance and supervision and fulfilled the requirements for the submission of the thesis, which has attained the standard required for a Ph.D. degree of the University. The results presented in this thesis have not been submitted elsewhere for the award of any degree or diploma.

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Abstract

Electronic-governance (E-governance) refers to the use of information and communication technologies for enhancing performance of public organizations by making them more effective and accessible. The benefits of e-governance have been recognized across the world. It provides opportunities to public organizations to strengthen their interface with citizens. For the past many decades, the concept has been playing crucial role for transforming public organizations. In India, over the past few years, government has invested huge amount of money in implementing various new e-governance projects and strengthening the existing ones for improving the performance of its public organizations. However, studies indicate that the actual benefits of e-governance projects are yet to fully realize in terms of benefits to citizens.

In India, to avail various public services such as passport, driving license, birth and death certificate, etc. citizens are required to visit public organizations. They have to interact with different government departments for availing benefits under various schemes. The experience of citizens about the performance of public services is perceived as public value. Public value is a popular concept to assess public services. It is known as the measurement tool for public services. However, despite several initiatives taken to promote e-governance by the Government in India, its benefits are yet to fully reach the target beneficiaries as planned. Therefore, it is important to analyze the public value of public organizations from the perspective of citizens'.During the study, it has been found that measurement of public value in most of the developed countries has been attempted through performance of e-governance portals. However, in the Indian context, due to lack of an end-to-end IT-based service delivery mechanism, all services are not accessible exclusively through websites. In most of the cases, a hybrid approach has been adopted for service delivery in which citizens can fill applications and book appointment in online mode whereas, for availing actual services, they are required to visit the concerned department.

A citizen visiting a public organization faces a situation, interacts with employees and follows a process or a set of processes. In this study, it is conceptualized that the citizen develops a perception based on interplay of Situation-Actor-Process (S-A-P) related variables which is expected to be influencing public value of e-governance. Therefore, variables related to the situation, actors and processes are explored in the study context and it has been attempted to analyze their influence on public value.

The objectives of research areto identify the factors for analyzing public value of citizen-centric e-governance projects, to identify the situation-actor-process related variables in the context of centric e-governance projects and to explore the relationship between situation-actor-process related variables and public value in the study context and propose an empirically validated framework for improving public value of citizen-centric e-governance projects. To fulfil these objectives, followed by a pilot study, a detailed analysis is executed by conducting a survey and collecting responses from beneficiaries of select five citizen-centric e-governance projects.

This study is mainly divided into three phases. In the first phase, a pilot study of passport project and driving license project is conducted to get better insights about service delivery related issues. In the second phase, research variables related to S-A-P and public value are identified and an opinion survey is conducted based on select e-governance projects. In the last phase of the study, analysis of data is conducted to identify the relationship between S-A-P related variables and public value. Another case study to suggest measures for achieving improved public value is also conducted in this phase. Lastly, a few recommendations are proposed for improving public value of e-governance projects based on Learning-Action-Performance (L-A-P) synthesis.

The study reveals that macro variables in terms of S-A-P, viz. ‘Improved Situation’, ‘Capability level of Actors’ and ‘Flexible Process Workflow’ are having significant influence on ‘Quality Service Delivery’, ‘Competence of Public Organizations’, ‘Achievement of Socially Required Outcomes’ and on

overall ‘Public Value’ of public organizations in the study context. This study has contributed to the area of analysis of the public value of e-governance projects. It has several implications for e-governance practitioners, researchers and society. The study is expected to benefit both e-governance planners and implementers while planning for new projects or analyzing existing ones to improve the realization of public value. It opens a window for researchers to analyze more such public services of similar nature in order to increase the scope of the study for generalized findings. Thrust on improving situational aspects, capability of actors and flexibility of processes as identified in this study, are expected to enhance delivery of services that satisfies the need for improved public value and creates a positive attitude among society towards public organizations.

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List of Abbreviations

ADF	:	Asymptotically Distribution-Free
AGFI	:	Adjusted Goodness of Fit Index
AMOS	:	Analysis of Moment Structures
ASRO	:	Achievement of Socially Required Outcomes
AVAIL	:	Availability of Basic Amenities
AVE	:	Average Variance Extracted
CFA	:	Confirmatory Factor Analysis
CFI	:	Comparative Fit Index
CHANG	:	Change Mechanisms
CLA	:	Capability Level of Actors
COMPE	:	Competency
CONCE	:	Concern for Environment
COSTS	:	Cost Savings
CPO	:	Competence of Public Organizations
CPV	:	Central Passport and Visa
CR	:	Critical Ratio
CSCs	:	Common Service Centres
DARPG	:	Department of Administrative Reforms and Public Grievances
DDA	:	Delhi Development Authority
DeitY	:	Department of Electronics and Information Technology
DIMTS	:	Delhi Integrated Multi-Modal Transit System Ltd.
DIP	:	Digital India Programme
DIPP	:	Department of Industrial Policy and Promotion
DLP	:	Driving License Project
EFA	:	Exploratory Factor Analysis

EFFIC	:	Efficiency
ENVIR	:	Environmental Factors
EQUIT	:	Equity
FAQs	:	Frequently Asked Questions
FPW	:	Flexibility of Process Workflow
G2B	:	Government-to-Business
G2C	:	Government-to-Citizen
G2CS	:	Government-to-Civil Society
G2G	:	Government-to-Government
GFI	:	Goodness of Fit Index
GLS	:	Generalized Least Square
GNCTD	:	Government of National Capital Territory of Delhi
GOF	:	Goodness-of-Fit
GPs	:	Gram Panchayats
ICT	:	Information and Communication Technologies
IDFC	:	Infrastructure Development Finance Company
IFI	:	Incremental Fit Index
iMIS	:	Integrated Management Information System
IRP	:	Interpretive Ranking Process
IST	:	Improved Situation
IT	:	Information Technology
KMO	:	Kaiser-Meyer-Olkin
L-A-P	:	Learning-Actions-Performance
LED	:	Light Emitting Diode
MEA	:	Ministry of External Affairs
MI	:	Modification Indices
ML	:	Maximum Likelihood
MMPs	:	Mission Mode Projects

MSV	:	Maximum Shared Squared Variance
NeGP	:	National e-Governance Plan
NFI	:	Normed Fit Index
NIC	:	National Informatics Centre
NSKs	:	Nagrik Suvidha Kendras (Citizen Facilitation Centres)
OPENN	:	Openness
OPTIO	:	Availability of Options
OSI	:	Online Service Index
PNFI	:	Parsimony Normed Fitness Index
PPP	:	Public-Private-Partnership
PSP	:	Passport Seva Project
PV	:	Public Value
QSD	:	Quality Service Delivery
QUALI	:	Quality of Information
RMR	:	Root Mean square Residual
RMSEA	:	Root Mean Square Error of Approximation
RTI	:	Right to Information
S-A-P	:	Situation-Actor-Process
SDCs	:	State Data Centres
SE	:	Standard Error
SEM	:	Structural Equation Modelling
SERVI	:	Service Orientation
SFL	:	Standardized Factor Loadings
SHCIL	:	Stock Holding Corporation of India Ltd
SLS	:	Scale-Free Least Square
SR	:	Standardized Residuals
SRMR	:	Standardized Root Mean Residual
SRW	:	Standardized Regression Weight

SWANs	:	State Wide Area Networks
SYSTE	:	System Functioning
TCS	:	Tata Consultancy Services
TLI	:	Tucker-Lewis Index
TRUST	:	Trust
UIDAI	:	Unique Identification Authority of India
ULS	:	Un-Weighted Least Square
UN	:	United Nations
URW	:	Un-standardized Regression Weight
USERO	:	User Orientation
UTs	:	Union Territories
WLS	:	Weighted Least Square

Chapter 1
Introduction

1.1 Research Background

Electronic-governance (E-governance) is offering opportunities to government organizations across the world to strengthen their interface with citizens through effective use of Information and Communication Technologies (ICT) (Fitzgerald and Gunter, 2006; Gorla, 2008; Bannister and Connolly, 2014; Kumar et al., 2018b). The benefits of e-governance are well recognized. These include ensuring better services, bringing transparency, cost-effectiveness, efficient administration, easy access to government, participatory governance, etc. The concept is also playing a catalytic role in bringing reforms in government functioning.

The term e-governance is not uniformly adopted across the globe. The term e-governance or e-government is popular in different countries as per their varying contexts (Verdegem and Verleye, 2009). In general, e-governance is used to describe the decision-making process, and e-government is viewed as the way decisions are executed in government (Marche and Mcniven, 2003). In our study, we have used both the terms interchangeably. However, the term “e-governance” has been used more frequently keeping the Indian context into view (Planning Commission, 2007).

In India, e-governance can be viewed to have broadly evolved in two phases ‘Pre-Internet era' from the 1960s to the 1990s and ‘Internet era' after late 1990s (Gupta, 2010, p.48). In 2006, the Government of India sanctioned the National e-Governance Plan (NeGP). Several of the mission mode projects started under NeGP during 2006 are now being implemented under ‘Digital India Programme’ launched in 2014 by the new government. The objective of Digital India Programme (DIP) is to transform India in terms of digital

empowerment and knowledge economy (www.meity.gov.in). The aim of the programme is to prepare India for the future through effective use of digital technologies. Efforts are being put by various government departments to improve their functioning particularly in terms of re-designing government processes for streamlining interfaces with citizens (www.meity.gov.in; www.digitalindia.gov.in).

Citizens, owing to their voting rights in a democratic federation, can influence government functioning. Therefore, it becomes necessary for the government also to be more and more citizens oriented. As the citizens become accustomed to the use of ICT, their expectations from the government also keep increasing. Studies reflect that the true benefits of e-governance projects have not been received by the citizens to the desired extent as planned. Because of this, several e-governance projects have resulted in complete or partial failures mainly in developing and developed nations (Heeks, 2002; Gauld et al., 2010; Weerakkody et al., 2011; Zhang, Xu and Xiao, 2014).

In India, certain services are provided only by the government. Examples include filing income tax returns, the issuing of passports, driving licenses, birth and death certificates, etc. Citizens have to interact with different government departments on such matters for availing benefits under various schemes. The experience of citizens about the performance of public services is perceived as public value.

Public value is a measure to analyze the performance of services provided by public organizations (Moore, 1995). It is a popular concept to assess public services. It is known as the measurement tool for public services. It can be evaluated through different sources, viz. delivery of quality public services, achievement of outcomes and development of trust (Kelly et al. 2002). Another study has measured public value through the level of information provision to citizens, level of e-government use, availability of choices with

citizens, fairness and cost savings (Kearns, 2004). A research framework proposed in the context of Sri Lanka analyzes the public value of e-governance on the basis of mainly three factors, viz. delivery of quality public services, effectiveness of public organizations and achievement of socially desirable outcomes (Karunasena, 2012). Public value enhances the value for its stakeholders in the service, and it improves overall management and makes the service deliver to its best (Yotawut, 2018).

Despite several measures taken to promote e-governance by the successive governments in India, its benefits are yet to fully reach the target beneficiaries. Hence, it is useful to analyze the public value from the citizens' perspective. On the basis of a review of literature, it is found that measurement of public value in most of the developed countries has been attempted through performance of e-governance portals (Garcia et al., 2005; Wang et al., 2005; Torres et al., 2005; Jong and Lentz, 2006; Rorissa and Demissie, 2010; Elling et al., 2012; Karkin and Janssen, 2014; Faulkner, 2018; Anna, 2018). However, in the Indian environment, due to lack of an end-to-end IT-based service delivery mechanism, all services are not accessible exclusively through websites. In many cases, a hybrid approach has been adopted for service delivery. The citizens can fill applications and book appointment in online mode. However, for availing actual services, they are required to visit the concerned department. A few examples of such services are issuance of passport, issuance of driving license, issuance of marriage certificate, registration of property, conversion of immovable property from leasehold to freehold, etc.

A citizen visiting a public organization faces a situation such as facilities in terms of seating arrangements, temperature, availability of drinking water, cleanliness, etc. The citizen interacts with employees to avail services and observes their communication skills, service orientation, speed and knowledge to execute the work, presence at the service counter, etc. The

citizen also follows a process or a set of processes and experience in terms of easiness and convenience of the process, flexibility and continuity of the process, etc. In the present study, it is conceptualized that the citizen develops a perception based on interplay of Situation-Actor-Process (S-A-P) related variables. Variables related to the situation, actors and processes are explored in the context of citizen-centric e-governance projects. Further, it has been attempted to analyze their influence on public value. It is probed as to whether improvement in the situation, skilled manpower and versatile processes may lead to improved public value of e-governance projects.

1.2 Motivation for the Research

The intent of e-governance initiatives by public organizations is to create enhanced public value. It is, therefore, necessary to analyze these initiatives in terms of public value (Moore, 1995; Meynhardt, 2009). It is, however, revealed from the review of literature that majority of the studies conducted to evaluate public value have been in the context of developed nations. These studies are generally not applicable in the context of developing nations as many of the developed nations have successfully implemented e-governance and have reached a higher level of maturity. Whereas, developing countries have still to go a long way in the direction of achieving complete digitalization of public services to ensure delivery of services in a comparatively easy and transparent manner. For instance, e-governance development index of India is still relatively much lower than most of the other countries (United Nations, 2018) in spite of the continuous improvement in budgetary allocations and favourable policy level modifications for effective e-governance. Therefore, it is essential to analyze public value of e-governance keeping Indian context into consideration. It has also been identified at the time of literature review that assessment of public value in developed nations has mainly been conducted in terms of performance of online portals (Garcia et al., 2005; Wang et al., 2005; Torres et al., 2005; Jong and Lentz, 2006; Rorissa and Demissie, 2010; Elling et al.,

2012; Karkin and Janssen, 2014; Faulkner, 2018; Anna, 2018). This means that better the performance of a government website, better the public value of that organization. However, in the Indian scenario, citizens are generally required to visit the public organization to avail services.

The research is, therefore, an attempt to bring out a framework by studying a few e-governance initiatives in India for achieving improved public value. As discussed above, in Indian context, citizens are required to visit public organizations to avail public services, and it is conceptualized that they build perception about situational variables, variables related to the actors and process-related variables at the time of their visit to the public organization. In the present study, it has been conceptualized that a public organization with an improved situation, capable actors and flexible process workflow is expected to have improved public value. Therefore, with the help of theoretical research framework, it has been attempted to analyze the influence of situation-actor-process related variables on public value.

1.3 Research Objectives

E-governance is providing ample opportunities to various governments across the globe to offer better services to citizens with effective use of ICT. However, developing countries are still struggling behind to achieve a higher level of public value of citizen-centric e-governance projects as compared to developed countries. Due to the hybrid approach adopted by the government in a developing country like India, beneficiaries are still required to visit the public organizations to avail the services. In this study, it has been conceptualized that citizens at the time of their visits to the public organization form perception about factors in terms of situation, dealing actors and set of processes. Therefore, an attempt is made to identify the relationship between situation, actor, process related variables and public value. Even after various initiatives taken by government of India, benefits of e-governance are not

reaching the citizens to the desired extent. This has motivated us to conduct in-depth study of select e-governance projects and propose a framework to achieve improved public value of e-governance projects in India. To execute this research, five citizen-centric e-governance projects have been selected.

The study has the following three objectives:

- To identify the factors for analyzing public value of citizen-centric e-governance projects.
- To identify the situation-actor-process related variables in the context of citizen-centric e-governance projects.
- To explore the relationship between situation-actor-process related variables and public value in the study context and propose an empirically validated framework for improving public value of citizen-centric e-governance projects.

1.4 Research Questions

In the light of above research objectives, our research work attempts to answer the following questions:

- What are the crucial factors that constitute public value of citizen-centric e-governance projects in India?
- What are the situation, actor and process related variables that significantly influence public value of citizen-centric e-governance projects in India?

1.5 Significance of the Research

The research will help in understanding the influence of situation, actor and process (S-A-P) related variables on public value of citizen-centric e-governance projects. It will help planners and implementers to keep S-A-P

related variables into view while designing new e-governance projects and take corrective measures for strengthening ongoing projects. The research framework proposed in the study is likely to achieve improved public value of e-governance projects by analyzing the influence of S-A-P related variables on public value. The recommendations on the basis of learning-action-performance synthesis in the study context are expected to assist practitioners to take actions for 'Improved Situation', enhancing 'Capability level of Actors' and ensuring 'Flexible Process Workflow' at the public organizations. Overall execution of e-governance projects with focus on achieving improved public value is expected to benefit the citizens at large.

1.6 Scope of the Study

The research is based on select citizen-centric e-governance projects in India, which have been operational for minimum one year. The study is designed within the following scope:

- There are a total of five citizen-centric e-governance projects selected to conduct the study out of which one is of national level and rest four are of state level.
- All four state level projects belong to Delhi. Apart from convenience, selection of projects is based on the criteria that the project is operational and citizens are required to visit public offices for availing services.
- The survey and data collection is limited to the beneficiaries who have availed e-governance service from any of the select e-governance projects.

1.7 Overall Methodology of the Research

The research is based on the conceptual research framework developed through literature review and a pilot study of national and state level e-governance

projects. The detailed study is executed by conducting a survey and collecting responses from beneficiaries. Further, data collected through the survey has been analyzed to make recommendations in the study context. This study is mainly divided into three phases. In the first phase, a pilot study of passport seva project and driving license project is conducted to get better insights about service delivery related issues. In the second phase, research variables related to S-A-P and public value are identified and an opinion survey is conducted based on select e-governance projects. Last phase of the study comprises of analysis of survey data to identify the relationship between S-A-P related variables and public value. Another case study in direction to suggest measures for achieving improved public value is also conducted in this phase. Lastly, a few recommendations are proposed for improving public value of e-governance projects based on learning-action-performance synthesis.

At different phases of the study, different research techniques have been used. A snapshot of these studies along with their key objectives, research methodologies and technique is presented in Table 1.1.

Table 1.1: Description of Research Methodologies and Techniques Used

Study Phase	**Study Objective**	**Research Methodology**	**Research Technique Used**
Pilot Study	• To present a conceptual research framework for analyzing public value of citizen-centric e-governance projects • To explore the likely influence of conceptualized S-A-P-related research variables on public value	• Pilot study conducted by selecting two citizen-centric e-governance projects, viz. Passport Seva Project (PSP) and Driving License Project (DLP) • Three service centres of the projects selected for the study were visited • Questionnaire based survey conducted for beneficiaries	• SAP-LAP Framework (Sushil, 2000, 2001, 2009a) • Univariate Analysis

Study Phase	Study Objective	Research Methodology	Research Technique Used
Main Study	• To explore the factors for analyzing public value of citizen-centric e-governance projects • To identify the situation-actor-process related variables • To explore the relationship between situation-actor-process related variables and public value in the study context and propose an empirically validated framework for improving public value of e-governance projects	• Main study conducted by selecting five citizen-centric e-governance projects, viz. passport seva project, issuance of driving license, issuance of marriage certificate, registration of property and leasehold to freehold of property • Study of several project-related documents and other relevant information available on the website • Questionnaire based survey conducted for beneficiaries	• SAP-LAP Framework (Sushil, 2000, 2001, 2009a) • Univariate Analysis • Structural Equation Modelling (SEM)
Case Study	• To explore association between conceptualized S–A–P related variables and public value in the context of e-governance • To identify such dominant actors who may be playing critical role in the aspired realization of public value of an e-governance service	• Case study conducted for Delhi Development Authority (DDA) service, viz. conversion of immovable property from leasehold to freehold • Three personal interviews were conducted with senior officials to get insights about the project • Questionnaire based survey conducted for beneficiaries	• SAP-LAP Framework (Sushil, 2000, 2001, 2009a) • Univariate Analysis • Interpretive Ranking Process (IRP) Method (Sushil 2009b, 2017b)

1.8 Structure of Thesis

The research study is organized into eight chapters. The first chapter is **Introduction** to the study which describes the background of research in terms of research motivation, research questions, and objectives, scope of the

research and research significance. It also brings out an outline of the research methodology used in the study.

The second chapter, **Literature Review,** presents a detailed review of literature about the concept of e-governance, various maturity models of e-governance, challenges in implementing e-governance in developing countries, progress of e-governance in India, the concept of public value and existing frameworks to analyze public value. It further identifies research gaps based on a review of the literature.

The third chapter, **Pilot Study on Public Value of E-Governance Project in India** probes deeper into two citizen-centric e-governance projects, viz. passport seva project and driving license project. The study aims at measuring the public value of select e-governance project and identifying the relationship between situation-actor-process related variables and public value of public organizations through univariate statistical analysis. A conceptual research framework based on pilot study is also proposed in this chapter.

The fourth chapter, **Research Design,** presents a theoretical research framework on the basis of macro and micro variables of public value identified through the literature review. Also, as per the context of the study, situation-actor-process related variables are identified on the basis of a review of literature. Further, this chapter presents research methodology including a description of Situation-Actors-Process (S-A-P) – Learning-Actions-Performance (L-A-P) framework (Sushil 2000, 2001, 2009a) used in the research. It also proposes the research hypotheses to be tested followed by preparation of questionnaire for a survey of beneficiaries, pilot testing of the questionnaire, description of projects selected for study, sample selection, mechanism of data collection and tools used for analysis.

The fifth chapter, **Validation of the Conceptual Research Framework,** reflects the analysis of data. It explains the process undertaken to analyze survey data and presents the results based on the analysis. The chapter begins with an overview of data analysis techniques used followed by the reliability test of the questionnaire. A summary of the survey data is shown in terms of demographic information of the respondents. Further, as per different objectives of the research, exploratory factor analysis, confirmatory factor analysis and structural equation modeling is presented. Lastly, outcomes of the data analysis are discussed followed by project wise univariate analysis.

The sixth chapter, **Case Study on Measures Suggested for Improved Public Value,** brings out an analysis by using Interpretive Ranking Process (IRP) Method. The case study has been conducted by selecting a service of Delhi Development Authority, viz. conversion of immovable property from leasehold to freehold. In the study, by analyzing the process workflow of the service delivery, the dominant actors who may be playing a critical role in the aspired realization of public value have been identified.

The seventh chapter, **Empirically Validated Framework,** presents an empirically validated framework depicting the influence of situation-actor-process related variables on public value of citizen-centric e-governance projects. Recommendations on the basis of learning-action-performance (L-A-P) synthesis to achieve improved public value, in the context of the study, are also brought out in this chapter.

The eighth and final chapter is the **Conclusions.** In this chapter, research questions are re-visited to check the level of accomplishment in the research. Further, an overview of the research findings and implementation in the area of e-governance for researchers, citizens and practitioners are discussed. Research limitations are also explained along with a few suggestions for further research in this area.

1.9 Concluding Remarks

This chapter presents an overview of the study. Through bringing out the research objectives, defining the significance and scope of the study, the study has become clear and focused. The study is intended to analyze the public value of citizen-centric e-governance projects in India by studying select e-governance projects. The next chapter covers a review of literature on the significant areas related to the study.

Chapter 2
Literature Review

2.1 Introduction

A review of literature has been carried out to develop better understanding about the study context. This has helped in acquiring knowledge about the concept of e-governance and its evolution in India, maturity models, implementation issues and challenges mainly in the field of developing countries, etc. Further, relevant frameworks for assessment of public value have been reviewed as the study is focussed on the public value of e-governance. The chapter concludes with the identification of gaps in literature in the context of the study.

2.2 E-Governance – An Overview

The term e-government is a popular phenomenon that was used in the context of United States in the year 1993 (Heeks and Bailur, 2007; Kurfal et al., 2017). It is understood in terms of effective use of ICT to assist the functioning of various governments. In the literature, the term has been defined in several ways. A narrow definition of e-governance is restricted to the use of Internet applications and restructuring of government-citizen interactions. However, the broader meaning of e-governance is to improve efficiency of government agencies by increasing citizens' participation, bringing transparency, building trust, streamlining processes, assigning accountability, enhancing overall public service delivery, etc.

There is no universal definition of e-governance (Halchin, 2004). E-governance has been defined by Means and Schneider (2000) as the association of governments with customers, different government departments and suppliers with the application of electronic means. Here,

customers and suppliers can be businesses, citizens or other governments. West (2004) referred e-governance as delivery of government information and services in online mode or through other digital modes. Schuppan (2009) described e-governance as improving the performance of government organizations in terms of an effective administration required for financial and social growth of a country.

World Bank (www.worldbank.org) has defined e-governance as the utilization of ICT in the direction of improving interactions with citizens, different government departments and businesses by government organizations. The definition by the United Nations (www.un.org) emphasizes on delivering effective and efficient services to citizens and businesses by using ICT. It is well recognized that use of ICT in government results into several benefits such as reducing corruption, better transparency, increased convenience, growth of revenue and reduction in costs by providing better services to people, enhanced communications with business and industries, empowerment of citizens and efficient government management.

In the past few years, the scope of ICT based equipment has increased from simple computers to mobiles, tablets, satellite communication, cloud computing, etc. ICT based applications are increasingly enabling governments all over the world by offering new opportunities for enhancing performance. Governments are also promoting e-governance because of its well-recognized benefits. Solutions based on information and communication technologies (ICT) have helped in bringing transformations in government functioning.

E-governance offers various benefits such as improving quality of service delivery at government departments (Shim and Eom, 2008), promoting citizens participation in government processes (Heeks, 2001; Sharifi and

Manian, 2010), bringing transparency and ensuring availability of information to citizens (Golubeva, 2007; Papadomichelaki and Mentzas, 2012), increasing efficiency and effectiveness of public organizations (Suri and Sushil, 2006; Dash and Sangita, 2011; Osman et al., 2014), ensuring equality (Dash and Sangita, 2011; Lindgren and Jansson, 2013), developing trust of citizens towards government (Kearns, 2004; Belwal and Zoubi 2008; Satapathy, 2014), creating awareness among citizens through promotion of knowledge (Kalsi and Kiran, 2013; Navarro et al., 2014) and promoting social growth and saving resources (Suri and Sushil 2011; Zhang et al., 2014).

Approaches of e-governance may be in terms of e-administration, e-citizens, e-services, and e-society (Heeks, 1999; Jones et al., 2007). The first, e-administration approach attempts to develop the coordination among different government organizations by linking them together to avoid the duplication of work, ensuring zero redundancy and to increase the efficiency of government organizations by reducing costs. The e-citizens approach relates to eliminating the gap between citizens and governments by encouraging their participation in public discussions, decision making, and policy making for improved public services. The e-services approach strives to provide online services to citizens in an improved and innovative way without any interruption. The e-society approach focuses on an extended approach by the government which may involve building relationships with non-profit organizations, creating communities and societies, etc.

Different kinds of interactions in e-government are known as government-to-government (G2G), government-to-business (G2B), government-to-citizen (G2C) and government-to-civil society (G2CS) as shown in Figure 2.1 (Heeks, 2006).

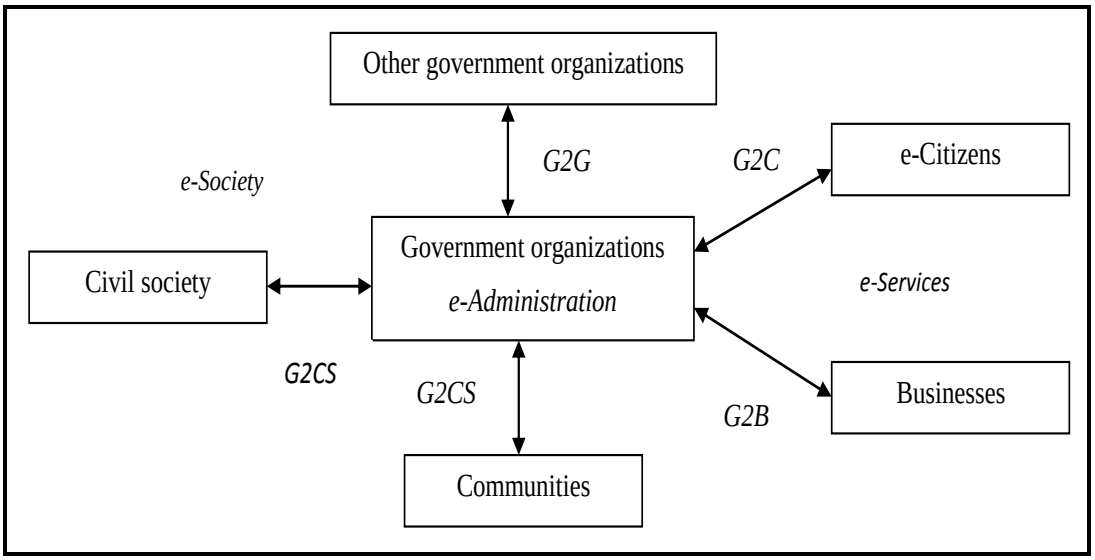

Figure 2.1: The Components of E-Government
[Source: Heeks (2006)]

G2G e-government includes the exchange of electronic data and information between government departments at the national, state or local level (United Nations, 2003). Information exchange in inter-government organizations and intra-government organizations results in better coordination, avoidance of duplicate tasks, leads to improved efficiency and simplified processes (Suri and Sushil, 2006). Such interactions support public organizations to offer timely services to citizens. For example, in India, integration of data between 'Unique Identification Authority of India' (UIDAI) and 'Ministry of External Affairs' has helped passport department to do the verification of applicants in a reliable and efficient way by using the database of UIDAI (www.passportindia.gov.in).

G2B e-government focuses on facilitating public organizations to perform business-related transactions. This supports organizations to obtain data electronically and execute business specific tasks such as payment of invoices, procurement of goods and services, etc. in an effective manner. For example, in India, an integrated service project, viz. eBiz has been launched by the 'Department of Industrial Policy and Promotion' (DIPP) with the support of 'Infosys Technologies Limited' (Infosys) which is also a part of Mission

Mode Projects (MMPs) (www.services.ebiz.gov.in). This service aims at providing business related information to the concerned stakeholders by providing a transparent, efficient and convenient interface. This is also expected to save time and efforts by ensuring smooth interaction between government and businesses.

G2C e-government refers to bridging the gap between citizens and government through electronic means. This is to encourage citizens' participation in policy formulation, government processes, project implementations, decision making, etc. G2C e-government is to ensure two-way communications between public organizations and citizens. The purpose of G2C e-governance projects is not only to deliver services to citizens but also to receive their feedback and promote their contribution to government processes for improved service delivery. One of the examples of G2C projects in India is the citizen-centric website of Transport Department of Delhi. It facilitates citizens to apply for driving license online along with access to required information and provision of feedback.

G2CS e-governance projects aim at facilitating specific sections of the society such as differently abled people, senior citizens, people living in rural areas, etc. The project of ‘Digital Village’ initiated by the Indian government is a type of G2CS e-government. The project is aimed at delivering services such as Light Emitting Diode (LED) street lighting, wi-fi hotspot, tele medicine, skill development and tele education to the people by providing a platform at Gram Panchayat level in various states of the country (www.meity.gov.in). Another example of G2CS e-government is ‘Dial.Gov’ search engine offered by the Indian government for the target beneficiaries of different welfare schemes. Purpose of this service is to disseminate information about various schemes through a common platform so as to avoid any information gap related to these schemes.

2.3 Maturity Models of E-Governance

E-government development is an advancement process encompassing different characteristics, functions, and services (Esteves and Joseph, 2008). There are various maturity models of e-governance discussed in the literature. These maturity models are adopted by various governments as per their needs to analyze e-governance projects and take required steps for improving the quality of government portals designed to connect with citizens. For example, the staged model of e-governance depicts the evolution of e-governance with respect to catalog stage, transactional stage, vertical integration stage and horizontal integration stage (Layne and Lee, 2001).

In the cataloging stage, a government organization puts efforts to show its presence online by uploading information such as presentations, forms, etc. In this stage, a department offers services electronically, only to a limited extent. Information provided by government facilitates citizens to understand policies and procedures and learn more about government services. Forms can be downloaded and filled for further submission in offline mode.

In the second stage, i.e. the transactional stage of e-government, the interaction between governments and citizens can take place online. As governments, as well as citizens, get more aware about the usefulness of the Internet, they want to utilize it further to save time and efforts. In this stage, citizens look for convenience and a paperless process which was not possible in conventional mode. Government organizations, however, face many issues during the transaction stage which include integration issue, cost issue, security, and confidentiality issue, etc.

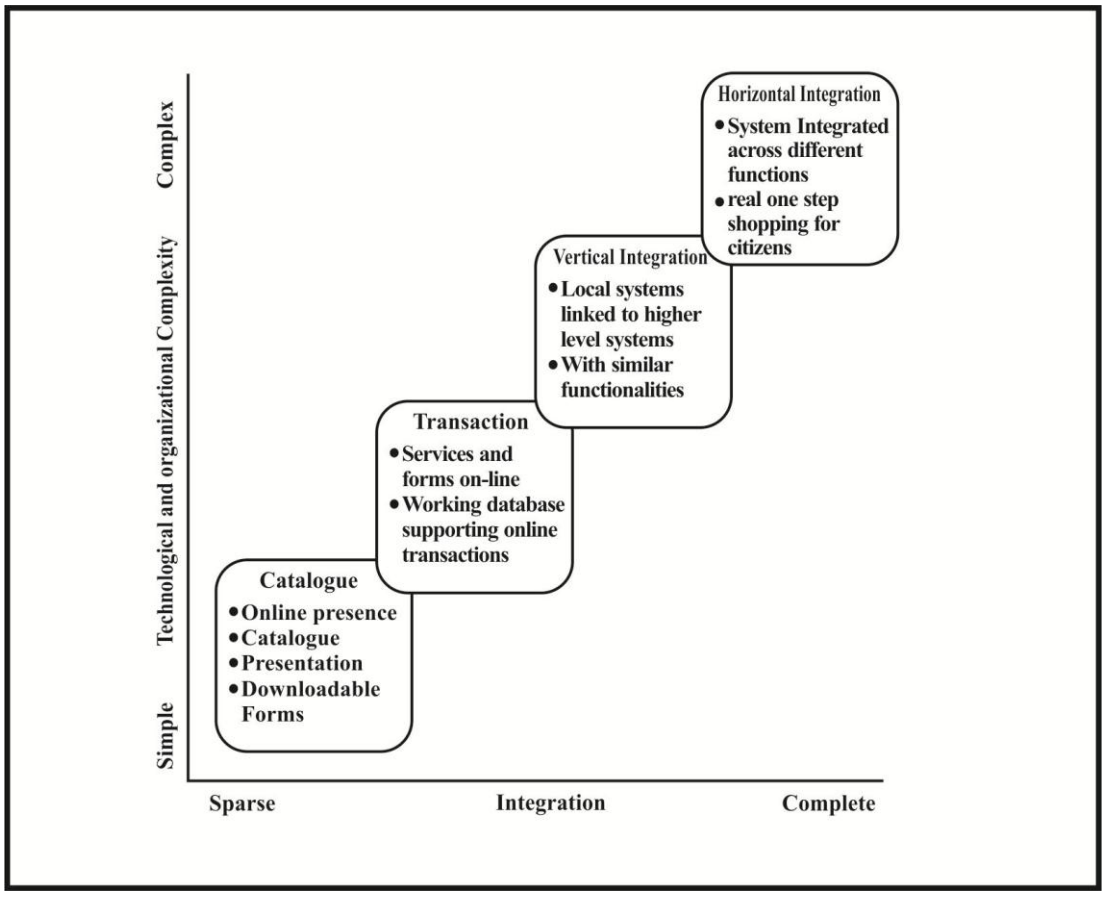

Figure 2.2: Different Stages of E-Government Growth

[Source: Layne and Lee (2001)]

In the vertical stage, the focus of the government is on transformation rather than digitalization of services. As e-government in this stage is not only sharing data on web but re-conceptualizing the services and ensuring organizational changes alongside the technological interactions. Hence, vertical integration is expected to take place between local, state and central government to eliminate the gap at different levels. In this stage, the purpose is to integrate the database of different levels of governments to ensure the uniformity and transparency to citizens. Hence, flexibility in the databases of different organizations is also required for easy and successful integration at this stage.

In the last stage of e-government development, i.e. horizontal integration, different related functional areas of governments are integrated to provide a one-stop solution to citizens. In this stage, different services offered by governments are made available to citizens under a single window.

Connected databases of different government functions support each other to provide information or extend services to citizens. The vertical and horizontal integration stages, however, involve many complexities which include heterogeneous nature of government databases, conflicting system requirements, challenges related to collaboration and change management in government organizations, etc.

Another e-government growth model proposed by Watson and Mundy (2001) has three stages named as initiation, infusion, and customization. 'Electronic Democracy' as shown in Figure 2.3 has two elements, i.e. e-government and e-politics. E-government enables citizens to make online transactions, and e-politics supports the government to take effective decisions through citizens' participation.

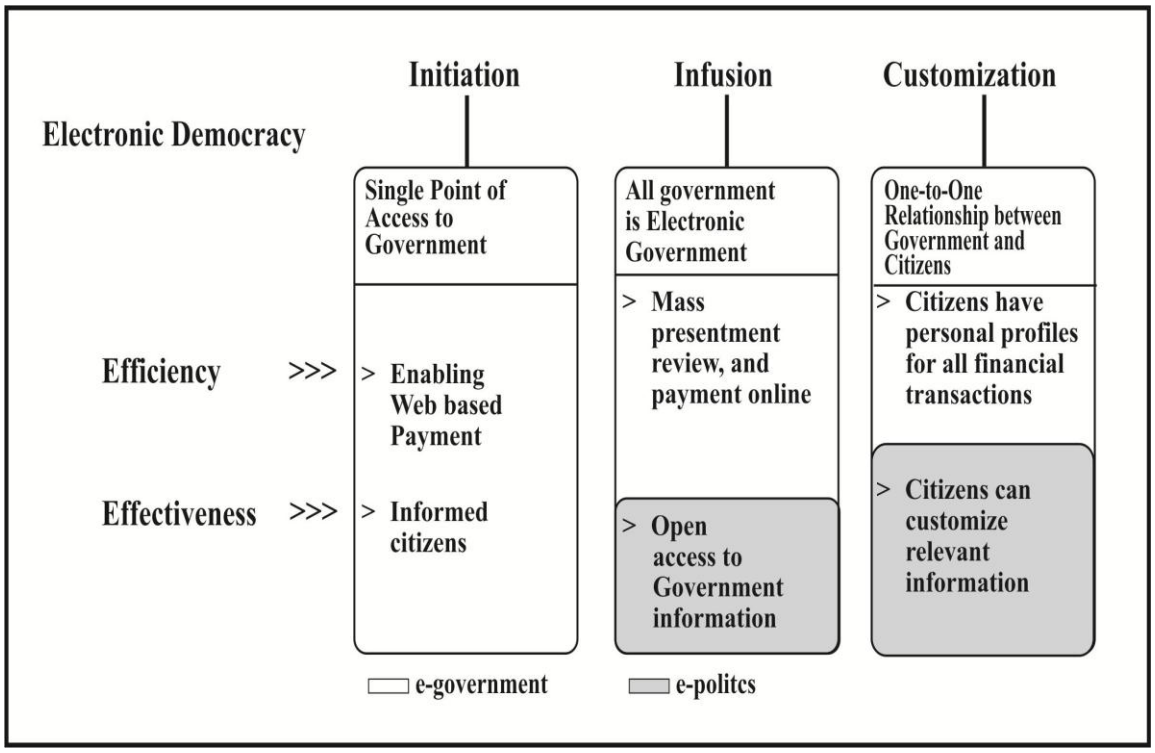

Figure 2.3: E-Government Growth Model
[Source: Watson and Mundy (2001)]

In the Initiation stage, government information is provided to citizens electronically. They are entitled to make web-based payments which help to reduce costs, provide comfort to citizens and create a positive effect on the environment by saving energy and resources. In the second stage, i.e.

Infusion stage, all government departments start adopting electric means of transactions. Citizens become aware of processes and can learn about the reasons behind political decision making. In this stage, citizens get empowerment of monitoring and influencing government through Internet technologies. During the last stage of the e-government growth model, the government forms a one-to-one relationship with citizens. Citizens receive personal notifications for the services they have requested.

In another approach by Chen (2003), stages of e-government have been defined as information, communication, transaction, and transformation. During the first stage of information, government categorizes, index and provide information to its citizens through the Internet. In the next stage, citizens can communicate with the government electronically. They can put their requests or queries through e-mail, web forms or other means available on the Internet. Next level after communication is transaction during which both citizens and governments use the Internet for making or accepting payments. In this stage, different departments of government also access the Internet at an internal level to execute various transactions. The fourth and highest level of e-government as referred by Chen (2003) is transformation. In this stage, it is believed that transformation concerning practices and service delivery is expected by citizens from governments. Hence, applications such as e-courts, e-voting may have an impact on government processes by using new databases and technologies.

There are various other maturity models discussed in literature reflecting different stages of e-governance. A few of such models are presented in Table 2.1.

Table 2.1: Maturity Models of E-Governance

Models	Stage 1	Stage 2	Stage 3	Stage 4
Gartner group (2000)	Web presence stage	Interaction stage	Transaction stage	Transformation stage
Layne and Lee (2001)	Catalogue stage	Transactional stage	Vertical integration stage	Horizontal integration stage
Watson and Mundy (2001)	Initiation stage	Infusion stage	Customisation stage	
Chandler and Emanuel (2002)	Information stage	Interaction stage	Transaction stage	Integration stage
Chen (2003)	Information stage	Communication stage	Transaction stage	Transformation stage
World Bank (2003)	Publishing stage	Interactivity stage	Completing transactions stage	Delivery stage
West (2004)	Bill-board stage	Partial-service-delivery stage	Portal or the one stop shop portal stage	Interactive democracy stage
United Nations (2012)	Emerging information stage	Enhanced information services stage	Transactional services stage	Connected services stage
Alhomod et al. (2012)	Presence on the web stage	Interaction between the citizen and the government stage	Complete transaction over the web stage	Integration of services stage

Though stages of a few maturity models seem similar, there is difference in characteristics of each stage across various models. While new features have been introduced in a few maturity models, it has been observed that other models have not considered them as a part of the maturity model established by others (Fath-Allah et al., 2014). The staged model presents only a macro level view of e-governance progress. Further, it is not required for organizations to follow the stages in a sequential manner in their journey to reach matured level of e-governance. An organization can cross-over stages depending upon its e-preparedness level.

2.4 Challenges in Implementing E-Governance in Developing Countries

The journey towards e-governance through various stages of maturity models has been full of challenges in many developing countries. As per a UN report, since 2014 there is a raise in the number of countries with elevated Online Service Index (OSI) and a decrease in the number of countries with low OSI (United Nations, 2016). Further, it has been mentioned that the majority of countries with high OSI are high-income level countries whereas countries with low OSI are low-income level countries. Many developing nations, having less economic growth and poor standards of living, face challenges with respect to inefficiency, lack of transparency, bureaucracy and corruption (Chen et al., 2007). Many of such countries fall short in the maturity level of their democratic systems when compared with developed nations. Therefore, the maturity level of their implementation of e-governance in these countries is relatively far more challenging. On the contrary, developed economies have consistent economy growth, transparent processes, high-rate of production and a better standard of living among citizens. The challenges faced by developing countries in their journey towards effective e-governance can be categorized as:

Planning and Management: Major challenge faced by most of the developing countries relate to planning and management (Sarrayrih and Sriram, 2015). Due to fast developments in technology and complexities related to automation of legacy systems, it has become difficult for governments to cope-up with uncertainty and develop systems to meet rising expectations of stakeholders.

ICT Infrastructure: Poor ICT infrastructure in developing countries is another obstacle in the implementation of e-governance (Chen et al., 2007). Development of e-governance is positively linked with IT infrastructure which is a pre-requisite for the implementation of e-governance (Basu, 2004). Major components of e-governance infrastructure are network and security

infrastructure, data management tools, application server environment, application development tools, systems management, etc. (Basu, 2004). However, the lack of consistent power supply, limited or no access to the Internet due to poor telecommunication infrastructure in developing countries create hurdles while building an ecosystem for e-governance. Besides, establishing required ICT infrastructure, it is also essential to educate and motivate citizens about the benefits of e-governance applications.

Creating Awareness among Citizens: In developing nations, the willingness among citizens to use e-governance applications is comparatively low (Chen et al., 2007). The difference between educated and illiterate people in such countries is found to be wide (Basu, 2004). Lack of access to Internet and computers by poor and uneducated people creates a digital divide in such countries. Also, while comparing with developed countries, the major population in developing countries reside in rural areas and suffer from poverty (Gupta et al., 2008). Therefore, it becomes challenging for the government to offer online services in such areas. As citizens in developing countries avoid participating in initiatives taken by government, issues such as unsuccessful policies, non-meeting of expected results and under-utilization of resources are common in such countries.

Silo Structure of Government Departments: One crucial challenge being faced by developing countries is to offer a one-stop solution to citizens. Silo structure of different departments of government presents formidable challenges while implementing cross-departmental initiatives. This may create a barrier to the free flow of communication, and further may result in customers' dissatisfaction. To ensure benefits not only to the citizens but to the organizations also, it is required to develop strategic alliances among organizations. This would further support in reducing cost and improving efficiency by avoiding duplicative tasks (Suri and Sushil, 2006, 2017). Therefore, for successful execution of one-stop e-governance, it is required to build trust and co-operation among departments (UN, 2012).

Approach: Initiatives taken by governments in the absence of a standardized methodology may result in non-achievement of expected results of e-governance implementation. Hence, developing countries should follow a methodology consisting of steps such as social and educational development, developmental policies and strategies addressing ground realities, ICT infrastructure development, ICT literacy and public awareness and, creating job opportunities (Sarrayrih and Sriram, 2015).

Therefore, many factors such as insufficient supply of human resources, lack of coordination among government departments at state and national level, lack of familiarity with e-governance among citizens, poor planning and management in government departments, etc. are the major obstacles in successful implementation of e-governance in many of the developing nations.

2.5 Evolution of E-Governance in India

Advantages of e-governance are known to several governments around the world. Governments of developed nations raised their level of services with the efficient utilization of ICT whereas developing nations are striving hard to achieve complete digitalization of all government departments.

In India, it is consistently being attempted by the government to improve the functioning of its various departments (Suri and Sushil, 2017). Government took a major step towards infusion of IT in its internal processes by establishing National Informatics Centre (NIC) in 1976. Till 1980s, use of computers was limited to only internal purposes especially in the areas where huge data is involved such as tax administration, census, elections and other large scale surveys. Subsequently, use of computers was extended to some special purposes such as defence, planning and research, etc. In the year 1987, the NICNET programme was launched by the earstwhile Planning Commission of India (now NITI Ayog). The purpose of this programme was to network districts, states and central governments through a satellite and computer based communication system for enabling exchange of government

information in digital mode. The focus of the programme was to automate government's internal functions instead of improvement of citizen service delivery mechanism (ARC, 2008, p.106). The advent of World Wide Web, in early nineties offered new opportunities for the use of Information Technology (IT) in government departments. Since then, e-governance initiatives are progressively being undertaken by various departments.

In the year 1998, a National Task Force on IT was constituted by the government of India. Based on its recommendations, government departments were asked to utilize 2 to 3 per cent of their total budget for promoting IT. Further in the year 2000, a High Powered Committee was formed which directed all central government departments to depute an IT Manager in each department for the promotion of Information Technology. At the same time, the DARPG circulated "Minimum Agenda of E-Governance" to be executed by all central government departments (www.darpg.nic.in). This 12 points agenda included establishment of basic ICT infrastructure, providing IT training to staff and start utilization of ICT for better interactions. All departments were directed to make an 'IT Vision' for five years supported by annual 'Action Plans.' However, government departments in the eagerness of ICT adoption were found to have neglected issues such as process re-engineering, standardization, interoperability, etc. To accomplish the basic requirement of e-governance, government departments acted in silos. Various departments initiated different e-governance projects autonomously as part of their e-governance plan. Out of such initiatives, a few demonstrated the noteworthy benefits towards enhancing accessibility, reducing corruption and providing support to the underserved societal groups (Harris, 2007).

In the recent past, to promote e-governance in India, government has taken some significant initiatives such as introduction of IT Act 2000, formulation of Right to Information (RTI) Act 2005 and formation of second Administrative Reforms Commission. Digital transactions were given legal recognition through the implementation of IT Act 2000 to facilitate the submitting of documents electronically (www.legalserviceindia.com). Introduction of Right to

Information Act 2005 has enabled citizens to access government information of their interest promoting openness and ensuring accountability of public organizations (www.rti.gov.in). The Administrative Reforms Commission in its eleventh report recommended that in any e-governance initiative, the focus should be on government reforms along with technological tools being utilized to bring fundamental changes in the process of government organizations (ARC, 2009). The latest report also mentioned that a clear roadmap with defined milestones should be prepared by the government to achieve transformation of citizen-government interfaces by 2020 at all levels of government.

Since the pace of e-governance progress was slow in India and initiatives taken by government departments were mostly in isolated mode, government realized the requirement for a national level effort in mission mode by key departments. As a result, National e-Governance Plan (NeGP) was sanctioned in the year 2006. Initially, NeGP comprised 27 Mission Mode Projects (MMPs) and 8 components to be executed at various levels of government such as central, state and local. Presently there are 44 MMPs out of which 15 are Central MMPs, 17 are State wise MMPs and 12 are Integrated MMPs. The mission mode projects are characterized by clear objectives, timelines and scope. The list of Central, State and Integrated MMPs is shown in Table 2.2.

The scheme of State Wide Area Networks (SWANs) was approved by the government in March 2005. The objective is to connect all States, Union Territories (UTs) to the Block level through Headquarters of District and sub-divisions with high bandwidth. Currently, SWANs are operational in 34 States/UTs which are being used to provide closer user connectivity to different government offices in the States (DIT, 2015).

Government approved the scheme of Common Services Centre (CSC) under the NeGP in September 2006. The objective of the scheme was to establish one lakh ICT enabled front-end service centres across India in a way that

there is minimum one CSC for every six villages so that all six lakhs villages of the country are covered under this initiative. However, after the assessment of the CSC scheme, CSC 2.0 scheme has been launched in 2015 to increase the reach of CSCs at Gram Panchayats (GPs). As part of the CSC 2.0 scheme, it has been proposed to set up a minimum one CSC in every 2.5 lakhs GPs across the country by 2019 (www.csc.gov.in).

Table 2.2: List of Central, State and Integrated Mission Mode Projects

Central MMPs	**State MMPs**	**Integrated MMPs**
Banking	Agriculture	CSC
Central Excise & Customs	Commercial Taxes	e-Biz
Income Tax (IT)	e−District	e-Courts
Insurance	Employment Exchange	e-Procurement
MCA21	Land Records(NLRMP)	EDI For eTrade
Passport	Municipalities	National e-governance Service Delivery Gateway
Immigration, Visa and Foreigners Registration & Tracking	e-Panchayats	India Portal
Pension	Police(CCTNS)	Financial Inclusion
e-Office	Road Transport	Roads and Highways Information System
Posts	Treasuries Computerization	Social benefit
UID	PDS	National GIS
Central Armed Para Military Forces	Education	Urban Governance
e-Sansad	Health	
e-Bhasha	e-Vidhaan	
NMEICT - National Mission on Education through ICT	Agriculture 2.0	
	Rural Development	
	Women and Child development	

Source: www.meity.gov.in

A Digital India Programme (DIP) has been introduced by Indian Government in July, 2015 to prepare India for a knowledge based transformation. There are mainly three vision areas of this programme, viz. providing digital infrastructure to citizens, availability of governance and services as per demand, and ensuring digital empowerment of citizens. Every vision area consists of some objectives as shown below in Table 2.3. The ongoing MMPs are now part of NeGP 2.0 or e-Kranti which is one of the components of DIP. Thrust is now being given on certain principles such as bringing transformation, providing integrated services, making reengineering of government processes essential in each MMP, ensuring availability of ICT Infrastructure as per demand, making services accessible through mobile phones, localization of language, etc. (www.digitalindia.gov.in).

Table 2.3: Vision areas under Digital India Programme

Digital Infrastructure as a Utility to Every Citizen	**Governance & Services on Demand**	**Digital Empowerment of Citizens**
Availability of high speed internet as a core utility for delivery of services to citizens	Seamlessly integrated services across departments or jurisdictions	Universal digital literacy
Cradle to grave digital identity that is unique, lifelong, online and authenticable to every citizen	Services availability in real time from online & mobile platforms	Accessible digital resources universally
Mobile phone & bank account enabling citizen participation in digital & financial space	All citizen entitlements to be available on the cloud	All documents/certificates to be available on cloud
Easy access to a Common Services Centre	Digitally transformed services for improving ease of doing business	Availability of digital resources/services in Indian languages
Shareable private space on a public cloud	Making financial transactions electronic & cashless	Collaborative digital platforms for participative governance
Safe and secure cyber-space	Leveraging GIS for decision support systems & development	Portability of all entitlements through cloud

Source: DIT, 2015

Doorstep Delivery of Services by Delhi Government

According to a recent development, the government of Delhi has launched doorstep delivery of services with effect from Sep 10, 2018. As per the initiative, residents of Delhi are required to dial 1076 to make a request for required service by fixing up the date and time. On a given date and time, a representative of the government would visit the house of the applicant and collect an application form, documents, and fees. Presently, there are 40 services provided by the government of Delhi under this initiative which are planned to be increased to 100. Delhi Government has given contract of call centre services to the VFS Global which is a Visa and Passport service provider worldwide. Initially, the duration of the contract has been kept for three years which may be extended by the government.

The list of 40 services provided under this initiative includes services from mainly seven departments, viz. Revenue, Social Welfare, Transport, Delhi Jal Board, Food and Supplies, Labour and Welfare. Also, a few major services covered are the issuance of marriage certificate, issuance of the driving license, issuance of different caste certificates, issuance of delayed birth and death order, etc.

As this service is launched recently and there are only limited numbers of representatives appointed by the government, people are still required to visit public organizations to avail the services in the absence of availability of early appointment under the doorstep service delivery method. Due to the huge demand for services, people are finding it difficult to get an appointment in case of urgency. Hence, many of them are using the conventional way of getting services.

2.6 Public Value

Public value is used to measure the performance of public services. The concept of public value focuses on the value that citizens should suggest public organizations for improving service delivery (Moore, 1995). The reason behind this approach is that the objective of public programmes consisting of

e-government initiatives is to offer value to citizens (Moore, 1995; Meynhardt, 2009). Public value is derived by citizens from their utilization of public services (Kelly et al., 2002). It has been defined as the value generated by government for citizens by providing public services, forming of laws and through several other government actions (Kelly et al., 2002).

The concept of public value is popular not only in developed countries, it is also well known in developing countries to evaluate the performance of public services. This is because of capability of the concept to evaluate the performance of public organizations from the citizens' perspective (Kelly et al., 2002; Alford and O'Flynn, 2009). In other words, it can also be said that public value is used to measure the whole effect of government actions on citizens with respect to value creation (Alford and O'Flynn, 2009). Hence, it plays a significant role for governments across the world to improvise its policy decisions and its relationship with citizens (Kelly et al., 2002).

Jorgensen and Bozeman (2007) has developed a list of seventy-two kinds of public value on the basis of 230 studies. These studies were conducted in United States, the United Kingdom and the Scandinavian countries. In another study, thirty-two types of public value have been examined in the context of four governments, viz. Australia, Canada, New Zealand and the United Kingdom (Kernaghan, 2003). The significant kinds of public value are quality, openness, user orientation, self-development of citizens, responsiveness, efficiency, democracy, equity and sustainability of environment (Kernaghan, 2003; Jorgensen and Bozeman, 2007).

Sources of public value as per its inventory can be defined in various ways. As per the study context, a few sources of public value are explained as follows. The term quality is referred as fulfilling the expectations of citizens via public service delivery (Stringham, 2004). Functioning of system covers uninterrupted provision of services without any technical error at the time of service delivery (Papadomichelaki and Mentzas, 2012; Bhattacharya et al.,

2012). User-orientation covers provision of public services in such a way that fulfils the need of the customers in a user-friendly manner (Jorgensen and Bozeman, 2007). Cost saving is referred as satisfaction level of citizens in terms of cost incurred by him such as money, time and efforts to avail the services (Kearns, 2004; Belwal and Zoubi, 2008). Efficiency means that through running of operations, public organizations are able to achieve more profits than costs (Millard et al., 2006). Openness is defined as sharing of information by public organization and giving answer of questions asked by citizens (Jorgensen and Bozeman, 2007). Responsiveness refers to the action performed by public administration in response to public demand, public opinions, etc. (Jorgensen and Bozeman, 2007). Equity is interpreted as the treatment given to all citizens by the public organization is same (Schwartz, 1992). Trust includes fulfilment of promises or commitments made by public organization in respect of services and other necessary actions taken which help to build trust of citizens on public organization (Belwal and Zoubi, 2008; Bidyarthi and Srivastava, 2011; Dash and Sangita, 2011). The self-development is referred as efforts put in by public organization to develop the knowledge and skills of the citizens (Benington, 2009). Citizens' participation means that public organization is willing and encouraging citizens to get involved in the decision making or other functional activities (Jorgensen and Bozeman, 2007). Concern for environment is interpreted as avoidance of natural resource wastage and putting efforts to keep them clean for upcoming generations (Jorgensen and Bozeman, 2007). However, it is argued that interpretation of sources of public value is different in different states and also varies in different societies (Jorgensen and Bozeman, 2007).

There are three main sources of public value creation that has been identified in literature. For example, quality service delivery is one source of public value (Kelly et al., 2002). Competence of public organizations also results into public value (Moore, 1995; Karunasena and Deng, 2010; Deng, et al., 2018). Achievements of outcomes which are socially required are also source of public value (Kelly et al.,

2002; Try, 2007). Development of trust among citizens towards public organizations has also been considered as the source of public value creation (Kelly et al., 2002). However, it is argued that trust should be accepted as the result of public value instead of source (Grimsley and Meehan, 2007).

2.7 Analysis of Public Value

With the growth of e-governance since introduction, it has played a significant role in improving the efficiency of public organizations (IANIS, 2007). There are several drivers behind the growth of e-governance such as use of ICT, user-centric approach and cost (IANIS, 2007). E-governance driven by technology plays an important role in effective and efficient service delivery with the help of ICT. Initiatives of e-governance which are driven by cost focus on the effective use of ICT to deliver efficient services to citizens. Also, a user-oriented approach strives to meet the need and expectations of citizens through e-governance (Karunasena et al., 2011).

The concept of public value can also be seen as driver of e-government (IANIS, 2007), as the aim of ICT is to enhance the functioning of government and the objective of public value is to create value for citizens. This can also be understood as that the purpose of e-government is to produce public value (Castelnovo and Simonetta, 2008). It has also been stated that creation of public value through e-governance is significant to develop and design the initiatives of e-governance. People express their needs and expectations and the government attempts to meet the requirement of people by improving its own capacity with the use of ICT. As stated above, e-government is looked as the process of producing public value with the efficient use of ICT (United Nations, 2003).

The concept of public value in terms of the driver of e-governance development has led to introduction of various approaches to evaluate the public value in the context of e-governance from various perspectives. There are mainly three dimensions of public value, i.e. delivery of quality public services, achievement of socially desirable outcomes and development of public trust (Kelly et al.,

2002). This has been further investigated by Kearns (2004), and indicators of public value are presented as shown in Figure 2.4. As shown in the framework, public value is created through quality service delivery which further has a few indicators, viz. the extent of information provision, the level of use of e-government, the availability of options, the extent to which users are satisfied, the level to which focus of e-government is on preferences of users, the extent to which e-government is focused on users who require this most and the extent to which it is cost-effective to avail e-government services. The framework has been used to measure the public value of initiatives taken by the United Kingdom in the field of e-health (Bend, 2004).

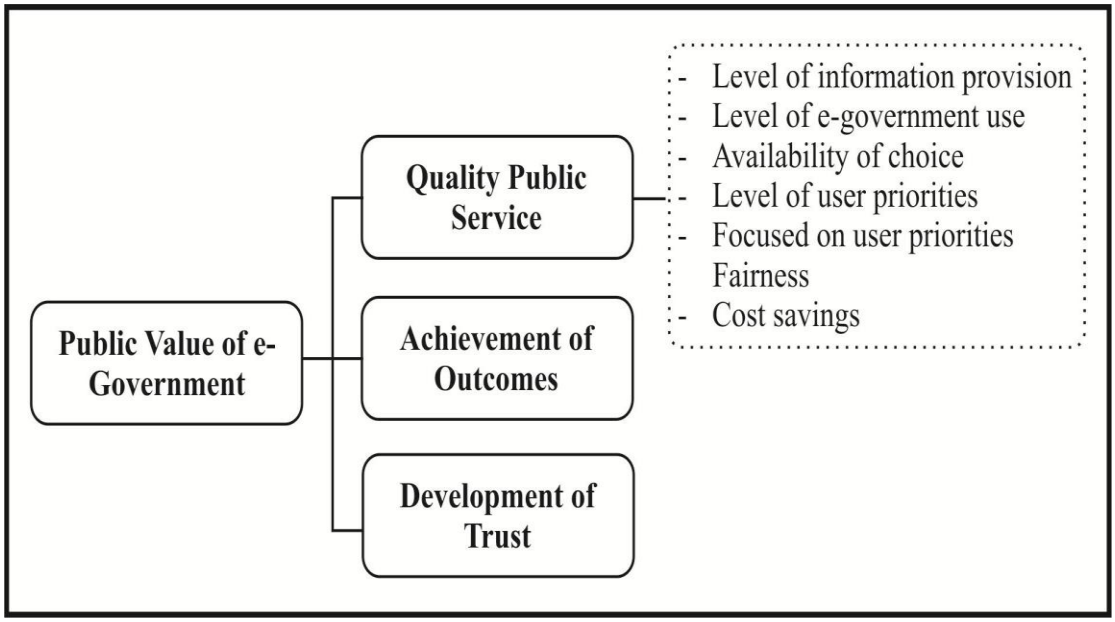

Figure 2.4: Public Value Framework by Kearns (2004)

Above framework by Kearns (2004) has further been extended in various ways. A framework has been proposed by Golubeva (2007) to measure the public value of portals of e-government. As per which, there are three sources, viz. quality of public service delivery, trust of public, and outcomes of public policy. Public service quality has been evaluated through openness, citizen-centricity indicators, and usability indicators. Also, public trust has been measured via transparency indicators and interactivity indicators.

Further, it has been indicated that public policy outcomes are the result of public service quality. This framework has been used in the Russian Federation to evaluate the public value of regional portals. Public value framework given by Gulubeva (2007) is shown below in Figure 2.5.

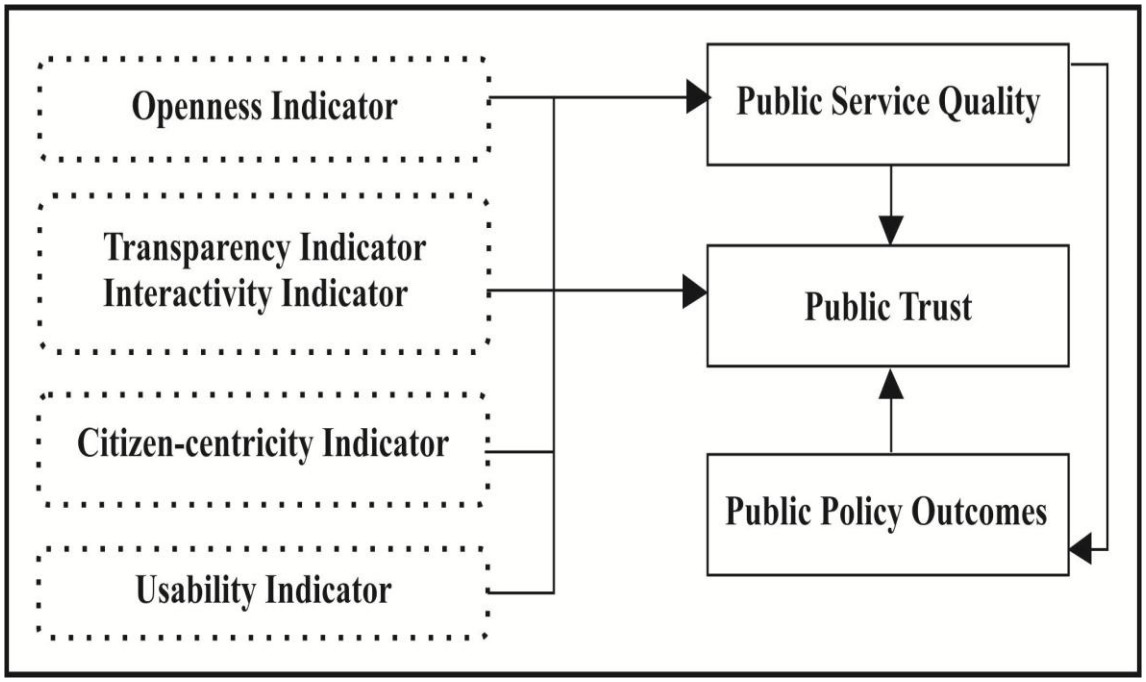

Figure 2.5: Public Value Framework by Golubeva (2007)

A framework proposed to evaluate public value proposed by Grimsley and Meehan (2007) has focussed mainly on services, satisfaction of users, trust, and outcomes. The framework considers the experience of users on the public service provision and outcomes of services for the public trust development. The validation of the framework was executed in the United Kingdom by surveying e-governance projects. The findings suggest that there is a relation between trust and level to which users think that an e-government service leads to increase in sense of being informed, personal control, and gives a sense of the experience of e-government (Grimsley and Meehan, 2007).

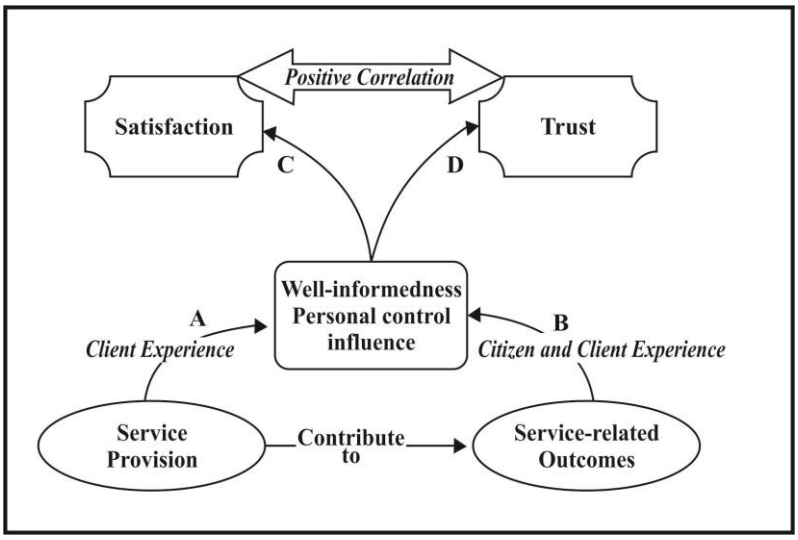

Figure 2.6: Public Value Framework by Grimsley and Meehan (2007)

The framework proposed by the European Commission (2006) has considered the public value of three types, viz. finance, political, and constituency. The three drivers of public value are proposed as efficiency, democracy, and effectiveness (European Commission, 2006).

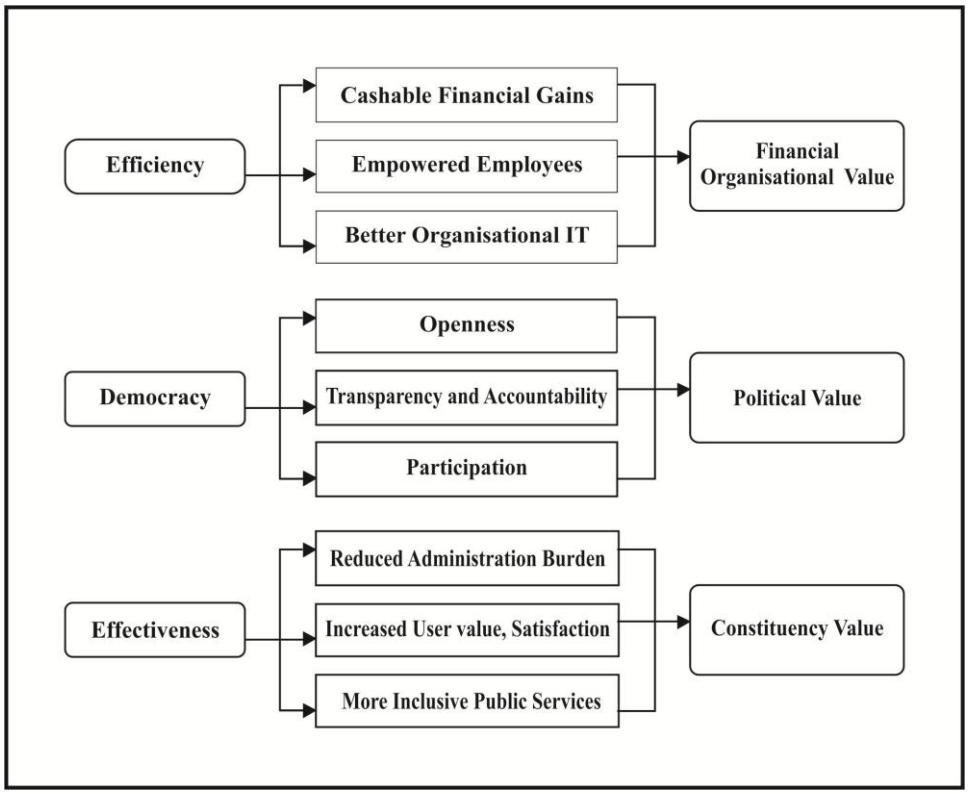

Figure 2.7: Public Value Framework by European Commission (2006)

As per the framework, efficiency is measured through financial profits for a public organization, the extent to which employees at public organizations are empowered, and improved ICT infrastructure at public organizations. Democracy is analyzed through openness, and transparency showed by public organizations, and participation by citizens in the activities of public sector by using e-government. Effectiveness is measured by evaluating decrease in administrative pressure on citizens, increase in satisfaction level of citizens, and the level to which inclusive public services are provided by e-government.

A framework is proposed by Liu et al. (2008) to measure the public value of e-government projects in the member countries of the European Union. The framework measures the IT investment of public organizations by considering the multidimensional feature of the value of e-government projects. It mainly focuses on four values of any e-government project, i.e. finance, social, strategic, and operational. The framework is suitable for mainly G2B e-government projects to measure the public value.

A framework proposed by Omar, Scheepers, and Stockdale (2011) measures the public value by evaluating the delivery of quality public services. As per the framework, quality of services is measured by taking into consideration mainly three qualities, i.e. system, service, and information. The objective of this framework is to measure the public value from the citizens' perspective and to consider how value is perceived by citizens and how they assess e-government services (Omar et al., 2011).

A public value framework to measure the pubic value of IT is proposed for analyzing the improvement of IT administration in France (Carrara, 2007). The focus of the framework is to assess e-government projects in terms of the monetary benefits in France from the perspective of citizens and public organizations. The framework evaluates mainly four values related to the projects, i.e. financial value, direct customer value, social value, and

operational value. The financial value is evaluated through monetary savings and growth in revenues of government by measuring net present value (NPV), internal rate of return (IRR) and break-even point. The measurement of social and operational value is done by examining the effect of improved delivery of services and satisfaction of employees from e-government. The evaluation of direct customer value is done through value received by citizens in terms of quality of services, social impact, savings of cost and time, etc.

A methodology to assist government organizations to measure demand and value created through e-governance initiatives has been proposed by the Australian Government Information Management Office (AGIMO, 2004). Through this methodology, mainly four values of individual agencies generated via online programmes are measured, i.e. the financial value of an organization, the financial value of the user, governance value and social value.

A framework proposed by Karunasena (2012) in the context of Sri Lanka to measure the public value of e-governance is an extension of the framework proposed by Kearns (2004) by including another dimension, i.e. effectiveness of public organizations. As per the framework, the effectiveness of public organizations is evaluated through efficiency of public organizations, openness of public organizations, and responsiveness of public organizations towards users. Delivery of quality services is evaluated through quality of information provision, functionalities of e-services from the perspective of citizens', and orientation of public organizations towards users. Achievement of socially desirable outcomes is measured via equity, self-development of citizens, trust of users towards the public organization, confidentiality maintained by the public organization, and steps taken by public organization towards sustainability of the environment. The revised framework proposed by Karunasena (2012) is shown below in Figure 2.8.

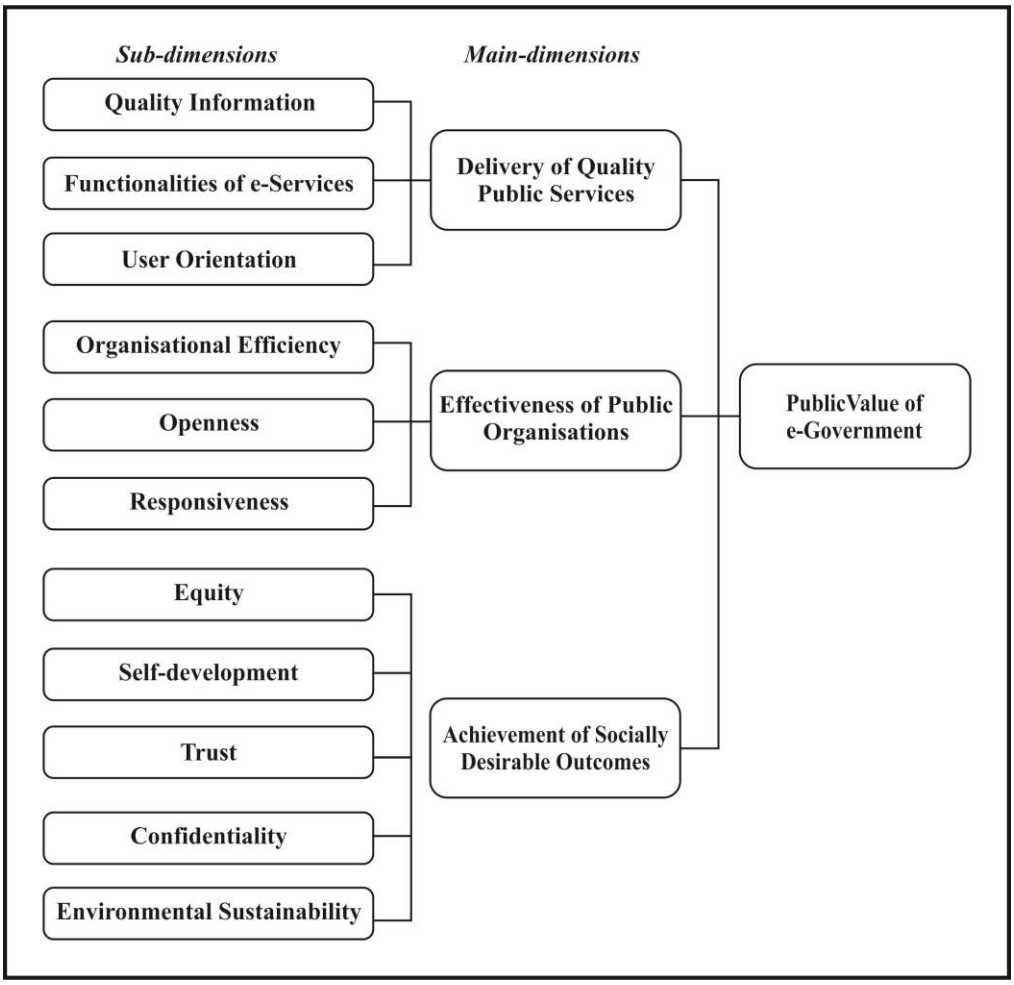

Figure 2.8: Public Value Framework by Karunasena (2012)

During the review of the literature, various frameworks have been found measuring public value as discussed above. However, each framework has been designed to analyze public value in different contexts and may not be suitable in the context of India. For example, public value framework proposed by Kearns (2004) has measured public value via delivery of quality public services whereas it has not taken into consideration a few attributes with respect to service quality, i.e. quality of information provision and functioning of the system (Papadomichelaki and Mentzas, 2009). Also, the creation of public value via operations has not been considered, that is a significant constituent of public value creation (Moore, 1995).

Additionally, the framework proposed by Kearns (2004) does not reflect appropriate variables to measure the trust of citizens and e-government outcomes whereas both have been shown as the key sources of public value creation. Moreover, various public value sources i.e. openness, responsiveness, self-development, orientation towards citizens, citizens' participation, concern for the environment, and efficiency have not been considered by the framework. To measure the true public value of an e-governance project, it is important to analyze all necessary sources of public value creation in the context of e-governance.

The framework of Golubeva (2007) which is an extension of the framework of Kearns (2004) also consists of the issue of lack of indicators to measure the complete public value of public organizations. As per the framework proposed by Golubeva (2007), significant sources of public value creation such as equity, efficiency, cost, self-development, environmental factors, citizens' participation, and responsiveness have not been considered. Such variables are crucial to analyze while measuring the wholesome public value of public organizations in the context of e-governance.

The European Commission (2006) framework is specifically designed to evaluate the public value of e-government initiatives in European countries. Therefore, the framework is not suitable for developing country like India, as e-governance initiatives in developing countries have not matched to the level of developed countries. Also, the European Commission (2006) is biased towards e-administration and does not include e-enabling of civil society (Heeks, 2008). Also, the framework expects researchers to get information through statistics obtained from office, administrative data, estimates of the standard cost model, web analysis by the third party, the survey conducted for user satisfaction, etc. However, to measure the true public value of e-governance, it is significant to consider the opinion and perception of users.

The framework proposed by Liu et al. (2008) also faces criticism due to its subjective approach toward the perspective of G2B. Moreover, public value is known as the creation of value by public organizations for citizens (Moore, 1995; Kelly et al., 2002). Hence, consideration of G2C perspective is crucial to evaluate the public value of e-governance. Another framework proposed by Omar et al. (2011) focuses on single source for creating public value, i.e. delivery of quality public services. The framework has not considered other significant sources such as the competence of public organization, achievement of variables which are socially required, etc.

A few frameworks focus on financial value while evaluating public value. However, they give comparative low weight to social value and democratic values (AGIMO, 2004; Carrara, 2007). The tools used to evaluate the public value of e-governance by such frameworks are NPV, IRR and other calculations based on cost benefits. Such tools are usually used to measure the financial value of organizations in the private sector (Jones, 2008). The calculation method used in such frameworks is not appropriate for the complex environment of the public sector where values and preferences of citizens are more crucial (Bannister, 2001). Another reason of non-suitability of such frameworks into the public sector is that the purpose of public organizations is not only to generate financial value but also public value for citizens (Flak et al., 2009). Therefore, assessment of only financial values is not sufficient for evaluating e-government projects (Esteves and Joseph, 2008). It is also important to take into consideration other factors also which may have substantial contribution while measuring public value (World Bank, 2007).

A framework proposed by Karunasena (2012) to measure public value in the context of Sri Lanka has considered many aspects while assessing public value. However, it has ignored expense paid by citizens to avail services and participation of citizens' required to assess true public value of e-governance.

Cost can be evaluated through time, efforts and money incurred by users to avail public services (Kearns, 2004; Belwal and Zoubi, 2008; DeitY, 2008; Bidyarthi and Srivastava, 2011; Osman et al., 2014). Citizen-participation can be analyzed through the involvement of citizens' in policy making, decision making, asking for new ideas from citizens, etc. (Axelsson et al., 2010; Bidyarthi and Srivastava, 2011; Navarro et al., 2014; Satapathy, 2014). Therefore, it is required to include all such factors which may have any contribution to public value while analyzing the public value of e-governance.

Some frameworks also face shortcoming due to lack of validity and reliability of their framework (Kearns, 2004; Golubeva, 2007; Omar et al., 2011). It is not clear how necessary tests and validation are conducted of such frameworks and which type of methodology is used for validation. Also, before applying any such framework in the context of India, it is required to check the suitability of such frameworks in developing countries as different frameworks have been proposed in different contexts. Moreover, the term public value has different definitions in different states and different societies (Jorgensen and Bozeman, 2007). It is also argued that public values are flexible for displaying social requirements (Samaratunge and Wijewardena, 2009). Public value evaluated through other frameworks would vary from public value interpreted through a framework applicable in India. Therefore, to address such concerns, it is required to develop a framework which is empirically tested and validated to analyze the public value of e-governance in the context of India. A summary of descriptions and limitations of prevailing frameworks for analyzing public value is presented in Table 2.4.

Table 2.4: Descriptions and Limitations of Existing Frameworks to Measure Public Value

Frameworks	Descriptions	Limitations
Kearns (2004)	• Evaluation of public value is performed through three factors, viz. quality of public service delivery, outcomes, and trust • Measurement of quality public service delivery is done via amount of information provided to citizens, level of utilization, accessibility of options, satisfaction of users, preferences of users, fairness and savings of cost	• A few significant variables of public value, viz. openness, responsiveness, citizens' participation, user orientation, efficiency, environmental factors, self-development are not considered • Service quality issue of e-governance such as service quality, quality of information and usability have not been taken into consideration • Trust and outcomes have been avoided • Issues such as validity and reliability also exists
AGIMO (2004)	• Evaluation of public value is addressed from financial and social point of view in the context of e-government	• Other sources creating public value have not been considered • Critical public value from the perspective of society is ignored
European Commission (2006)	• Assessment of public value is performed through three dimensions, viz. efficiency, democracy, and effectiveness • Measurement of efficiency is done through financial profits, staff empowerment and development of ICT infrastructure • Democracy is measured in terms of openness, transparency, and signs of participation • Measurement of effectiveness is in terms of lessening of administrative load on citizens, enhancement in satisfaction level of citizens, completeness of public services • Framework is developed to analyze public value of e-government in developed nations	• Framework is focussed to measure public value in developed nations hence, not appropriate for developing nations like India • Issue of service quality of e-government is not considered • A few significant dimensions of public value are not considered such as orientation towards users, trust, factors related to environment and self-development • Public value indicators are oriented towards e-administration • Indicator is not proposed to evaluate e-enabling of civil society • There is more use of secondary data, administrative data, cost model approximation, web assessment of third party, survey of satisfaction of users, etc.
Golubeva (2007)	• Public value is evaluated through three factors, viz. quality of public services, trust and outcomes • Public service quality are measured	• Main concentration of the framework is on e-portals • A few significant dimensions of public value are not considered

Frameworks	Descriptions	Limitations
	in terms of openness, providing citizen-centricity and usability • Measurement of public trust is conducted through ensuring transparency and interactivity	• Indicator to measure outcomes is not proposed • Issues such as validity and reliability also exist
Carrara (2007)	• Three values are identified to evaluate the public value, viz. financial, social and operational, and customer.	• Other sources creating public value have not been considered • Critical public value from the perspective of society is ignored • The framework is based on measures used in private sector and financial value to assess the public value
Liu et al. (2008)	• Four dimensions proposed to evaluate public value of e-governance, viz. financial, social, strategic and operational • Main focus of proposed framework is on G2B projects	• As per the framework, G2C and G2CS projects have not been included • Other sources creating public value have not been considered • Critical public value from the perspective of society is ignored
Omar et al. (2011)	• Public value is evaluated through delivery of quality service • Service quality issues of e-government such as quality of service, quality of information and quality of system have been assessed	• To evaluate complete public value other sources creating public value have not been considered • Critical public value from the perspective of society is ignored • Issues such as validity and reliability also exist due to the conceptual nature of the framework
Karunasena et al. (2011)	• Public value is evaluated through four dimensions, viz. delivery of public service, efficiency of public organizations, development of trust, and achievement of socially desirable outcomes • Public service quality indicators are the extension of the framework of Kearns (2004) • Trust is measured in terms of security and privacy, transparent service delivery, trust in e-services and citizens' participation • Measurement of effectiveness is executed through efficiency, accountability and perceptions of citizens' about service delivery	• A few significant dimensions of public value are not considered such as cost savings, citizen-participation • Service quality issue of e-governance are not considered • Indicator to measure outcomes is not proposed • Framework is based on secondary data • Issues such as validity and reliability also exist

Frameworks	Descriptions	Limitations
	effectiveness	
Deng et al. (2018)	• Public value is measured through three dimensions, viz. delivery of quality public services, effectiveness of public organizations and achievement of socially desirable outcomes • Delivery of quality public services is measured through quality of information, functionalities of e-services and orientation towards users • Effectiveness of public organizations is measured in terms of efficiency of organization, openness and responsiveness • Achievement of socially desirable outcomes is measured in terms of equity, self-development of citizens, ensuring trust, participatory-democracy and sustainability of environment	• A significant dimensions of public value are not considered such as cost savings • Service quality issue of e-governance are not considered • Indicator to measure outcomes is not proposed

2.8 Analyzing Public Value of E-Governance Portals

E-governance is a popular phenomenon which has enabled nations to provide efficient service delivery to citizens. In the past few years, it has been implemented successfully by developed countries, and with the advancement of technology, it has become possible for public organizations of developed countries to provide public services in digital mode. In such processes, citizens are generally not required to visit public organizations. Therefore, many studies have been based on assessment of the websites of public organizations for analyzing the public value of e-governance. A few such studies have been explained in this section to get insights about existing studies analyzing the public value of e-governance. In developing countries like India due to lack of an end-to-end IT-enabled mechanism, citizens are required to visit public organizations to avail public services. Understanding of existing studies has helped to identify the research gaps in the study context.

A study in the context of Turkey has evaluated the public value of sixteen Turkish local government websites (Karkin and Janssen, 2014). The focus of the study was to assess local administration in Turkey by evaluating municipal websites. For website evaluation, three conventional categories have been used, i.e. content, usability, and quality and for public value evaluation, six categories have been used, i.e. accessibility, citizen engagement, transparency, responsiveness, dialog, and balancing of interests. The ‘Quality' dimension has further sub-factors, viz. the number of times link broken, the updated range, existence of visual elements, availability of transaction forms and layout of the website. Findings of the study suggested that most of the websites were performing well as per traditionally used websites evaluation categories. However, the websites did not score well on the public value dimensions. Experiences of users, content and other website related features have pushed for the user-oriented design of websites. Public value is less entrenched in the design of websites. The study thus emphasized keeping in view the aspects related to public value also while designing user-oriented websites as depicted in Figure 2.9.

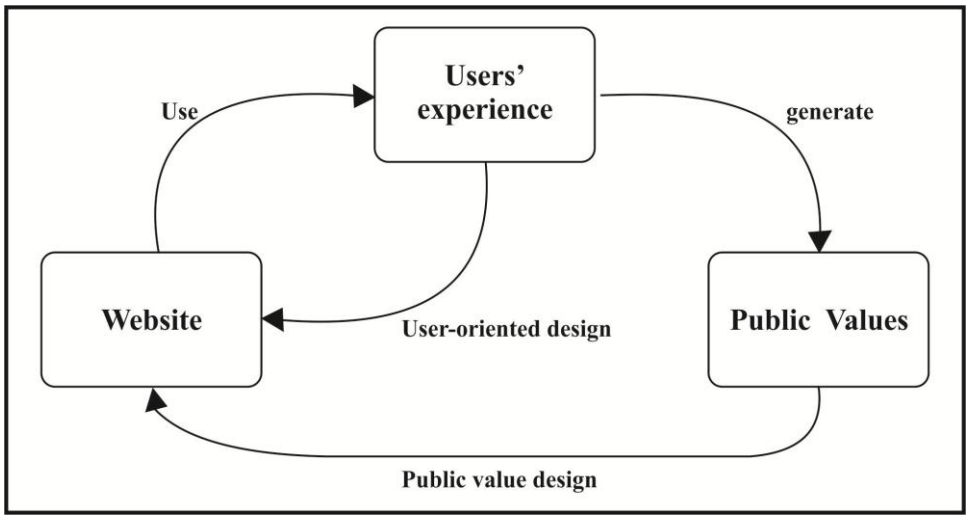

Figure 2.9: Websites Evaluation from Public Value Perspective
[Source: Karkin and Janssen (2014)]

Another study in this regard has analyzed fifteen municipal websites (Jong and Lentz, 2006). For this purpose, an instrument consisting of two main elements has been developed. In the first element, set of five different users' scenarios has been explained such as one represents perspective of tourists, one concentrates on registry office, one on building permits, one performs the passive role of a user who is required to be informed by municipal policy, and the last one plays an active role of a citizen willing to initiate a new policy. Out of the above five scenarios, first belongs to municipal characteristics, second and third belong to products and services, and fourth and fifth belong to policy and administration. As per the study, the second element consists of a set of criteria which can be used to suggest and help the detection of the problems faced by users as it is not sufficient for experts to review user activities. The study also mentioned that experts should also help in the execution of users tasks of finding and registering problems which they had come across. Findings of the study suggested that there is lack of user-friendliness of municipal websites and for the success of these websites and to improve the communication between municipalities and their users, it is crucial for municipalities to pay attention to the user-friendliness of the websites.

A website evaluation questionnaire has been developed by Elling et al., (2012) to evaluate the government websites. As per the study, the questionnaire can be used to detect and diagnose problems faced during the use of websites for the purpose of benchmarking websites of government. Also, the questionnaire can be used to evaluate other websites that provide information for the knowledge of users. According to the study, the main three crucial aspects to find answers to the questions by users' efficiency on websites are ease of navigation, availability, and easiness of content and clear layout of the website.

A few more studies in this regard have been executed such as one study has evaluated 127 government websites to address the assessment issues such

as transparency of websites, accuracy of information, interoperability and easy accessibility (Garcia et al., 2005) and another study has been conducted in the context of African countries by evaluating 582 government websites (Rorissa and Demissie, 2010). A study by Wang et al., (2005) to evaluate websites of government has reflected that present efforts on designs of websites mainly focus on the features of the website to enhance the usability, however, only a few answers the reason of betterment of one design from another from the facilitation point of citizens. The study has presented an equation to measure the performance of information seeking activity of citizens. According to the study, citizens' activity of information seeking on the website is based on a) information user, i.e. citizen, b) information problem, i.e. information task to be finished and c) information pool, i.e. the website of government with information.

To evaluate the effectiveness of government websites for the purpose to understand the quality and usage of public electronic service delivery, a study has been conducted in the context of Europe (Torres et al., 2005). The survey was conducted on websites of 33 cities of European countries. As per the study, the number of services delivered through the Internet was identified as sixty-seven. Services offered by local governments have been classified into three main categories, i.e. publish, interact and transact. Findings of the study suggested that some populated websites are moving from the traditional paradigm to e-governance paradigm with various levels of development. It is reflected through the study that the big cities in the EU are making efficient use of ICT; however, within these big cities, there is much difference in the use of the Internet.

Based on a review of literature, it has been found that most of the studies have analyzed government websites to evaluate the public value of e-governance. As per the studies reviewed in this section, analysis of public value has mainly conducted through a few variables with respect to websites such as content written on the website, easiness to use, easy accessibility, the layout of the

website, hyperlinks available on the website, ease of navigation, etc. However, as per the Indian context, to analyze the public value of citizen-centric e-governance projects, it is also necessary to assess the performance of variables with respect to situation, actors, and processes at the public organization. Hence, understanding of public value evaluation performed by most of the developed countries has led us to get insights about the research gaps in the study context.

2.9 Learning from Literature and Research Gaps

E-governance provides opportunities to public organizations to strengthen their interface with citizens. In India, over the past few years, government has spent huge amount of money to improve the performance of public organizations through implementing various new e-governance projects. A review of literature has brought out learning based on which following Research Gaps (RGs) have been identified:

RG1: Studies indicate that the actual benefits of e-governance projects are yet to fully realize in terms of benefits to citizens. There are only a few studies available on the public value in the context of e-governance projects. However, the available few studies provide useful insights for public organizations to improve their services.

RG2: Measurement of public value varies according to the context of a country, purpose of measurement and stage of e-governance in that country. Most of developed countries have implemented e-governance successfully. Hence, citizens can avail government services easily by accessing their websites. Therefore, in such countries, evaluation of public value is conducted through performance assessment of government websites. However, e-governance is still at initial stages in developing countries like India. Hence, perceptions of citizens about basic issues during the experience of e-government processes are more important compared to technical issues (Belwal and Zoubi, 2008).

RG3: In the context of India where e-governance is still at growing stage and generally an end-to-end IT based solution is not available with public organizations, all services are not accessible through websites. Therefore, in most of the cases, citizens are required to fill-up the online application form and visit the public organization after booking the appointment online. It means that to avail services, citizens are needed to access the website as well as visit the public organization. Hence, in Indian context, measurement of public value is not complete only by evaluating performance of websites. For the complete analysis of public value of e-governance, it is also crucial to measure the experience of citizens while availing services at public organization.

RG4: During a review of literature, it has been found that there is lack of research on analyzing public value keeping Indian context into consideration. In particular, the perception of beneficiaries based on their experience during their visits to public organizations has not been analyzed in the context of public value. The influence of situation – actor – process related variables on public value of e-governance remains unexplored.

2.10 Concluding Remarks

An attempt has been made here to develop understanding about e-governance, its evolution in India, existing frameworks to evaluate the performances of e-governance, public value, and analysis of existing frameworks of public value. The purpose was to identify research gaps based on the learning from literature review. During the review of existing public value frameworks, it has been revealed that there are various shortcomings in the existing frameworks for effective implementation to analyze public value in India. Many issues such as suitability of a few frameworks in the context of developed nations only, ignorance of critical

public value creation in the society, lack of validity and reliability testing make such frameworks ineligible to use them in the context of India. In result, need arises to develop a revised theoretical framework based on the learning of existing literature review. Therefore, a public value framework to analyze the public value of e-governance applicable in the context of India is proposed (*Chapter 4*).

Also, during the literature review, it has found that many studies conducted to evaluate the public value of e-governance have measured the performance of websites of public organizations. The concept of visit conducted by an applicant to the public organization has been ignored. Such studies focus on the performance of government websites in terms of the level of information available and information updated on websites, facility of doing the transaction online, facility to search for information on websites, etc. The purpose of such studies is to assess the overall performance of government websites to measure the public value of e-governance.

However, in India, at most of the public organizations, citizens are required to visit public organizations for availing services. They are required to fill the application forms online, make the payment and fix the appointment and then visit the service centre of public organizations. Hence, public value is not limited to the evaluation of websites only. For the purpose of complete analysis, it is important to analyze the overall public value of public organizations and see the influence of feedback of citizens about their experience in terms of situation, actors and processes at the service centre. Therefore, to execute the study, we have considered both the aspects which are explained in the next sections of the study.

A recent development of doorstep service delivery launched by the government of Delhi has also been described in the chapter to get insight into the process of a new method. However, with the start of a new mechanism,

the current method where applicants have to visit the service centre is still in use. Therefore, from the study perspective, all five projects selected on the basis of defined criteria have been studied and further analyzed to interpret the study results.

Chapter 3

Public Value of E-Governance Projects in India: A Pilot Study of Issuance of Passport and Driving License Services*

3.1 Introduction

Many of the existing studies in e-governance context have attempted to measure the public value of projects with regards to quality of services provided, the cost-effectiveness of public organizations and extent to which public organizations are able to meet their social objectives. However, it is also important to explore variables influencing public value in order to pursue attaining high public value from such projects. In this pilot study, it is attempted to explore such variables based on Situation-Actor-Process (S-A-P) framework. In India, the physical presence of citizens is still required at many public centres established for delivering a variety of government services. A citizen at the time of his visit to a public service centre faces a situation, deals with different actors and is subjected to a set of processes. At the end of the service cycle, the citizen develops a perception of the public value of the e-governance project. The study aims at exploring the likely influence of 'Improved Situation,' 'Capability level of Actors' and 'Flexible Process Workflow' on 'Public Value' of e-governance projects. A questionnaire was designed, and a survey conducted to analyze public value and S-A-P related variables in the context of two e-governance projects, viz. Passport Seva Project (PSP) and Driving License Project (DLP) in India. Survey data has been analyzed to get insights about the influence of S-A-P related variables on the public value of e-governance projects. Learning issues have been synthesized in terms of implications for practitioners as well as researchers for enhancing public value of e-governance projects.

* Part of this chapter has been published as
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3.2 Methodology

A review of the literature was conducted for developing understanding about the public value and variables related to the situation, actors and processes. SAP-LAP framework (Sushil, 2000) (*Chapter 4, Section 4.5.2*) has been used for conducting this study considering the context of e-governance projects where the presence of citizens at service centres of public organizations is mandatory to avail the services. Two citizen-centric e-governance projects, viz. Passport Seva Project (PSP) and Driving License Project (DLP) were identified for the purpose of conducting a pilot study. Besides the convenience of conducting the study, the other criteria for selecting the projects were:

- The projects should be citizen-centric and have been operational for at least one year.
- The project should be of a state/national level.
- The projects are of such nature that citizens are required to visit public organizations for availing services.

Three service centres of the two projects were visited. Out of three centres visited, one belonged to the driving license project, and the remaining two belonged to the passport seva project. The purpose of visiting two service centres of passport seva project was due to national level coverage of the project. Preliminary visits to service centres were conducted to develop an understanding of the situation, actors and processes related to the service delivery. During preliminary visits, discussions held with applicants have also helped in the conceptualization of the variables related to the situation, actors and processes. This was followed by questionnaire development, data collection, and Univariate analysis. The study is exploratory in nature, and a pilot survey was conducted to develop better insights about conceptual variables and refining them further before conducting a detailed study with a larger sample size and multiple projects to validate relationships between public

value and S-A-P based variables. Hence, before conducting the main study, it was felt appropriate to use univariate analysis to develop better insights about the conceptualized research variables. The approach has helped in providing a base for formulating research hypotheses for the main study.

Conceptual Research Variables

Based on a review of literature, public value is conceived to be measured in terms of ‘Quality Service Delivery,' ‘Competence of Public Organizations' and ‘Achievement of Socially Required Outcomes’. Other conceptualized variables, viz. ‘Improved Situation', ‘Capability level of Actors' and ‘Flexible Process Workflow' have roots in the SAP-LAP framework (Sushil, 2000) which are supported by literature review and visits made to the service centres of public organizations to get more insights about micro variables. The pilot study is designed to explore the linkage between conceptualized S-A-P variables and public value of e-governance projects. For this purpose, a survey of two citizen-centric e-governance projects was conducted. Similar to any other management context, public organizations also consists of an interplay of situations, actors and processes which is experienced by citizens during their visits to the service centres. It is conceptualized that experience of citizens related to situation, actors, and processes in a given project setting may be influencing their perception about public value.

3.3 Brief Description of Projects

A brief description of the two e-governance projects studied is presented below:

3.3.1 Passport Seva Project

Central Passport Organization (CPO) is responsible for delivering overall passport related services in India. It functions as a wing of the Central

Passport and Visa (CPV) division of Ministry of External Affairs (MEA). The MEA engaged Tata Consultancy Services (TCS) in 2008 to executed passport seva (services) project in Public-Private-Partnership (PPP) mode. The project was formally launched in May 2010. The overall scope of the project included process re-engineering, development of application and portal system, data migration and communication, setting up passport offices, increasing printing capacity, setting up a call centre and building reporting systems. Passport project in India is introduced to meet the challenges such as increasing demand for passports, the requirement for a more transparent and smooth process for issuing passports, improved public grievance redressal mechanism, removing the role of mediators and reduction in pendency, etc. MEA has a network of 37 passport offices across the nation and 181 Indian embassies and consulates abroad to issue passports to the citizens. Under the project 77 passport seva kendras (service centres) and have been established all over India. Passport seva project is recognized as one of the Mission Mode Projects (MMPs) under the ambitious Digital India Programme announced by the government recently. The passport services are accessible through the website (*http://passportindia.gov.in*) which has been re-designed under the passport seva project.

3.3.2 Driving License Project

Driving license is a document which certifies the eligibility of the holder to drive a vehicle as per the Motor vehicles Act, 1988. The transport department is the organization responsible for the issuance of the driving license. For this purpose, the transport department of Delhi has tied up with Delhi Integrated Multi-Modal Transit System Ltd. (DIMTS) which is a joint venture of Government of National Capital Territory of Delhi (GNCTD) and Infrastructure Development Finance Company (IDFC) foundation since July 2007. The Project has been implemented in all 13 zonal transport authorities in Delhi. DIMTS developed an online appointment system (*www.transport.delhigovt.nic.in*) through which citizens can

book an appointment and can make e-payment, or they can contact to call centre by dialing a toll-free number, viz. 09311900800 for booking of an appointment. The new driving license system aims at computerization of processes involved in issuing driving licenses for commercial and non-commercial purposes. It aims at minimization of human interventions and making the process more secure, transparent and efficient.

A summary of projects selected for the study is presented in Table 3.1

Table 3.1: Summary of Selected Projects

E-Governance Projects		
Parameter	**Passport Seva Project (PSP) (www.passportindia.gov.in)**	**Driving License Project (DLP) (www.transport.delhigovt.nic.in)**
Objective	To streamline the processes related to issuing of passports and expand service network by setting up new passport seva kendras across India.	To streamline the processes related to issuing of driving licenses.
Scope	Process re-engineering based application development, data migration, and communication, setting up new passport offices, enhancing printing capacity, setting up the call centre and reporting systems	Setting up of the centralized data repository, creating an online appointment system, providing e-payment facility, effective check on the issue of multiple licenses, confirming the identity of the applicant through fingerprint, avoiding duplication of data, reducing the possibility of manipulations
Coverage	The national level project is covering 37 passport offices with overall 77 passport seva kendras for service delivery; centrally co-ordinated.	State level project. In Delhi, the project covers 13 zonal transport authorities. Independently being co-ordinated by different states.
Responsible organization	Central Passport Organization (CPO), Ministry of External Affairs (MEA).	Department of Transport, Government of Delhi and similar departments in other states.
Intended Beneficiaries	Citizens	Citizens

E-Governance Projects		
Parameter	**Passport Seva Project (PSP) (www.passportindia.gov.in)**	**Driving License Project (DLP) (www.transport.delhigovt.nic.in)**
Expected benefits	Increased reach by setting up new passport seva kendras, reduced wait time due to the online application and appointment system, faster delivery of passports and minimized the role of intermediaries.	Enhanced security features, minimized human interference, reduced waiting period, online appointment system and e-payment facility.
Services offered	Issuance and renewal of passports, issuance of police clearance certificates (PCC) to citizens of India.	Issuance and renewal of driving licenses.
Status	A website is launched to apply for passport related services. Applicants are required to visit the passport office after taking an online appointment. The application process includes filling up form, capturing photograph and fingerprints.	Online appointment system was launched in 2011. However, applicants can also book an appointment through call centres. Applicants are required to approach assigned zonal office for submission of supporting documents, verification of credentials and taking driving tests.

3.4 Questionnaire Development and Data Collection

An initial questionnaire was prepared based on understanding developed through literature review, visits to the service centres and practical experience. The draft questionnaire was presented to seven experts for their inputs. Four experts were from academia and three from industry. After making necessary improvements, it was further distributed to a few respondents to get feedback with respect to their understanding of the contents of the questionnaire. The final questionnaire for the pilot study comprised of 54 questions.

A survey was conducted in Delhi city, India in November 2015. It was planned to survey in the third week of November 2015 keeping into view holidays during the first two weeks of the month. Due care was taken to ensure that the

survey is conducted on a normal working day considering weather conditions into mind. To capture maximum responses, respondents were approached during peak hours, i.e. from 10 AM to noon. Applicants approached for the survey comprised of both literate and illiterate respondents. Out of 123 respondents approached, a few of the respondents were not willing to fill the questionnaire due to lack of time or other reasons. In all, 87 responses could be received out of which 44 were from passport seva project and 43 from driving license project. The response rate was about 70 percent which is considered acceptable for the pilot study.

Data was collected by using a five-point Likert-type scale. In the five-point Likert-type scale used in this study, the value ‘0’ represents ‘do not agree at all,' and the value ‘4’ represents ‘agree to a very large extent.' For analysis purpose, the scale was further transformed, and values were normalized between zero to one as per their score.

3.4.1 Reliability and Validity Analysis

The internal consistency of the items in a construct is analyzed using Cronbach's alpha. The Cronbach's alpha values of constructs, i.e. public value and S-A-P variables of both the projects, viz. passport seva project (PSP) and Driving License Project (DLP) were found to be 0.81 and 0.70 respectively. The values above 0.6 are considered acceptable for this kind of empirical research (Hair et al., 2006; George and Mallery, 2011).

3.5 Analysis and Discussion

The descriptive statistics presented in Table 3.2 show the values of the range, mean and standard error of the study variables. The relatively higher observed range values of variables about driving license project as compared to the passport seva project may be due to variation in the nature of the processes encompassing each project. The processes of passport project are

fully computerized, and citizens are required to schedule appointments before visiting the passport seva kendra. As a result, the number of applications to be processed in a day is well-known in advance due to which operations are well managed. However, driving license project has both computerized and manual options for citizens. This may result in an unexpected number of applications to be processed in a day which may be adversely affecting service delivery. The standard error associated with all the variables being negligible, the observed sample mean values can be interpreted in general for the respective projects. In both, the projects, observed mean values of the three constituent variables of public value reflect upon relatively more significance of ‘Quality Service Delivery’ as compared to the other two macro variables. Detailed analysis of observed mean values of public value and S-A-P related variables is described below:

Table 3.2: Univariate Statistical Analysis

Passport Seva Project (PSP)							Driving License Project (DLP)					
Variable	**N**	**Range**	**Minimum**	**Maximum**	**Mean**	**Standard error (mean)**	**N**	**Range**	**Minimum**	**Maximum**	**Mean**	**Standard error (mean)**
Public Value	**44**	**0.44**	**0.38**	**0.82**	**0.56**	**0.02**	**43**	**0.72**	**0.13**	**0.84**	**0.40**	**0.02**
Quality Service Delivery	44	0.59	0.34	0.93	0.64	0.02	43	0.73	0.20	0.93	0.57	0.03
Competence of Public Organizations	44	0.67	0.28	0.94	0.56	0.02	43	0.72	0.03	0.75	0.32	0.03
Achievement of Socially Required Outcomes	44	0.46	0.31	0.77	0.48	0.02	43	0.81	0.04	0.85	0.30	0.02
S-A-P Variables	**44**	**0.46**	**0.32**	**0.78**	**0.57**	**0.02**	**43**	**0.66**	**0.13**	**0.79**	**0.33**	**0.02**
Improved Situation	44	0.53	0.44	0.97	0.72	0.02	43	0.63	0.06	0.69	0.36	0.02
Capability level of Actors	44	0.92	0.08	1.00	0.69	0.03	43	0.96	0.00	0.96	0.38	0.04
Flexible Process Workflow	44	0.50	0.10	0.60	0.29	0.02	43	0.75	0.05	0.80	0.25	0.02

(0 - 0.2: Nil, 0.2 - 0.4: to a small extent, 0.4 – 0.6: to a medium extent, 0.6 – 0.8: to a large extent, 0.8 – 1.0: to a very large extent)

3.5.1 Analysis of Key Research Variables

Public value

The observed average of public value in the context of Passport Seva Project (PSP) is found to be above the medium extent level whereas mean value of Driving License Project (DLP) is found to be less than the medium extent. The lesser mean value at the macro level of driving license project reflects upon relatively lower achievement of social outcomes and lack of the desired level of 'Competence of Public Organizations.' The macro variable 'Achievement of Socially Required Outcomes' (ASRO) constitutes micro variables, viz. 'Self-Development' (Kalsi and Kiran, 2013; Navarro et al., 2014), and 'Citizen-Participation' (Axelsson et al., 2010; Bidyarthi and Srivastava, 2011; Navarro et al., 2014). The mean value of both the micro variables was found to be low (below the small extent range) in driving license project. This low mean value is apparently due to unavailability of training and awareness programmes for knowledge promotion and lack of encouragement for citizens to participate in discussions, policies and decisions making. The macro variable 'Competence of Public Organizations' (CPO) constitutes micro variables, viz. 'Openness' (Golubeva, 2007; Papadomichelaki and Mentzas, 2012) and 'Responsiveness' (Satapathy, 2014; Osman et al., 2014) of public organizations towards citizens. The mean values of both the micro variables were found to be low (below the small extent range) and in small extent range respectively in driving license project. These low mean values reflect upon inadequate display of required information for applicants and lack of an adequate mechanism for responding to inquiries and complaints.

As per the observed average of the public value of passport seva project, it was noted that mean value of macro variable 'Achievement of Socially Required Outcomes' (ASRO) was low compared to other macro variables. As in the case of driving license project, this low mean value is apparently due to lack of development programs for citizens and lack of citizen participation in making policies and decisions. The mean values of these two micro variables were found to be in small extent range which is below the medium extent. Comparative study of both the projects also highlighted that 'Quality Service Delivery' (QSD) has maximum public value among all the

macro variables. However, the same is again better in the passport seva project compared to driving license project. The better value is expected to be due to the ‘Quality of Information’ (Golubeva, 2007; Suri and Sushil, 2011) and smooth ‘System Functioning’ (Papadomichelaki and Mentzas, 2012; Satapathy, 2014) in passport seva project. Mean values of a few micro variables such as accurate and up-to-date information, simple and understandable information, easy to fill and submit an application form, easy to make the payment and easy to get the application processed without any technical error are higher in passport seva project.

Analysis of S-A-P variables

The mean values of macro variables, viz. ‘Improved Situation’ (IS), ‘Capability level of Actors’ (CLA) and ‘Flexible Process Workflow’ (FPW) were found to be more in passport seva project compared to driving license project. However, the mean value of ‘Flexible Process Workflow' was found to be low in both the projects among all the macro variables. This low value is expected to be due to unavailability of the option to manually submit applications in passport seva project (Lovelock, 1983; Brown et al., 1993). In driving license project, the reason for low flexibility is apparently due to the unavailability of the option to submit the application in any service centre within the city (Lovelock, 1983; Brown et al., 1993). Comparative study of both the projects also highlighted that the presence of citizens (Satapathy, 2014; Saxena, 2005) is mandatory in both passport seva project and driving license project. This may also be a reason for the lower average value of flexibility.

It was observed that the mean value of the macro variable ‘Improved Situation' is better in passport seva project. This is apparently due to better environmental conditions such as proper seating arrangements (Cavana et al., 2007; Kakouris and Meliou, 2011), air-conditioned and clean environment (Yusoff et al., 2008; Islam et al., 2014), availability of drinking water (DeitY, 2008; Chatzoglou et al., 2013) and provision of feedback (Satapathy, 2014; Osman et al., 2014; Suri, 2016). The mean value of ‘Capability level of Actors’ was also found better in passport seva project which may be due to better communication skills (Parasuraman et al., 1988; Cavana et al., 2007) and service orientation of

employees (Bharwani and Jauhari, 2013; Al-Borie and Damanhouri 2013), better knowledge (Papadomichelaki and Mentzas, 2012) and punctuality of employees at service counters (Cavana et al., 2007; Kakouris and Meliou, 2011).

3.6 Research Findings

As per the analysis, the public value of a project and the associated S-A-P variables are expected to have a positive relationship. As per the results of the pilot study, the passport seva project is characterized by high observed values of both public value and S-A-P variables. On the other hand, driving license project is characterized by low public value and low value of S-A-P variables. This reflects upon the requirement of a more citizen-oriented approach for enhancing the public value of e-governance projects.

The pilot study suggests that it is quite possible that S-A-P variables may be influencing the public value of citizen-centric e-governance projects.

3.7 Concluding Remarks

The pilot study, conducted as a prelude to the main study, has helped in developing a better understanding of the public value and situation-actor-process related variables. The univariate analysis of two citizen-centric e-governance projects selected in the pilot study has revealed that S-A-P related variables may be influencing the public value of e-governance projects. The study has provided the required insights for enriching research variables and formulating research hypotheses which form part of the main study design as discussed in the next chapter.

Chapter 4

Research Design

4.1 Introduction

As discussed in Chapter 2, many studies have been conducted to analyze the public value of e-governance by measuring the performance of government websites. However, in the Indian context, delivery of services is not through websites only. In many e-governance projects, services are not fully digitalized. In such projects, citizens are also required to visit the public organizations to avail the services. A few examples of such services are issuing of passport, issuing of driving license, registration of property, service to avail marriage certificate, etc. After filling up the online application form, citizens are required to visit the service centres of these public organizations to avail the services. Due to the lack of an end-to-end online service delivery mechanism, visit of beneficiaries to the service centres becomes essential.

When a beneficiary visits a public organization, his experience is expected to be influenced by the situation of the service centre, his interaction with employees at the service centre and overall service delivery process at the centre. The associated variables can be categorized as variables related to the situation, variables related to the actors and variables related to the processes. These can also be stated as Situation-Actor-Process related variables. It is expected that the perception of citizens developed on the basis of Situation-Actor-Process related variables may influence the overall public value of the public organization. Therefore, it is important to analyze public value of e-governance by examining Situation-Actor-Process related variables experienced by beneficiaries during their visits to public organizations.

A citizen during his visit to a public organization faces a situation in terms of situational factors such as sitting arrangement, availability of drinking water, cleanliness, provision of feedback mechanism, the presence of intermediaries, etc. He interacts with different actors at the service centre and develops his perception about their communication skills, IT skills, speed of task completion,

knowledge level, willingness to serve the applicants, patience level, etc. Also, he goes through a process and builds an opinion about the overall flexibility of the process in terms of availability of options and adaptability to uncertainties. Options given to the applicants during the process may be with respect to the selection of date and time of the appointment, a choice to upload the documents online, option to fill either manual or online form, a choice to select the service centre as per convenience, etc. A public organization can be more adaptable to an unforeseen situation if there is a provision of maintaining continuity of service delivery in case of any disruption. This may be in terms of having a backup of employees, plan to recover data in case of any loss, a mechanism to process an application in case of insufficient documents, alternatives to handle disruption due to natural calamities, etc. The purpose of this research is to analyze the likely influence of Situation-Actor-Process related variables on public value. It is conceptualized that a public organization with better situational factors, capable actors and flexible processes may lead to improved public value.

This chapter has been divided into two sections. In the first section, a conceptual research framework is presented supported by a literature review of variables related to situation-actor-process and public value. It has been attempted to present the literature review of study variables in the form of tables. In the second section of the study, the research methodology that has been followed to conduct the study is presented. This section proposes research hypotheses followed by detailed description of SAP - LAP framework that has been used to identify the research variables in the study context. Further, brief description of projects selected for study has been presented followed by the development of the questionnaire for survey, pilot testing, sampling method, the collection of data and tools used to analyze the data.

4.2 A Theoretical Framework

Based on a review of the literature, SAP-LAP framework (Section 4.5.2) and keeping the research objectives into view, a theoretical framework to analyze the public value of e-governance in India is conceptualized and presented below in Figure 4.1. It is conceptualized that S-A-P related variables may be influencing public value of e-governance projects in the study context.

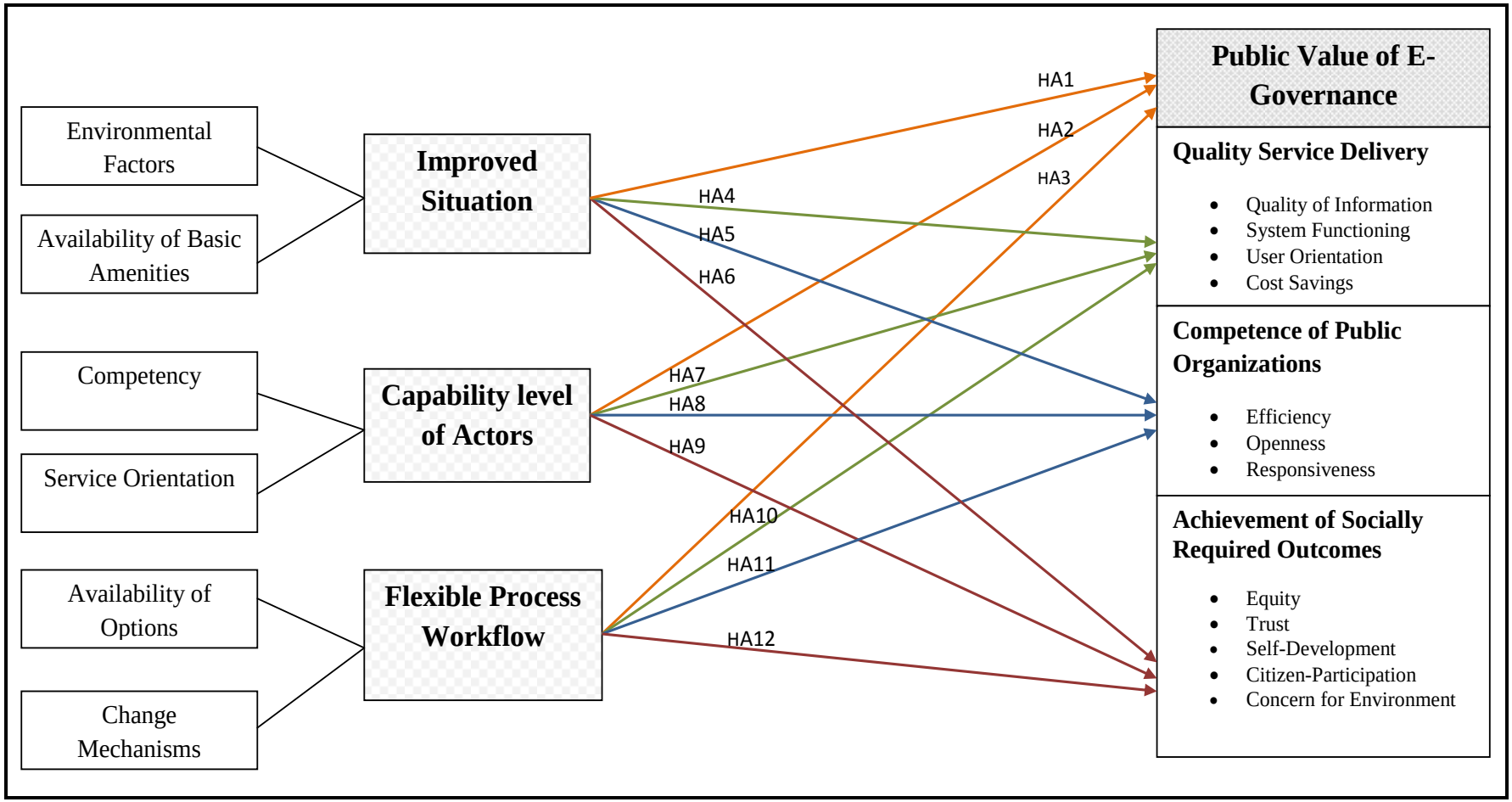

Figure 4.1: A Theoretical Research Framework

4.3 Research Variables for Public Value Measurement

Based on the literature review presented in Chapter 2, dimensions to analyze the public value of e-governance have been shown in the conceptualized research framework (Figure 4.1). There are mainly three dimensions to analyze the public value of e-governance, i.e. 'Quality Service Delivery,' 'Competence of Public Organizations' and 'Achievement of Socially Required Outcomes.' On the basis of existing studies, there are mainly four theories based on which these dimensions have been suggested. The first is the theory of public value (Moore, 1995). As per this theory, the main aim of public services is to generate value for citizens. Citizens using public services derive some values that should provide suggestions about the operations of public organizations on service delivery (Moore, 1995). However, the creation of public value is solely not based on citizens as it also depends on public organizations, different stakeholders, etc. (Jorgensen and Bozeman, 2007).

The second theory is the public value creation sources. As per the study context, there are mainly three sources of public value of e-governance. These are 'Quality Service Delivery' (Moore, 1995; O'Flynn, 2007; Karunasena, 2012), 'Competence of Public Organizations' (Moore, 1995; Karunasena, 2012) and 'Achievement of Socially Required Outcomes' (Kelly et al., 2002; Try, 2008; Karunasena, 2012). Public value is created in various ways through these three public value creation sources. For example, meeting citizens' expectations through 'Quality Service Delivery' generate public value as it offers benefits to citizens through the use of public services (Kelly et al., 2002; Kearns, 2004). The capability of public organizations fulfills the requirement of citizens through their efficiency (Moore, 1995; Jorgensen and Bozeman, 2007; Karunasena, 2012). Meeting socially required outcomes such as equity, trust, self-development, citizen-participation, concern for the environment also help to develop public value.

Inventories of public value are the third theoretical perspective of public value (Jorgensen and Bozeman, 2007). This theory helps us in understanding

various types of public value. For instance, quality of services, orientation towards users, the efficiency of public organizations, openness, and responsiveness of public organizations, equal treatment towards citizens, confidentiality of information, sustainability of the environment, etc. are a few representatives of public value. Such values are created by the main three sources as discussed above. Quality of information, smooth functioning of the system, user orientation and cost savings can be created through 'Quality Service Delivery.' Values such as efficiency, responsiveness, and openness can be realized through 'Competence of Public Organizations.' Finally, values such as equity, trust, self-development, citizen-participation, and concern for the environment can be achieved under 'Socially Required Outcomes'.

The final and fourth theory of public value is the e-governance dimensions. As understood from the literature review, there are primarily four approaches to e-governance. These are e-citizens, e-services, e-administration, and e-society. The first e-citizens approach, stresses on building a good relationship between citizens and public organizations through consultation and engagement with citizens, the participation of citizens in decision making, accountability, provision of public services, etc. (Jones et al., 2007). The e-services approach to government states that services are delivered to citizens in an effective and innovative way (United Nations, 2003; Jones et al., 2007). The approach of e-administration to government is about improvement in processes of public organizations by reducing costs, collaborating various government's processes and interconnection of public websites, empowering government employees, improvement in transparency and accountability, etc. (Heeks, 2008). The e-society approach stresses on the collaboration between public organizations and civil societies and other organizations such as non-profit organizations.

Keeping learning from the literature review and Indian context into view, conceptual variables to analyze the public value of e-governance projects are identified. As per the proposed research framework, the three constituents of

public value are ‘Quality Service Delivery’, ‘Competence of Public Organizations’ and ‘Achievement of Socially Required Outcomes.'

‘Quality Service Delivery' creates public value in terms of ‘Quality of Information', ‘System Functioning', ‘User Orientation and ‘Cost Savings.' ‘Quality of Information' refers to the accurate, updated, relevant, detailed, simple and understandable information (Abels et al., 1997; Chen and Wells, 1999; Muylle et al., 1999; Alpar, 1999; Madu and Madu, 2002; Cavana et al., 2007; Golubeva, 2007; Deity, 2008; Yusoff et al., 2008; Harrison et al., 2011; Suri and Sushil, 2011; Bhattacharya et al., 2012; Papadomichelaki and Mentzas, 2012; Karunasena, 2012; Osman et al., 2014; Jeon and Jeong, 2017).

‘System Functioning’ comprises the easiness to fill-up and submit the application form, easiness to pay for the service without any technical problem, processing of application without any technological issue, easiness to download the information such as report, forms, etc. and easiness to search for the information for example requirements of the documents, steps to apply for the service, etc. (Muylle et al., 1999; Alpar, 1999; Novak et al., 2000; Madu and Madu, 2002; Wolfinbarger and Gilly, 2003; Deity 2008; Bhattacharya et al., 2012; Papadomichelaki and Mentzas, 2012; Karunasena 2012; Satapathy, 2014; Osman et al., 2014; Deng et al., 2018).

‘User Orientation' focuses on an easy way of application submission for citizens having little or no formal education, facilities provided for differently abled persons and senior citizens such as availability of wheelchair, fast queue for people in need, etc., easy to remember website address, ensuring user friendly website for easy navigation and availability of frequently asked questions (FAQs) in case of any clarity required by applicants (Abels et al., 1997; Alpar, 1999; Madu and Madu, 2002; Golubeva, 2007; Deity, 2008; Bhattacharya et al., 2012; Papadomichelaki and Mentzas, 2012; Karunasena, 2012; Lindgren and Jansson, 2013; Osman et al., 2014; Satapathy, 2014; Jeon and Jeong, 2017; Deng et al., 2018).

‘Cost Savings’ refers to less number of visits required by applicants to avail the services, less fees paid to get the public services, lower efforts put in by applicants to receive the services, no dependencies on the middleman or intermediaries to avail the services and less cost involved in preparation of documents to receive the services (Kearns, 2004; Deity 2008; Belwal and Zoubi, 2008; Bidyarthi and Srivastava, 2011; Osman et al., 2014; Ayo, 2018).

‘Competence of Public Organizations' comprises the ‘Efficiency', ‘Openness' and ‘Responsiveness.' ‘Efficiency' refers to the avoidance of duplicate tasks performed by the public organizations, availability of IT infrastructure at public organizations to ensure fast delivery of services, process to update the IT infrastructure on regular basis such as installation of new applications and software, etc., availability of electronic queues to avoid any discrimination at the service centre and movement of information in electronic way to keep the complete track of the information (Suri and Sushil, 2006; Golubeva, 2007; Agus et al., 2007; Yusoff et al., 2008; DeitY, 2008; Dash and Sangita, 2011; Suri and Sushil, 2011; Papadomichelaki and Mentzas, 2012; Karunasena, 2012; Al-Borie and Damanhouri, 2013; Chatzoglou et al., 2013; Suri, 2014; Osman et al., 2014; Vela et al., 2015; Khorshidi et al., 2016; Ayo, 2018).

‘Openness’ is measured through display of information related to the project such as public policy drafts, agreements, laws and regulations, etc., display of financial information for better transparency such as budgets, expenses, information with respect to tenders, etc., display of annual plans and progress reports, display of organizational charts, roles and responsibilities of employees, display of contact lists of staff and display of other information such as number of working hours, lunch timings, address and contact details of public organization, etc. (Agus et al., 2007; Golubeva, 2007; Yusoff et al., 2008; Harrison et al., 2011; Papadomichelaki and Mentzas, 2012; Karunasena, 2012; Al-Borie and Damanhouri, 2013; Osman et al., 2014; Deng et al., 2018).

‘Responsiveness’ refers to the timely response to inquiries made by citizens, timely response by public organizations towards complaints raised by applicants, proper implementation of processes to improve the quality of public services such as citizen charter and Right to Information Act 2005 (RTI), etc., facilities provided to applicants to track the application as per their convenience and provision of computerized response to the queries raised by citizens in online mode (Cavana et al., 2007; Deity, 2008; Yusoff et al., 2008; Papadomichelaki and Mentzas, 2012; Karunasena, 2012; Al-Borie and Damanhouri, 2013; Lindgren and Jansson, 2013; Satapathy, 2014; Osman et al., 2014; Khorshidi et al., 2016).

‘Achievement of Socially Required Outcomes’ contributes to public value in terms of ‘Equity', ‘Trust', ‘Self-Development', ‘Citizens' Participation' and ‘Concern for Environment.' ‘Equity' refers to the display of information in local language for the local people to understand the same easily, availability of special characteristics on website for the people with special needs such as people with visual problem, etc., treating all applicants in same manner except people with special needs to avoid any personalization at the public organization, provision of services on the basis of first-in and first-out method at the service centre, treating all applicants as same irrespective of their gender, income level, status, etc. (Muylle et al., 1999; Agus et al., 2007; Deity, 2008; Dash and Sangita, 2011; Karunasena, 2012; Lindgren and Jansson, 2013; Osman et al., 2014).

‘Trust’ is conceptualized as security of information given to the public organization by applicants, ensuring only authorized access to the personal information provided by the applicants to the public organization, initiatives taken by governments to discourage the role of intermediaries or middleman, delivery of services by the public organization within the defined time limits and procedures followed by public organizations as given on the websites (Zeithaml et al., 2002; Kearns, 2004; Deity, 2008; Yusoff et al., 2008; Belwal and Zoubi, 2008; Bidyarthi and Srivastava, 2011; Dash and Sangita, 2011;

Bhattacharya et al., 2012; Papadomichelaki and Mentzas, 2012; Karunasena, 2012; Al-Borie and Damanhouri, 2013; Chatzoglou et al., 2013; Kalsi and Kiran, 2013; Osman et al., 2014; Satapathy, 2014).

'Self-Development' is measured through awareness programmes conducted by the governments for knowledge promotion of the citizens, training programmes organized for non-Internet savvy citizens to promote the use of online services, provision of online access for the citizens through common service centres / kiosks, uploading of videos on website for an easy learning of the applicants and facility of call centre provided to assist new users in case of any issue faced by them (Deity, 2008; Karunasena, 2012; Kalsi and Kiran, 2013; Navarro et al., 2014).

'Citizens' Participation' is measured through sharing of regular updates on policies and procedures, provision of opportunities for citizens to take part in discussions and policy-making, provision of taking suggestions from beneficiaries, asking for opinions from citizens for decision making and organization of contests to gather new ideas from citizens (Axelsson et al., 2010, Bidyarthi and Srivastava, 2011; Satapathy, 2014; Navarro et al., 2014; Vela et al., 2015).

'Concern for Environment' is conceptualized in terms of reduction in printing of paper to save the trees, steps taken towards saving of energy such as usage of less electricity and less human efforts, formulation of policy by government to implement the use of green information technology, mechanism to recycle the resources such as reuse of papers and printers, etc. and use of energy saving equipments by public organizations (Kearns 2004; Suri and Sushil, 2011; Karunasena, 2012; Zhang et al., 2014; Suri, 2014; Deng et al., 2018).

The macro variables and respective micro variables are mapped with the literature review and shown in Table 4.1.

Table 4.1: Mapping of Conceptual Public Value Variables with Literature

Macro Variable	Micro Variable	Items	Literature Review
Quality Service Delivery	Quality of Information	Accurate	Abels et al. (1997), Chen and Wells (1999), Muylle et al. (1999), Alpar (1999), Madu and Madu (2002), Cavana et al. (2007), Golubeva (2007), Deity (2008), Yusoff et al. (2008), Harrison et al. (2011), Suri and Sushil (2011), Bhattacharya et al. (2012), Papadomichelaki and Mentzas (2012), Karunasena (2012), Osman et al. (2014), Jeon and Jeong (2017)
		Up-to-date	
		Relevant	
		Detailed	
		Simple and understandable	
	System Functioning	Fill and submit an online application form	Muylle et al. (1999), Alpar (1999), Novak et al. (2000), Madu and Madu (2002), Wolfinbarger and Gilly (2003), Deity (2008), Bhattacharya et al. (2012), Papadomichelaki and Mentzas (2012), Karunasena (2012), Satapathy (2014), Osman et al. (2014), Deng et al. (2018)
		Make online payment without any technical error	
		Get the application processed without any technical error	
		Download information (e.g., reports, forms, circulars, etc.)	
		Search information (e.g. process to apply, required documents, delivery time, etc.)	
	User Orientation	An easy way of application submission for people having little or no formal education	Abels et al. (1997), Alpar (1999), Madu and Madu (2002), Golubeva (2007), Deity (2008), Bhattacharya et al. (2012), Papadomichelaki and Mentzas (2012), Karunasena (2012), Lindgren and Jansson (2013), Osman et al. (2014), Satapathy (2014), Jeon and Jeong (2017), Deng et al. (2018)
		Facility for differently abled, senior citizens, etc. (e.g., wheelchair, special queue)	
		Simple website address for easy remembrance	
		User-friendly website for easy navigation	
		Availability of frequently asked questions (FAQs) in case of any doubt	
	Cost Savings	Lesser visits are required to avail service	Kearns (2004), Deity (2008), Belwal and Zoubi (2008), Bidyarthi and Srivastava (2011), Osman et al. (2014), Ayo (2018)
		Lesser fees are paid to avail service	
		Lesser efforts are required to avail service	
		Charges are not paid to Intermediaries/Middlemen to avail service	
		Lesser cost involved in preparation of documents to avail service	

Macro Variable	Micro Variable	Items	Literature Review
Competence of Public Organizations	Efficiency	Duplicate work is not performed during the process	Suri and Sushil (2006), Golubeva (2007), Agus et al. (2007), Yusoff et al. (2008), DeitY (2008), Dash and Sangita (2011), Suri and Sushil (2011), Papadomichelaki and Mentzas (2012), Karunasena (2012), Chatzoglou et al. (2013), Al-Borie and Damanhouri (2013), Suri (2014), Osman et al. (2014), Vela et al. (2015), Khorshidi et al. (2016), Ayo (2018)
		Service counters are IT-enabled (e.g., computers at counters)	
		There is improved IT infrastructure (e.g., new computer applications and software)	
		There is an electronic queue at the centre (e.g., token system)	
		Information moves electronically across different levels (e.g., online approvals)	
	Openness	Public policy drafts, agreements, laws, and regulations	Agus et al. (2007), Golubeva (2007), Yusoff et al. (2008), Harrison et al. (2011), Papadomichelaki and Mentzas (2012), Karunasena (2012), Al-Borie and Damanhouri (2013), Osman et al. (2014), Deng et al. (2018)
		Budget, expenses, and tenders for better transparency	
		Annual plans and progress reports	
		Organizational charts, roles, and responsibilities of staff	
		Contact lists of staff	
		Working hours, lunch timings, contact details of public office	
	Responsiveness	Response to inquires	Cavana et al. (2007), Deity (2008), Yusoff et al. (2008), Papadomichelaki and Mentzas (2012), Karunasena (2012), Al-Borie and Damanhouri (2013), Lindgren and Jansson (2013), Satapathy (2014), Osman et al. (2014), Khorshidi et al. (2016)
		Response to complaints	
		Implementation of citizen charter and RTI (Right to Information)	
		Facility of online case tracking	
		Automatic response to queries	
Achievement of Socially Required Outcomes	Equity	There is a display of information in the local language	Muylle et al. (1999), Agus et al. (2007), Deity (2008), Dash and Sangita (2011), Karunasena (2012), Lindgren and Jansson (2013), Osman et al. (2014)
		Website complies with special features for people with special needs (e.g., visual problem)	
		The same treatment is given to all except for people with special needs	
		Service provision is on the basis of First in First out method (FIFO)	
		There is no discrimination on the basis of gender, income level and status of the beneficiary	

Macro Variable	Micro Variable	Items	Literature Review
	Trust	Information provided to the public organization is secure	Zeithaml et al. (2002), Kearns (2004), Deity (2008), Yusoff et al. (2008), Belwal and Zoubi (2008), Bidyarthi and Srivastava (2011), Dash and Sangita (2011), Bhattacharya et al. (2012), Papadomichelaki and Mentzas (2012), Karunasena (2012), Al-Borie and Damanhouri (2013), Chatzoglou et al. (2013), Kalsi and Kiran (2013), Osman et al. (2014), Satapathy (2014)
		There is only authorized access to personal information	
		Initiatives are taken to discourage the role of middleman	
		Service is delivered within the time defined by the public organization	
		Public organization complies with the procedure given on the website	
	Self-Development	Awareness programmes are conducted for knowledge promotion	Deity (2008), Karunasena (2012), Kalsi and Kiran (2013), Navarro et al. (2014)
		Training programmes are organized for people not familiar with the Internet	
		Access is provided through common service centres/kiosks	
		Videos are uploaded on the website for easy learning	
		Assistance is given to new users through the call centre	
	Citizen-Participation	Regular updates on policies and procedures are shared with citizens	Axelsson et al. (2010), Bidyarthi and Srivastava (2011), Satapathy (2014), Navarro et al. (2014), Vela et al. (2015)
		Opportunity is given to participate in public discussions and policy-making	
		There is provision for taking suggestions from beneficiaries	
		Opinion is asked from citizens for decision making	
		Contests are organized to gather new ideas from citizens	
	Concern for Environment	Reduction in paper printing	Kearns (2004), Suri and Sushil (2011), Karunasena (2012), Zhang et al. (2014), Suri (2014), Deng et al. (2018)
		Saving of energy (e.g., electricity, manpower)	
		A policy on green information technology	
		Process of recycling of resources (e.g., papers, printers)	
		Use of energy efficient equipments	

4.4 Situation – Actor – Process Research Variables

The proposed research framework (Figure 4.1) conceptualizes that the 'Public Value' of e-governance is influenced by 'Improved Situation', 'Capability level of Actors' and 'Flexible Process Workflow.' It is explained that 'Improved Situation' at the public organization is reflected by environmental factors and availability of basic amenities at the service centre. 'Capability level of Actors' is reflected through the competency level and service orientation of employees at the service centre. Also, 'Flexible Process Workflow' is reflected by the availability of options with applicants and change mechanisms followed at the public organization.

The 'Improved Situation' at the public organization is measured through citizens' perception about environmental factors, i.e. the closeness of service centre to the residence of the applicant, non-availability of middleman around the service centre, no long queues, air-conditioned environment at the service centre and provision of feedback mechanism at the service centre.

Smooth access to service is identified as one of the drivers of e-governance (Suri, 2009, p.304). The closeness of the service centre to the applicant's residence facilitates applicant and enhances his satisfaction level as he is not required to cover more distance to reach the service centre (Deity, 2008; Yusoff et al., 2008; Al-Borie and Damanhouri 2013). This in turn also saves time, cost and efforts of beneficiaries. Therefore, it is important to analyze the proximity and easy accessibility of the service centre from the applicant's home. Proximity to the service centre can be increased by increasing the number of service centres and opening them in densely populated areas.

Presence of middlemen around the service centre influences applicants to take their help for availing services. A public organization having the presence of middlemen around it reflects less control over the involvement of outsiders in the internal processes. A study conducted by Department of Information Technology (DeitY, 2008) to assess the impact of a few national levels and state level e-governance projects in India have analyzed the use of assistance

offered by agents to beneficiaries while availing public services. As per the study, the amount paid to the agents for facilitating services has been considered as part of the cost of availing services. It has also been explained that computerization of processes has impacted positively by reducing the role of middlemen, however, the situation is different in different projects and different states of the country (Deity, 2008).

An evaluation of computerization and privatization of public services in one of the states of India reflects that there is a minimal effect of computerization on the overall experience of citizens (Bussell, 2009). Further, for true transformation, more efforts are required in terms of improvement of the overall service delivery process. While executing the study, respondents were asked whether they have paid any bribe to any official or they have paid money to any middleman to get help in service delivery. In most of the cases, middlemen are connected with officials of public organizations who funnel money via bureaucrats instead of citizens. Another study conducted in this respect while evaluating transport department services in India found that citizens who were willing to pay money to the middlemen were able to get driver's licenses in short time and also a few of them were exempted from giving the driving test (Bertrand et al., 2008).

The requirement of applicants to stand in long queues has been considered as one of the situational factors which play an important role in the formation of citizens' perception about service delivery at the public organization (Satapathy, 2014). A study to measure the service quality delivery and its effect on the satisfaction level of customers in the banking industry of Malaysia has reflected that long queues negatively impact citizens' perception about service delivery (Munusamy et al., 2010). It has also stated that customers living at remote locations have comparatively more spare time than people living in metropolitan cities. This way people from remote place have different perception about time spent in queues (Munusamy et al., 2010).

Another study conducted to assess the impact of a few national level e-governance projects have reflected that a few applicants take help of middleman due to apprehensions about long queues at the service centre (DeitY, 2008). Long queues sometimes also result into an increased number of trips required to be made by the beneficiaries as a few of the beneficiaries leave the queue in case of delay in the process. The reason for long queues can be such as the difference between demand and supply, the system breaks down, etc. In some cases, it has also been highlighted that a few functionaries delay the process willingly and middleman charges an extra amount to get the work done expeditiously (DeitY, 2008).

To ensure convenient service delivery, it is important to provide a comfortable environment for the beneficiaries at the public organization. For this purpose, it has become necessary to keep the temperature inside the service centre according to the weather conditions which should be suitable to most of the applicants. ‘Comfortable temperature at the service centre' has been considered as one of the items under ‘comfort' dimension (Cavana et al., 2007). A study conducted to measure satisfaction level of customers on bus transportation has considered factors such as comfort, cleanliness, air condition, etc. as the first service for measuring citizens' satisfaction.

Proper feedback mechanism at the public organizations helps to improve service delivery (Bharwani and Jauhari, 2013; Satapathy, 2014). Feedback mechanism includes collection of beneficiaries’ response using different methods, sending responses to the concerned authorities and monitoring whether corrective actions have been taken or not. Many private organizations have digitalized their feedback mechanisms. Applicants select the concerned area which requires improvement and submits feedback in online mode. Further, the responses submitted by the applicants reach the responsible department/function in real time which they have to act upon as per specified timelines. Also, customers are informed and kept updated at different stages of the process.

Such digitized way of handling feedbacks is helping many private organizations not only to improve services but also to meet out the expectations of their customers. However, most of the public organizations in India still accept feedback of applicants on paper. It has also been observed during the field survey of the present study that many public organizations do not ask for any response from the applicants. However, accepting responses from the customers about service delivery is crucial for continuous improvement in overall service delivery (Satapathy, 2014; Osman et al., 2014).

The 'Improved Situation' at public organization is further measured through citizens' perception about availability of basic amenities, i.e. proper sitting arrangement at the centre, cleanliness of service area and waiting area, drinking water for applicants, clean washrooms for males as well as for females and baby feeding room for mothers at the service centre.

The proper sitting arrangement at the public organization is one of the service attributes which increases citizen's satisfaction level (Cavana et al., 2007). As per a study conducted in part of the Amtrak passenger rail system in the US, there are certain service quality attributes which influence users to choose the particular service provider (Hanna and Drea, 1998; Drea and Hanna, 2000). Such attributes include comfortable sitting space provided to the users, cleanliness at the service area, courtesy and politeness of the staff, etc. (Drea and Hanna, 2000). Also, the core experience of the users based on service quality attributes impact users to reuse the particular service (Tripp and Drea, 2002).

Cleanliness of service and waiting area at service centres is expected to increase the satisfaction level of beneficiaries (Al-Borie and Damanhouri, 2013; Islam et al., 2014). Public organizations having tidy environment influences applicants as it makes them feel good sitting in neat and clean ambiance due to which they give comparatively better ratings to those organizations who do not keep their service centres clean (Tripp and Drea, 2002; Cavana et al., 2007). Therefore, cleanliness is one of the situational

factors which is required to ensure that there is an availability of basic amenities at the public organization.

Citizens spend sufficient time at the service centre during service delivery process. However, different services have their own process times depending upon steps required to be followed in a process, the number of applicants at one time, the speed of service delivery, etc. During the presence of beneficiaries at the service centre, they may need drinking water which is expected to be available at the service centre (Drea and Hanna, 2000) and the water should be pure to drink keeping health prospects of applicants into consideration (Tripp and Drea, 2002).

Public organizations should have clean washrooms for men and women (Yusoff et al., 2008). Only availability of washrooms is not sufficient unless they are clean for use. Hence, a few organizations maintain a checklist that is marked by the person whenever he cleans the washrooms to ensure regular cleaning of the washrooms. Cleanliness at any public place is also required to maintain basic hygiene and avoid any unexpected disease due to foulness (Tripp and Drea, 2002).

Baby feeding rooms have emerged as a new requirement at public organizations especially for services which require presence of infants. As in such scenarios, mothers have to bring their kids along, and due to time taking process at the service centre, they find it difficult to feed their infants. During the visit to one of the e-governance project, i.e. passport seva project, it has been found that a separate room has been made available for mothers to feed their infants. Therefore, it was felt appropriate to add this variable under the requirement of basic amenities at the service centre.

To ensure effective service delivery, a major role is performed by actors of the public organizations. Their level of capability can be measured through their level of competency and level of service orientation. Competency level of an actor is measured through his communication and IT skills, speed to execute the work, knowledge level about his area of work and patience to listen to the customers.

Effective communication skills of an employee help to connect with customers emotionally which not only improve customer satisfaction but also differentiate the organization from its competitors (Bharwani and Jauhari, 2013). A study to measure the service quality in local authorities by using the SERVQUAL instrument has identified seven factors of service quality in the real estate sector (Yusoff et al., 2008). As per the identified dimensions, one has been found as the professionalism of the staff at the organization which consists of polite dealing of employees with customers, their effective communication skills, their overall appearance, etc. An effectual communication skill helps to improve the overall service delivery of the public organization (Berry and Carbone, 2007).

Evolution of technology influences customer service delivery. The nature of services has changed over a period of time with improvement in service delivery through effective use of technology (Bitner et al., 2000). A study in this respect has observed that technology can offer customized services, recover from service failure and delight customers (Bitner et al., 2000). Technology has benefits for both customers and employees. Employees with the required IT skills can provide better service delivery (Bitner et al., 2010; Green 2012). Therefore, with the increased use of IT in the service sector, employees are required to have technological skills to meet the expectations of customers.

Sufficient speed to perform the work is also one of the competencies of employees. Employees performing their tasks on time are able to delight more customers during service delivery compared to others (Ciavolino and Dahlgaard, 2007). In case of the slower working speed of employees, citizens are required to wait which results into lower satisfaction level about service delivery compared to those who execute their task within defined timelines (Deity, 2008, Islam et al., 2014).

Employees managing their respective counters are expected to have complete knowledge about their tasks (Agus et al., 2007; Cavana et al., 2007). Employees without having full knowledge about their job may lead to miscommunication to citizens which is expected to results into dissatisfaction

of citizens (Al-Borie and Damanhouri, 2013; Chatzoglou et al., 2013). Therefore, it is crucial for the overall competency of staff that they should have a clear understanding of the assigned tasks.

An employee dealing with citizens should have the patience to listen to them (Agus et al., 2007). In direction to deliver effective services, it is essential to understand the query of customers and explain them in a way that satisfies their requirements (Cavana et al., 2007; Chatzoglou et al., 2013).

The ‘Capability level of Actors’ at the public organization is further measured through citizens' perception about service orientation of employees at the service counters, i.e. an employee should be willing to serve the applicants, punctual and available at their seat, honest at their work, polite and friendly with the applicants and feel comfortable in providing customized services.

For efficient service delivery, it is vital that staff serving citizens is willing to help them (Agus et al., 2007; Deity, 2008). A person without having an interest in service delivery would not be able to provide expected services to citizens. Hence, for prompt services, it is important that employees at public organizations are willing to help and serve the customers (Cavana et al., 2007; Al-Borie and Damanhouri, 2013). Customers would not receive expected service until and unless the employee dealing with them has interest to do so (Chatzoglou et al., 2013; Bharwani and Jauhari, 2013).

Every public organization has a fixed number of hours of public dealing as per which employees should be available at their seat to serve the customers (Cavana et al., 2007). In the absence of the same, the amount of waiting time increases which may result in comparative lower satisfaction about service delivery (Satapathy, 2014). To overcome this issue, the government has also asked public organizations to install biometric capturing devices at public organizations to record entry and exit timings of the staff.

Employees delivering services at public organizations should be honest to their work (Agus et al., 2007). People influenced by middlemen create flaws in

processes which effects negatively on the image of the public organization. This also creates hurdle in smooth delivery of services and makes difficult for citizens to get expected services. Therefore, to ensure transparent delivery of services, it is vital that staff at the public organization is honest in all manners (Ineson et al., 2011).

Polite and friendly behaviour of employees at the public organizations helps customers to feel comfortable (Agus et al., 2007; Deity, 2008). Citizens would perceive positive values about service delivery if they had good interaction with employees at the service centre (Yusoff et al., 2008; Al-Borie and Damanhouri, 2013). Therefore, to achieve an improved level of service provision, employees at public organizations should behave in a polite and friendly manner with applicants.

Nowadays, every applicant has his expectations in terms of service provision at the public organization. Also, he wants to be treated with complete attention while seeking service (Agus et al., 2007). Therefore, employees should be willing to provide customized solutions to the applicants to meet their expectations (Chatzoglou et al., 2013; Bharwani and Jauhari, 2013).

The ‘Flexible Process Workflow’ at public organization is measured through citizens' perception about the availability of options given at the service centre, i.e. choice to select date and time for application submission, option of both manual and online form filling, option to upload the documents online, option to select any service centre within the city and choice to select between regular and fast service.

Flexibility in processes results in the convenience of applicants by giving a choice to them. Options provided to choose a suitable date and time for submission of application increases the convenience level of citizens (Deity, 2008; Chatzoglou et al., 2013). However, in the absence of flexible working hours, citizens become bound to visit the service centre at a given specified date and time. The flexibility given in date and time of application submission allows citizens to choose an appropriate time as per their suitability (Cavana et al., 2007).

Submission of online application saves time and increases transparency (Siddiquee, 2008). A study in this context has compared the services of the manual and computerized system of a few e-governance projects (Deity, 2008). As per the study, respondents have expressed their satisfaction with the online system. However, people having a low level of education and non-users of computers found submitting online application inconvenient. Therefore, the options of both manual and online form submission are desirable for the convenience of applicants.

As per the conventional process, applicants submit physical documents at the public organization during service delivery. However, under the e-governance programme, applicants should be given a choice to upload the documents online (Alpar, 1999; Madu and Madu, 2002). Online uploading of documents gives flexibility to applicants in terms of submission of the documents in physical or in scanned form (Deity, 2008).

A few organizations have restricted applicants to apply for service at a specified service centre only (Deity, 2008). Allowing application submission at any service centre increases the convenience and flexibility for applicants (Sloan, 1992).

Fee paid by the applicant impacts their satisfaction level about a service (Momparler et al., 2015). A public organization may offer a service in regular mode or fast mode depending on requirements of different types of applicants. The processing fee may accordingly vary. Such an approach introduces options for applicants and makes service delivery more flexible (Deity, 2008). In public service delivery, an option given to citizens for selection of service type fulfills their need in case of any urgency.

The ‘Flexible Process Workflow’ at public organization is further measured through citizens’ perception about change mechanisms at the service centre, i.e. provision for un-interrupted service in case of any technical fault, back-up of employees in case of their absence, mechanism to recover data in case of any loss, process to put application on hold in case of lack of documents and availability of backup plan in case of any natural calamity.

The service provided by public organizations should be technically efficient and applicants should not face any technical error during service delivery (Wolfinbarger and Gilly, 2003; Na-Qian Deng et al., 2018). However, in case there is any technical error during working hours, there should be provision for a back-up plan to ensure continuous service delivery.

The absence of employees at public organizations needs to be managed to improve the morale, profits, and service delivery (Howarth, 2005). In case of absence of a few employees, the burden on other staff increases which impact the level of effectiveness and service delivery. Therefore, it is important that organizations should have a clear attendance policy (Dunn and Wilkinson, 2002) at their workplace to ensure prompt service delivery (Howarth, 2005).

During the service delivery process at public organizations, there should be a back-up of every activity in small intervals to ensure the recovery of any information required at the time of service delivery (Sun et al., 2011; Badhel and Chole, 2014). Some public organizations have this facility and keep moving real-time data to data repository to ensure maximum back up of information which can be retrieved in case of any loss during the process.

The process at public organizations should be flexible enough to provide convenience to citizens. At some organizations, citizens visit after booking of an online appointment, however, in case of lack of some documents they may be asked to visit again after booking another appointment which in turn causes inconvenience to them. Therefore, there should be provision to allow submission of their application and keep it on hold for further completion of necessary documents (Deity, 2008).

To protect data from natural calamities such as fire, earthquake, flood, etc. it is crucial to have data back-up mechanisms (Badhel and Chole, 2014). For example, systems based on cloud computing keep the data at a different location and ensure uninterrupted supply of information (Badhel and Chole, 2014). Therefore, in public organizations, there should be such mechanisms so that safety of crucial data can be assured.

Table 4.2 summarises all the S-A-P related variables. The variables are mapped with literature:

Table 4.2: Mapping of S-A-P Related Variables with Literature

Macro Variable	Micro Variable	Literature Review
Improved Situation (IST)	**Environmental Factors**	
	Closeness of service centre to the applicant's home	Cavana et al. (2007), Yusoff et al. (2008), Deity (2008), Al-Borie and Damanhouri (2013), Islam et al. (2014), Ayo (2018)
	Non-availability of middlemen around the service centre	Bertrand et al. (2008), Deity (2008), Bussell (2009)
	Need to stand in long queues	Deity (2008), Munusamy et al. (2010), Satapathy (2014), Rezaei et al. (2017)
	Air-conditioned environment at the service centre	Cavana et al. (2007), Agus et al. (2007), Islam et al. (2014), Khorshidi et al. (2016), Rezaei et al. (2018)
	Provision of feedback mechanism at the centre	Bharwani and Jauhari (2013), Satapathy (2014), Osman et al., (2014)
	Availability of Basic Amenities	
	Proper sitting arrangement at the centre	Hanna and Drea (1998), Drea and Hanna (2000), Tripp and Drea (2002), Cavana et al. (2007), Jeeradist et al. (2016)
	Cleanliness at the service area and waiting area	Tripp and Drea (2002), Cavana et al. (2007), Al-Borie and Damanhouri (2013), Islam et al. (2014), Khorshidi et al. (2016), Rezaei et al. (2018)
	Drinking water for applicants	Drea and Hanna (2000), Tripp and Drea (2002), Jeeradist et al. (2016)
	Clean washrooms for males as well as females	Tripp and Drea (2002), Yusoff et al. (2008), Ayo (2018), Singh and Singhi (2018)
	Baby feeding room for mothers	www.passportindia.gov.in
Capability level of Actors (CLA)	**Competency**	
	Effective communication skills	Berry and Carbone (2007), Yusoff et al. (2008), Bharwani and Jauhari (2013), Khorshidi et al. (2016)
	Required IT skills	Bitner et al. (2000), Bitner et al. (2010), Green (2012), Jeeradist et al. (2016), Rezaei et al. (2017)
	Sufficient speed to do the work	Ciavolino and Dahlgaard (2007), Deity (2008), Islam et al. (2014), Singh and Singhi (2018)
	Complete knowledge about their work	Agus et al. (2007), Cavana et al. (2007), Al-Borie and Damanhouri (2013), Chatzoglou et al. (2013), Rezaei et al. (2017)

Macro Variable	Micro Variable	Literature Review
	Patience to listen to the applicants	Agus et al. (2007), Cavana et al. (2007), Chatzoglou et al. (2013), Rezaei et al. (2017), Rezaei et al. (2018)
	Service Orientation	
	Willing to serve the applicants	Agus et al. (2007), Cavana et al. (2007), Deity (2008), Al-Borie and Damanhouri (2013), Chatzoglou et al. (2013), Bharwani and Jauhari (2013), Rezaei et al. (2017)
	Punctual and available at their seat	Cavana et al. (2007), Satapathy (2014), Rezaei et al. (2017), Rezaei et al. (2018)
	Honest at their work	Agus et al. (2007), Ineson et al. (2011)
	Polite and friendly with the applicants	Agus et al. (2007), Deity (2008), Yusoff et al. (2008), Al-Borie and Damanhouri (2013), Rezaei et al. (2017)
	Comfortable to provide customized services	Agus et al. (2007), Chatzoglou et al. (2013), Bharwani and Jauhari (2013), Rezaei et al. (2017)
Flexible Process Workflow (FPW)	**Availability of Options**	
	Choice to select date and time for application submission	Cavana et al. (2007), Deity (2008), Chatzoglou et al. (2013)
	Option of both manual and online form filling	Siddiquee (2008), Deity (2008)
	Option to upload the documents online	Alpar (1999), Madu and Madu (2002), Deity (2008)
	Option to select any service centre within the city	Sloan (1992), Deity (2008)
	Choice to select between regular and fast service (e.g., Tatkal Passport)	Deity (2008), Momparler et al. (2015)
	Change Mechanisms	
	Provision for continuous service in case of any technical fault	Wolfinbarger and Gilly (2003), Na-Qian Deng et al. (2018), Ayo (2018)
	Back up of employees in case of their absence	Dunn and Wilkinson (2002), Howarth (2005), Ayo (2018)
	Mechanism to recover data in case of loss of data	Sun et al. (2011), Badhel and Chole (2014)
	Process to put the application on hold in case of lack of documents	Deity (2008)
	Availability of backup plan in case of any natural calamities	Sharma and Singh (2012), Badhel and Chole (2014), Jeeradist et al. (2016)

4.5 Research Methodology

A research methodology is a mechanism to solve the research problem starting from the theoretical aspect of the research to the collection and analysis of data (Hussey and Hussey, 1997). It consists of various research techniques those can be implemented to collect and analyze the data. Also, it includes identifying which particular research technique is suitable and how to use the same appropriately to answer the research questions (Creswell and Plano Clark, 2011). The aim of this research is to explore the influence of conceptualized situation-actor-process related variables on the public value of citizen-centric e-governance projects (Tukey, 1980). The exploratory nature of this research is reflected in pursuit to analyze the influence of S-A-P related variables on the public value of e-governance projects based on the perception of citizens, to identify the relationship between S-A-P related variables and public value and to find out how the public value of citizen-centric e-governance projects can be improved.

4.5.1 Formulation of Research Hypotheses

A review of the literature has helped in identifying research variables. These include variables to analyze the public value of citizen-centric e-governance projects and situation-actor-process related variables in the study context. Based on this, a conceptual research framework is developed (Figure 4.1). Conceptualized macro variables which constitute public value are ‘Quality Service Delivery’ (QSD), ‘Competence of Public Organizations’ (CPO) and ‘Achievement of Socially Required Variables’ (ASRO). Conceptualized macro variables related to situation-actor-process are ‘Improved Situation’ (IST), ‘Capability level of Actors’ (CLA) and ‘Flexible Process Workflow’ (FPW).

It has been reviewed that the existing public value measurement frameworks in the context of e-governance have generally focused on the evaluation of public value through government websites only. The reason for this is that e-governance has reached advanced levels in most of the developed countries. Hence, citizens are enabled to avail government services through websites and not required to visit public organizations (Garcia et al., 2005; Wang et al.,

2005; Torres et al., 2005; Jong and Lentz, 2006; Rorissa and Demissie, 2010; Elling et al., 2012; Karkin and Janssen, 2014; Faulkner, 2018; Anna, 2018). However, in the Indian context, e-governance is not yet fully matured, and several of the citizen-centric e-governance projects do not feature end-to-end IT-based solutions. As a result, the service delivery mechanism is not completed online in many cases. Therefore, to avail most of the government services in India for example, issuance of passport, issuance of driving license, issuance of marriage certificate, etc. citizens are required to visit the public organizations due to lack of availability of complete online process.

Based on learning from literature review, the study context is further investigated in the light of SAP – LAP framework (Sushil, 2000, 2009a, 2017a). Like any management context, a public organization also consists of a situation, a group of actors and a process or set of processes. Hence, a citizen during his visit to a public organization to avail service, gets exposed to a situation, interacts with different actors and follows a set of processes. As per the study context and identified conceptual research variables, Figure 4.1 depicts the following proposed research hypotheses to be tested empirically:

HA1: An improved situation of service centre influences the public value of citizen-centric e-governance projects.

HA2: Capability level of service centre actors influences the public value of citizen-centric e-governance projects.

HA3: Flexible process workflow at service centre influences the public value of citizen-centric e-governance projects.

HA4: An improved situation of service centre influences the quality service delivery of citizen-centric e-governance projects.

HA5: An improved situation of service centre influences the competence of public organizations of citizen-centric e-governance projects.

HA6: An improved situation of service centre influences the achievement of socially required outcomes of citizen-centric e-governance projects.

HA7: Capability level of service centre actors influences the quality service delivery of citizen-centric e-governance projects.

HA8: Capability level of service centre actors influences the competence of public organizations of citizen-centric e-governance projects.

HA9: Capability level of service centre actors influences the achievement of socially required outcomes of citizen-centric e-governance projects.

HA10: Flexible process workflow of service centre influences the quality service delivery of citizen-centric e-governance projects.

HA11: Flexible process workflow of service centre influences the competence of public organizations of citizen-centric e-governance projects.

HA12: Flexible process workflow of service centre influences the achievement of socially required outcomes of citizen-centric e-governance projects.

The null hypotheses of the above alternate hypotheses are as follows.

H01: An improved situation does not influence the public value of citizen-centric e-governance projects.

H02: Capability level of service centre actors does not influence the public value of citizen-centric e-governance projects.

H03: Flexible process workflow at the service centre does not influence the public value of citizen-centric e-governance projects.

The remaining corresponding null hypotheses are formulated on similar lines as above.

4.5.2 SAP-LAP Framework

As mentioned above, Situation-Actors-Process (S-A-P) – Learning-Actions-Performance (L-A-P) framework (Sushil 2000, 2009a, 2017a) has been used to conduct the research. The framework is found suitable for this study due to the transforming nature of public organizations, significant role being played by employees in various processes and ongoing efforts by government to makes the processes easier and flexible. SAP-LAP framework is a comprehensive

framework which has been widely used by researchers for case analysis in various areas of management. A few such study areas include resource management (Chauhan and Singh 2013), supply chain management (John and Ramesh 2012; Charan 2012), technology management (Garg and Deshmukh 2010), strategy formulation (Mangla et al. 2014), identifying planning-implementing gaps in the context of e-governance projects (Suri and Sushil 2017), etc.

SAP-LAP framework provides a generic view to deal with the problem context by considering three basic entities, viz. a ‘situation' to be managed, an ‘actor' or a group of actors to deal with the situation and a ‘process' or a set of processes that respond to the situation and recreate it. The ‘situation’ is explained by the current status of the organization including its environment and the factors responsible for better performance. The ‘actors’ are the individual members or a group of participants that effect the situation and describe the culture of the organization to develop business process. The ‘process’ can be explained as the procedure of converting the input into output in a direction to recreate the situation (Sushil, 2001). A situation is dealt by an actor or a group of actors through a process or a set of processes. These three entities and their relationship constitute S-A-P part of the framework in which freedom of choice exists with an actor. More freedom of choice with an actor enables him to keep the processes flexible and adapt to emerging situations. On the contrary, lesser freedom of choice with the actor results in rigid processes and restricts his options to deal with the changing situation.

Learning issues based on analysis of situation-actor-process interplay are used to suggest actions to cope-up with the emerging situation and improve the overall performance (L-A-P). Further, the effect of action taken to improve the performance can be analyzed through increased performance of actors, processes and situational factors. The framework is presented in Figure 4.2:

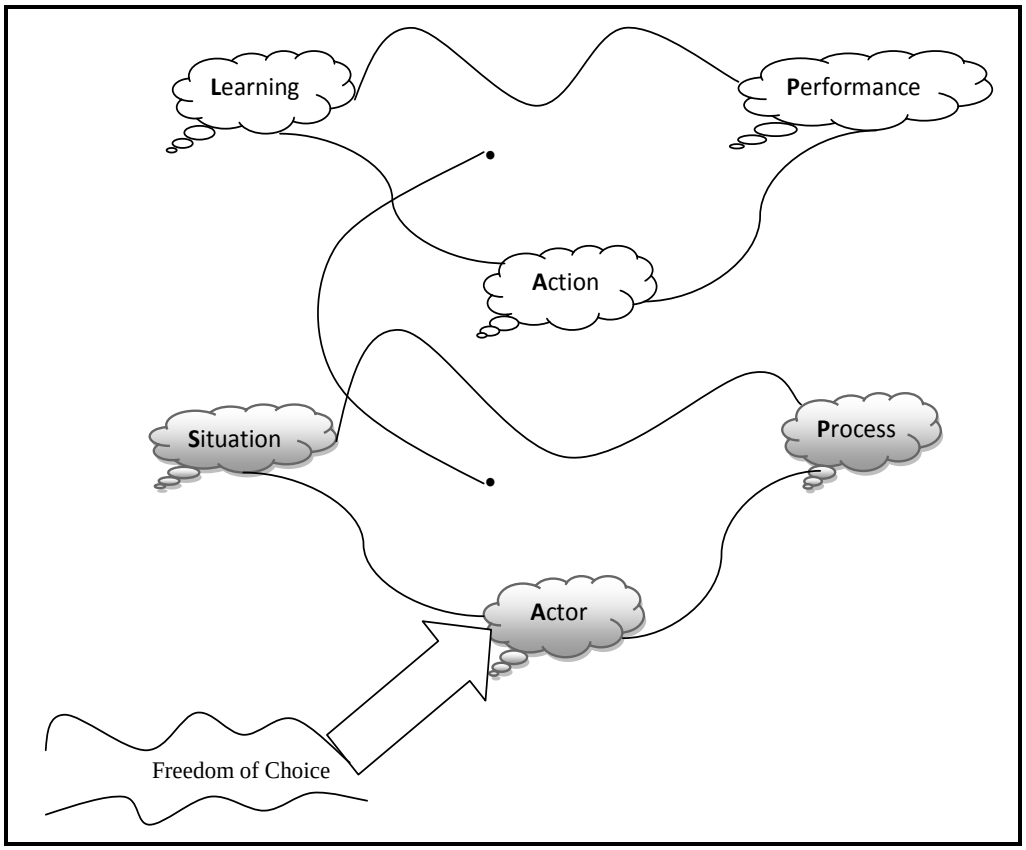

Figure 4.2: SAP-LAP Framework
[Source: Sushil (2000)]

In the Indian context, due to lack of an end-to-end IT service delivery mechanism, citizens are generally required to visit public organizations or authorized service centres to complete the service delivery cycle. A citizen during his visit to a public organization faces a situation in terms of the office environment and the availability of basic amenities. He interacts with employees and observes their level of competency and service orientation. Also, he follows a process or a set of processes where he gets to know about the availability of options and change mechanisms followed at the public organization. A list of all situation, actor and process related conceptualized variables in the context of study are shown in Table 4.3. The list is based on a literature review and an understanding developed about the select projects.

Table 4.3: List of Situation – Actor – Process related Variables

Macro Variable	Micro Variable
Improved Situation (IST)	**Environmental Factors**
	Closeness of service centre to the applicant's home
	Non-availability of middlemen around the service centre
	Need to stand in long queues
	Air conditioned environment at the service centre
	Provision of feedback mechanism at the centre
	Availability of Basic Amenities
	Proper sitting arrangement at the centre
	Cleanliness at the service area and waiting area
	Drinking water for applicants
	Clean washrooms for male as well as female
	Baby feeding room for mothers
Capability level of Actors (CLA)	**Competency**
	Effective communication skills
	Required IT skills
	Sufficient speed to do the work
	Complete knowledge about their work
	Patience to listen to the applicants
	Service Orientation
	Willing to serve the applicants
	Punctual and available at their seat
	Honest at their work
	Polite and friendly with the applicants
	Comfortable to provide customized services
Flexible Process Workflow (FPW)	**Availability of Options**
	Choice to select date and time for application submission
	Option of both manual and online form filling
	Option to upload the documents online
	Option to select any service centre within the city
	Choice to select between regular and fast service (e.g., Tatkal Passport)
	Change Mechanisms
	Provision for continuous service in case of any technical fault
	Back up of employees in case of their absence
	Mechanism to recover data in case of loss of data
	Process to put the application on hold in case of lack of documents
	Availability of backup plan in case of any natural calamities

Based on literature review, a measure for public value in the study context is conceptualized in terms of three dimensions, viz. ‘Quality Service Delivery,' ‘Competence of Public Organizations’ and ‘Achievement of Socially Required Outcomes.' It is further conceptualized that a citizen perceives public value based on situational factors, capability level of actors and flexibility of processes at the time of his visit to a public organization. Therefore, it has been conceptualized that variables related to the situation, actor, and processes may be influencing the public value of e-governance projects where citizens are required to visit the public organization to avail services.

4.5.3 Flowchart of Research Methodology

As stated above, the objective of this research is to identify the influence of conceptualized situation-actor-process related variables on the public value of citizen-centric e-governance projects. The exploratory study aims at answering a few research questions, i.e. What is the public value of select citizen-centric e-governance projects in India? To what extent situation, actor and process related variables are at play in select citizen-centric e-governance projects in India? Do situation, actor and process related variables influence public value? In order to seek answers to these questions, a conceptual research framework is developed (Figure 4.1) which is required to be empirically tested and validated. The research methodology followed for conducting the study is presented in Figure 4.3.

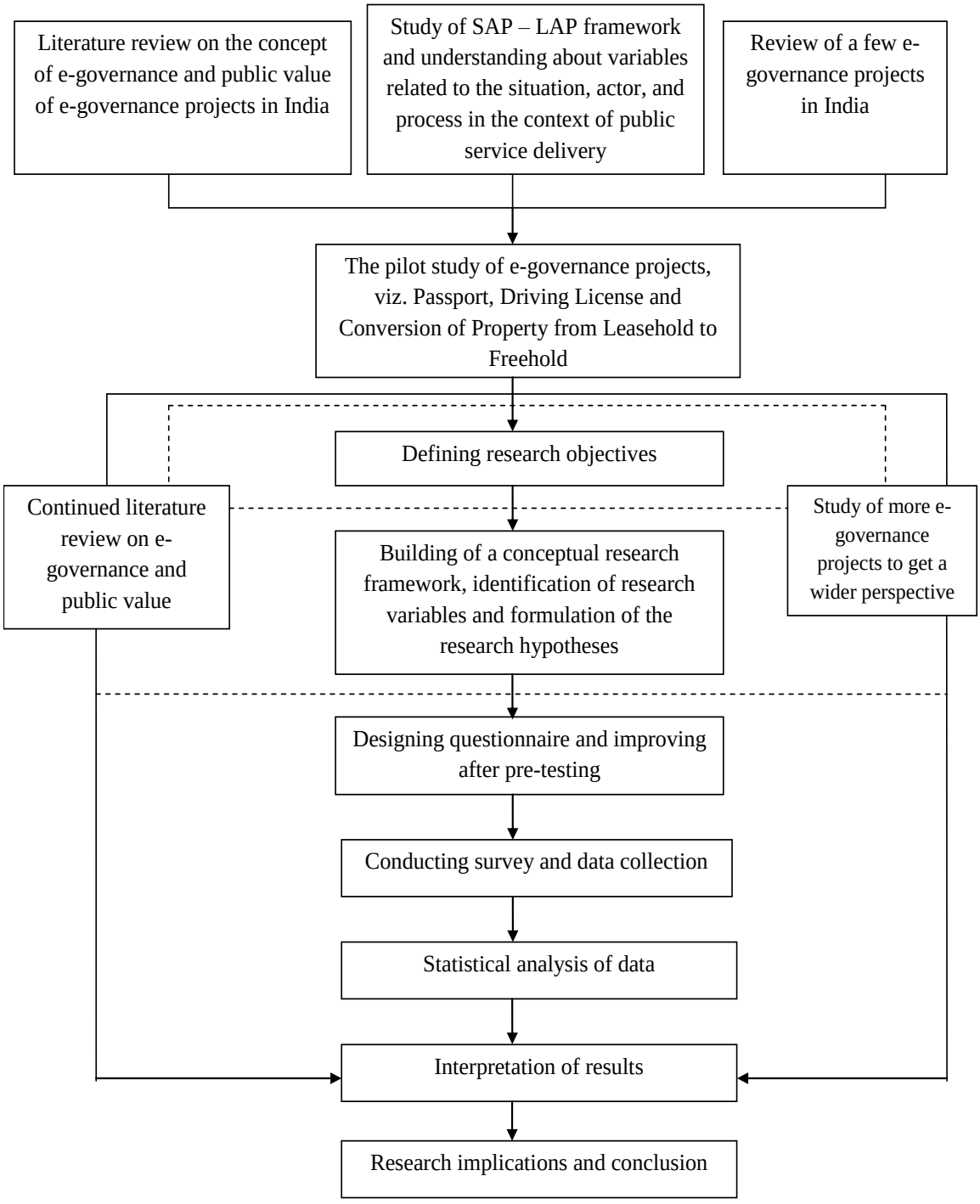

Figure 4.3: The Research Methodology

4.5.4 Development of Survey Questionnaire

For the purpose of empirical testing of the conceptual research framework, data is collected through a survey of beneficiaries. To conduct the survey, a

closed-ended questionnaire is prepared. It is convenient to assign codes to prospect answers in case of a closed-ended questionnaire and also it is easy to analyze the responses (Bailey, 1994). Respondents also feel comfortable to respond to the questions by understanding it through the options provided. Hence, the extent of non-response to the survey questionnaire is reduced due to a better understanding of the questionnaire (Bailey, 1994).

The research questionnaire (Appendix I), is divided into three parts. Part one consists of a non-disclosure undertaking and instructions for respondents for filling up the questionnaire. Part two of the questionnaire captures demographic information of the respondents. Part three is designed to capture the data required to test and validate the conceptual research framework. A total of Ninety-One questionnaire items are developed. Questions Eight to Nineteen are designed to capture public value perceived by citizens in terms of ‘Quality Service Delivery', ‘Competence of Public Organizations' and ‘Achievement of Socially Required Variables.' Table 4.4 shows the mapping of questionnaire numbers with macro and micro variable to capture public value.

Table 4.4: Mapping of Macro and Micro Variables of Public Value and Questionnaire Items

Macro Variable	Micro Variable	Questionnaire Numbers
Quality Service Delivery	Quality of Information	8a to 8e
	System Functioning	9a to 9e
	User Orientation	10a to 10e
	Cost Savings	11a to 11e
Competence of Public Organizations	Efficiency	12a to 12e
	Openness	13a to 13f
	Responsiveness	14a to 14e
Achievement of Socially Required Outcomes	Equity	15a to 15e
	Trust	16a to 16e
	Self-Development	17a to 17e
	Citizen-Participation	18a to 18e
	Concern for Environment	19a to 19e

Further, to get the feedback from respondents about situation, actors, and process related variables of public organization, responses have been captured for ‘Improved Situation,' ‘Capability level of Actors' and ‘Flexible Process Workflow.' Question ranging from twenty to twenty-five have been formulated to get the response on S-A-P related variables. Table 4.5 shows the mapping of questionnaire numbers with macro and micro variable to capture responses in terms of S-A-P related variables.

Table 4.5: Mapping of Macro and Micro Variables Related to S-A-P and Questionnaire Items

Macro Variable	**Micro Variable**	**Questionnaire Numbers**
Improved Situation	Environmental Factors	20a to 20e
	Availability of Basic Amenities	21a to 21e
Capability level of Actors	Competency	22a to 22e
	Service Orientation	23a to 23e
Flexible Process Workflow	Availability of Options	24a to 24e
	Change Mechanisms	25a to 25e

The response to questions presented in part three is captured through a five-point Likert-type scale. It is a commonly used scale which makes it easy for respondents to provide their feedback on each item depending on its intensity (Millar, 1970). In the survey questionnaire used in present study, the value ‘0’ represents ‘do not agree at all’, the value ‘1’ represents ‘agree to small extent’, the value ‘2’ represents ‘agree to medium extent’, the value ‘3’ represents ‘agree to large extent’ and the value ‘4’ represents ‘agree to a very large extent'.

4.5.5 Pilot Testing of Questionnaire

After developing the questionnaire, it was tested by circulating the same to a few fellow research scholars, academic experts, citizens, and e-governance practitioners. In all, a group consisting of fifteen members was approached for pre-testing of the questionnaire. A sample questionnaire was then distributed

to each member of the group. Also, the provision was kept to keep enough space in the sample questionnaire for the group members to write their comments on the questionnaire wherever required. Members of the pre-test group were requested to verify all the aspects of the questionnaire including a sequence of the questions, understanding of the language of each question, redundancy in the questionnaire, appropriateness of the questions, the absence of any question, etc. (Bailey, 1994).

As a result of questionnaire evaluation by the pre-test group, a positive response was received from them. However, some minor changes were suggested. These changes were with respect to the replacement of a few technical words with simple words and changing the sequence of a few questions for easy understanding of the respondents. The suggested changes were incorporated in the questionnaire, and it was presented again to the pre-test group for their confirmation and further feedback. The research questionnaire was thus finalized with an iterative approach. The average time taken to fill-up the research questionnaire was estimated as twenty minutes on the basis of feedback of the pre-test team. The questionnaire was subjected to various validity tests before launching the survey. Validity of the questionnaire refers as the extent to which it measures what the researcher intends to measure (Kerlinger, 1983).

4.5.6 Collection of Data

The target respondents of the study are those citizens who have availed services of any of the five public services selected for the study, i.e. passport, driver's license, certificate of marriage, registration of property and conversion of immovable property from leasehold to freehold. It was not possible to use probability sampling for selecting the sample as the consolidated list of beneficiaries of these services was not available. Therefore, due to non-availability of a sampling frame, ‘Snowball non-probability sampling technique’ was used for collecting data for the study. In order to operationalize this, a list of known beneficiaries was prepared and questionnaire was sent to them for response and with the request to further share the questionnaire with other

contactable beneficiaries in their knowledge. At each stage respondents were pursued to respond and keep floating the questionnaire further. The process was continued till the target number of responses was received. Snowball sampling method is also called a chain sampling or referral sampling. In this kind of sampling, the initial set of respondents involves more participants in the study based on their contacts. Therefore, the number of respondents' increases like a chain through references and it results into a large number of respondents who participate in the research (Biernacki and Waldorf, 1981; Bailey, 1994).

As per the context of the study, five citizen-centric e-governance projects have been selected. Hence, any citizen who has availed service from any of these public organizations could respond to the questionnaire. Also, out of five projects selected for the study, four are state-level projects, and one is a national level project. Hence, the area of the study has been kept limited to Delhi – National Capital Region.

The questionnaire comprising eighteen micro variables and ninety-one question items was used to survey by using 'Snowball non-probability sampling technique.' The questionnaire was circulated to 650 respondents. However, 370 responses could be collected. Out of 370 responses, 55 forms were found to be incomplete. Hence, valid responses collected for the study were 315. Both online and manual survey methods were used to collect the responses. The sample size of 315 was considered suitable for the study as recommended for analysis using Structural Equation Modeling (Hair et al., 2010).

4.5.7 Quantitative Tools

The responses obtained were recorded and analyzed with the help of Structural Equation Modelling (SEM). SEM is a statistical technique that considers a confirmatory approach to analyze the structural theory based on research (Byrne, 2010, p 3). It is a statistical tool to test hypothesized conceptual models that consists some relationships between observed and latent variables (Hoyle, 2000) under a confirmatory way with the sample of data gathered through surveys (Byrne, 2010; Glaser, 2010). SEM examines

up to which level the hypothesized model has support from sample data (Byrne, 2010). Acceptance or rejection of a model depends on the adaptability of sample data to the hypothesized model. SEM has been used in this study to identify the influence of situation-actor-process related variables on the public value of select citizen-centric e-governance projects.

In the present research, we have preferred co-variance based SEM (CB-SEM) over variance based SEM or Partial Least Square (PLS-SEM) because of two reasons as mentioned below:

Sample Size: CB-SEM is capable to perform better than PLS-SEM when sample size is more than 250 (Reinartz et al., 2009). Use of PLS-SEM is suggested in studies where sample size is 100 or less than 100 (Ringle et al., 2012).

Number of Indicators: CB-SEM is more suitable when there are limited number of indicators such as at least three to four indicators related to each latent variable (Reinartz et al., 2009).

A brief discussion about SEM and its application in the present study is presented in Chapter 5.

4.6 Brief Description of Projects Selected for Study

As per the context of the study, e-governance projects where citizens are required to visit the public organizations have been considered for the purpose of this research. In such projects, citizens during their visits at public organizations face a situation, deals with actors and follow a set of processes. Conceptualized variables (Table 4.1 and 4.2) in terms of situation, actors, and process are expected to be influencing the public value of such projects. Therefore, to conduct the study, keeping this aspect into consideration a few of operational e-governance projects in India have been selected, viz. passport seva project, issuance of driver's license, issuance of marriage certificate, registration of property and conversion of leasehold property into freehold. It becomes essential to understand about these projects before proceeding to the

collection of data. Therefore, an understanding developed about the functioning of the selected projects for the study is presented in this section.

4.6.1 Basis for the Selection of the Projects

As stated above five citizen-centric e-governance projects have been selected for the purpose of this research. While making a selection of the projects, it has been kept into consideration that selected projects should match with the objective of the research. Therefore, only those projects where the presence of citizens is mandatory to avail the services have been selected. The criteria followed while making a selection of the projects is mentioned below.

Firstly, the selection of the projects was made on the basis of target beneficiaries of the project. As there are many types of e-governance projects such as Government to Government (G2G) and Government to Business (G2B) e-governance projects. For this research, only those projects which serve citizens directly have been considered. Therefore, all the projects selected are citizen-centric.

Due to the growing stage of e-governance in India, there are many projects which are either at the planning stage or under implementation. It has been found that services of an e-governance project takes a few months to streamline after a project is implemented. In this study, we have considered only those projects which have been implemented successfully and have completed at least one year post implementation. Thus, all the projects considered for the research have been implemented since last one year or more.

As studied and described in the literature review chapter, there are many e-governance projects operational in India. A few of them having defined objectives and outcomes are known as Mission Mode Projects (MMPs) under the initiative of e-Kranti by the government of India. However, there are other e-governance projects which are not MMPs and being operational at the state level. For the purpose of research, both kinds of projects have been considered to increase the overall scope of the study. Therefore, apart from

four state-level projects, one national level project, i.e., passport seva project has been selected which is also a central level MMP.

4.6.2 Passport Seva Project

Passport seva project is handled by the Central Passport Organization (CPO) which functions as a wing of the Central Passport and Visa (CPV) division of Ministry of External Affairs (MEA). This project is operational since May 2010 under Public-Private-Partnership (PPP). The MEA engaged Tata Consultancy Services (TCS) in 2008 to executed passport seva (services) project. Link to access passport services is *https://portal2.passportindia.gov.in/AppOnlineProject/welcomeLink*. The project details have been presented in Chapter 3 (Section 3.3.1).

4.6.3 Driving Licence Project

Driving license project selected for the study is a state level project. The Transport Departments of the respective state governments are responsible for the issuance of driver's license. To deliver the driving license services in Delhi state, the government has tied up with Delhi Integrated Multi-Modal Transit System Ltd. (DIMTS). There are 13 transport authorities in Delhi through which driving license is being issued to the citizens. The website to access driving license services is *www.transport.delhigovt.nic.in.* The project details have been presented in Chapter 3 (Section 3.3.2).

4.6.4 Issuance of Marriage Certificate

A marriage certificate is a document which is issued to both husband and wife whose marriage has been duly performed. There are mainly two Acts which are being followed while executing registration of marriage. Out of which one is Hindu Marriage Act, 1955 which is implemented when husband and wife are Hindus, Buddhists, Jains or Sikhs. Another is Special Marriage Act, 1954 which is applicable when husband and wife are not from any of the above-mentioned religions.

Similar to driver's license project, in marriage registration project also applicants are required to fill-up an online application form and make e-payment as per the type of service to be availed. For example, there is a facility of 'Tatkal Registration' (Speedy Registration) under which certificate of marriage after the registration is delivered to the applicant comparatively faster than the 'Normal Registration.' The fee charged for Tatkal service is higher than that of the normal service. After making the payment online, applicants are given date and time to reach the service centre with necessary documents. Detailed list of the required documents according to the type of the application has also been made available on the marriage registration website for easy reference of the applicants.

As per the process, applicant visits to the marriage registration office and the application form filled up by the applicant is verified by the staff at the service centre, and photograph and biometric of both the applicants are captured. However, in addition to the requirement of the presence of husband and wife for registration of marriage, the presence of two witnesses is also mandatory. Hence, in the case of one application, the presence of a minimum of 4 people is required at the service centre. The link to apply for a marriage certificate is *https://edistrict.delhigovt.nic.in/.* The applicant is required to select his district in the web-based application and follow the process of application.

4.6.5 Registration of Property

Registration of property in Delhi is managed by the revenue department of the state. There are fifteen sub-registrar offices through which registration of property is handled by the revenue department. According to the Registration Act, 1908, a few documents, for example, sale deed, gift deed, conveyance deed, agreement for sale, lease deed are required to be registered mandatorily. There are some documents such as general and special power of attorney, partnership deed, will and trust deed which are not mandatory to register. However, the applicant can get them registered as per his requirements.

In case of registration of property, the first step is to perform due-diligence before the purchase of any property about the validity of the ownership which can be done by consulting a property lawyer. There are various areas which should be taken care of while verifying the documents. Once the verification of the documents has been done, the next step is to prepare a draft of the sale deed. A sale deed consists of details with respect to the buyer and seller of the property, terms, and conditions of the sale, etc.

After preparing the sale deed, below mentioned steps are required to be followed for the registration of property:

Step 1: To get the e-stamp of the value prepared by Stock Holding Corporation of India Ltd. (SHCIL). Applicants are required to visit the nearest SHCIL. Addresses of different SHCIL branches have been made available at www.shcilestamp.com.

Step 2: To book an appointment before visiting the sub-registrar office through *www.revenue.delhi.gov.in.*

Step 3: To visit the sub-registrar office at the given date and time and get the token number by showing the appointment details.

Step 4: To present the deed documents at the facilitation counter after displaying of the token and fulfill the gaps in the documentation, if any.

Step 5: Once documents are verified at the facilitation counter, present the documents to the sub-registrar along with the presence of two witnesses.

Step 6: After documents are accepted by sub-registrar, the applicant is required to proceed for capturing of photograph and biometric.

Step 7: Collect the acknowledgment receipt after completion of the process.

Step 8: Once the registered deed is ready, the applicant is required to go to the sub-registrar office to collect the documents at a defined time from the delivery counter.

4.6.6 Conversion of Immovable Property from Leasehold in Freehold

Delhi Development Authority (DDA) was established under the provisions of the Delhi Development Act, 1957 to encourage the safe and planned growth of Delhi. After the independence of India in 1947, the population of Delhi started increasing rapidly due to migration from other states to the capital city. At that time, the two local bodies, viz. Delhi Improvement Trust and Municipal Body were not sufficiently equipped to manage the emerging situation. Hence, it was recommended to constitute a single planning and controlling authority to ensure the development of Delhi. Delhi has a total area of 1497 sq. Km. and DDA has a major role in the development of Delhi. Major functions performed by DDA are

- Ensuring planned growth through the master, zonal and action area plans.
- Acquisition and disposal of lands and properties for different uses such as residential, commercial, industrial and institutional to execute the master plan.
- Development of sports infrastructure, designing, and up-grading of green areas and developing shopping places, etc.
- Launching housing schemes for residential flats and houses, allotment and payment management, conversion of leasehold immovable property into freehold, etc.

About the Housing Department of Delhi Development Authority

Housing department is the main branch of DDA which started in the year of 1968 mainly to construct and provide houses to the society as per requirements. Its roles include:

- Allotment of residential flats through housing schemes.
- Conversion of leasehold property into freehold property.
- Execution of conveyance deed of flats allotted by DDA on a leasehold basis.
- Stopping unauthorized construction and misuse of property.

Starting from 1969, a total of 44 housing schemes have been launched, and about 4,20,510 flats of various categories have been allotted till October 2015 (*www.dda.org.in*). All the residential flats constructed before the year 1992 were allotted by DDA on a leasehold basis. Purpose of DDA to make allotment on lease basis was to retain the ownership of the property and receive recurring revenue from allottees for supporting other developmental activities. However, after the lease period, it was found difficult by DDA to take over the property. Hence, due to the growing number of litigations, in February 1992, DDA decided to convert properties from leasehold to freehold by executing the conveyance deed.

Implementation of Leasehold to Freehold Scheme

As per the scheme, allotments made by DDA before 1992 are permitted for conversion from leasehold to freehold. However, the option of acquiring property on hire purchase basis was continued even after 1992. Due to this, the property could not be allotted on a freehold basis. Allotment of properties completely on freehold basis was started from 2010 when hire purchase option was excluded from the scheme. Hence, the majority of the allotments made before 2010 were on leasehold basis only. During a detailed discussion with senior officers at DDA, it is learned that out of the total allotted flats, only one-third of flats have been converted from leasehold to freehold till 2017. To expedite the conversion process, directions were issued to the housing department in 2011 to complete the process of a conversion case in 45 days which used to be 90 days earlier.

Housing activities were taken up by the DDA in the year 1968. For several years, the functioning of the housing department was characterized by manual processes and physical record maintenance. In the year 1992, the government decided to computerize the records of all allotments made by the DDA under various schemes. As per discussion held with the senior officers of DDA in April 2017, only 50-60 percent of the data could be computerized till 2016. The department is to complete the computerization of all manual records by 2018.

Apart from the ongoing processes, a few other initiatives which were taken by the DDA towards computerization are as follows:

- In November 2005, it was decided to receive applications at a counter of housing department by giving computer generated receipts which used to be accepted in a government bank earlier. In the year 2005-06, information kiosks were set up at the DDA offices. The website of DDA was also revamped by the Right to Information Act 2005.

- In April 2007, as a major step towards e-governance, an Integrated Management Information System (iMIS) was launched which aimed at automating all the involved processes. The iMIS was expected to improve citizen interface, enable easy access to information and introduce paperless processing.

- In September 2012, a web-based interface was launched to apply online for conversion of immovable property from leasehold to freehold. The service was started to facilitate easy tracking of applications and reduce the number of visits made by applicants.

Although considerable efforts were put by introducing IT-based solutions, the housing department could not achieve the desired results. Citizens continued to face issues related to an un-friendly user interface and were required to visit the DDA office frequently. Hence, four Nagrik Suvidha

Kendras (NSKs) were opened in June 2014 as part of the re-engineering of government processes to facilitate receipt of applications for conversion of property from leasehold to freehold.

4.7 Concluding Remarks

The conceptual framework of the research on the basis of a detailed review of literature about the public value and S-A-P related variables has been presented in this chapter. The conceptual framework for research is developed to measure the influence of S-A-P related variables on public value. The framework consists of a few macro variables, constituting micro variables and a set of items associated with each micro variable for public value, and situation, actors and processes.

The conceptual framework proposed in this chapter form the basis for further analysis. Understanding about macro and micro variables of the conceptual research framework helped in the formulation of a questionnaire which is further used to collect data for testing the conceptual research framework.

The research methodology section of the chapter is aimed to choose a suitable research methodology for providing answers to research questions. After analyzing the context of the study, both quantitative and qualitative research methods have been used for conducting the study. Qualitative research method using SAP-LAP framework has helped to identify the situation-actor-process related variables in the study context which is followed by recommendations based on learning-action-performance synthesis (*Chapter 7*). As per the quantitative research method, data collected through a survey questionnaire is analyzed with the help of SEM tool to identify the influence of situation-actor-process related conceptual variables on the public value of e-governance projects. A detailed discussion about the analysis of data and its interpretation is presented in the next chapter.

Chapter 5

Validation of the Conceptual Research Framework

5.1 Introduction

The chapter presents analysis of data to meet the research objectives (*Chapter 1, Section 1.3*) as per the study context. The data collected through a survey of beneficiaries has been analyzed keeping in view the research objectives. Further, hypotheses identified on the basis of the conceptual framework of research (*Chapter 4, Figure 4.1*) are analyzed here.

This chapter has been organized as follows. Firstly, the description of data analysis tool implemented in this research is provided followed by an overview of the data collected through the survey. Secondly, a comprehensive data analysis as per objectives of the research is presented followed by project wise univariate analysis.

5.2 An Overview of Data Analysis Techniques

Structural Equation Modeling is a popular statistical tool that allows researcher to execute Confirmatory Factor Analysis (CFA) that deals in measurement models (Brown, 2006; Kaplan, 2009). The relationship of observed variables and latent variables is defined by the measurement model (Brown, 2006; Hair et al., 2010). A variable that can be measured directly through data collected from the survey is known as the observed variable (Byrne, 2010). However, a variable that is measured through a set of observed variables is referred as latent variable (Schumacker and Lomax, 2004).

SEM permits researchers to test the relationship between selected latent variables in a predefined hypothesized conceptual framework (Kaplan, 2009; Hair et al., 2010). This study has used a pre-defined hypothesized conceptual

framework (*Chapter 4, Figure 4.1*) that has been developed based on a review of the literature. By applying SEM analysis on survey data, the hypothesized model is validated to verify as to what level the hypothesized model is supported by survey data (Shumacker and Lomax, 2004). Several Goodness-of-fit (GOF) assessment indicators have been used to check up to what extent the hypothesized model fits into survey data (Byrne, 2010).

To apply SEM analysis, software applications are important to use (Kline, 2005). To conduct the research, this study has used Microsoft Excel, SPSS (Statistical Package for the Social Sciences) Graphics version 22 and AMOS (Analysis of Moment Structures) Graphics version 22. In this research, SPSS has been used to maintain survey data and creating descriptive statistics and also in conducting Exploratory Factor Analysis (EFA) (George and Mallery, 2011). The AMOS is used for executing SEM analysis. An easy user interface provided by its graphics makes it attractive to use (Arbuckle, 2010).

To execute the SEM analysis, a few steps are needed to be followed (Hair et al., 2010).

- The first step is to present a theory (Kaplan, 2009).
- The second step is to develop the measurement model on the basis of a theory for the purpose of performing Confirmatory Factor Analysis (CFA) (Hair et al., 2010). At this stage, observed variables are referred to as indicator variables, and latent variables are referred to as latent factors. Further, indicator variables are assigned to their respective latent factors (Hair et al., 2010). As per a common rule, it is suggested that every latent factor should have a minimum of three indicator variables (Cook, 1981; Gerbing and Anderson, 1985).
- In the third step, the researcher is required to select the sample data (Kaplan, 2009). To conduct the SEM analysis, it is suggested to have a sample size of more than 200 (Kline, 2005; Kaplan, 2009). It is also

important to select suitable estimation technique among various techniques such as weighted least square (WLS), maximum likelihood (ML), scale-free least square (SLS), generalised least square (GLS), un-weighted least square (ULS) and asymptotically distribution-free (ADF) (Kaplan, 2009; Hair et al., 2010). However, ML is widely used due to its robust process to deal with violations of normality (Hair et al., 2010).

- In the fourth stage, the validity assessment of the measurement model is performed. The main objective of SEM analysis is to check the level to which the hypothesized model fits the survey data. Validity assessment is done through an acceptable level of Goodness-of-fit (GOF) (Kline, 2005; Hair et al., 2010).

  There are several GOF assessment indices divided into mainly three types of fit indices such as absolute, parsimony and incremental (Brown, 2006). Absolute fit indices are used to see to what extent the researcher's model reproduces observed data. These are the basic assessment tools to see the fitment of sample data with the theory of the researcher (Brown, 2006; Byrne, 2010). The incremental fit indices, on the other hand, are different from the absolute fit indices as they assess to what extent estimated model fits alternative baseline models. They assess the fitness of a user-specified solution with a more restricted model, i.e. the nested baseline model (Brown, 2006). Thirdly, the parsimony fit indices give information about the best model among other competing models by considering its fitness with its complexity (Byrne, 2010).

- The fifth step in SEM analysis is doing modification in the model on the basis of GOF values, if required (Kaplan, 2009). This step is a repetitive process until the model achieves an appropriate standard (Brown, 2006; Hair et al., 2010).

- Once the researcher obtains appropriate GOF values, the sixth step consists of preparing a structural model by drawing structural relationships among the latent factors (Hair et al., 2010).

- The seventh step in SEM analysis is assessing the validity of the structural model. It consists of testing the validity of the structural model and its related hypothesized structural relationships (Hair et al., 2010). The level of significance of the structural relationship is tested using various statistics such as the standardized regression weight (SRW), *P*-value and the critical ratio (CR) (Byrne, 2010). On the basis of the level of significance of the structural relationships, the decision of acceptance or rejection of hypotheses is taken. In case the model does not reflect the required validity, new data is required to be collected along with modifications in the model (Hair et al., 2010).
- The last step is listing the findings on the basis of analysis of measurement and structural model (Kaplan, 2009).

5.3 Collection of Sample Data

The questionnaire was circulated to 650 target respondents. Filled-in questionnaires were received from 370 respondents only. The mode of collection of responses was manual as well as online. In manual mode, a print of physical form was handed over to the respondents to fill-up the same. In online mode, an online questionnaire was created with the help of Google form and link of the same was circulated to the respondents. In this manner, 245 responses could be collected through a manual process, and 125 forms could be collected through an online process. While entering the responses received in physical form into the system, it was observed that out of 245 forms, 55 forms were incomplete which could not be included for the analysis purpose as more than 50 percent of the questions were not answered. Hence, the count of total completed forms was 315 (190 from the manual process and 125 from the online process) which were further used for the detailed analysis. The response rate of the survey is 48.46 percent which is considered acceptable for such kinds of studies (Neuman, 2006).

5.3.1 Reliability of the Questionnaire

Cronbach's alpha (α) is a well-known method for assessing if items belonging to the one instrument measure the same thing (George and Mallery, 2011). It is tested to ensure the reliability of the questionnaire before conducting SEM analysis. The degree of reliability depends on the closeness of the value of Cronbach's alpha to 1. As per general rule, if the value of Cronbach's alpha is more than .80, that all items of the questionnaire are reliable (Nunnally, 1978).

Values of Cronbach's alpha for the latent factors were calculated using SPSS. It is found that Cronbach's α values for the corresponding questionnaire items are related to each latent factor and α values of all the latent factors are greater than 0.80 (Appendix II).

5.3.2 An Overview of the Survey Data

Analysis of demographic statistics of the survey data was conducted on the basis of gender, age, employment, education and income of the respondents. Figure 5.1 reflects the type of service availed by the respondents. Most of the respondents responded about passport services, i.e. 44.13 percent responses followed by driving license (17.14 percent), registration of property (15.24 percent), marriage certificate (12.06 percent) and conversion of leasehold to freehold of property (11.43 percent). The reason behind this seems to be that passport is the most common service availed by citizens these days compared to other services. For example, service of conversion of leasehold to freehold of property may not be required by all respondents. Marriage certificate service would also not apply to those who are single. Hence, responses received for various types of services vary due to its eligibility and requirements for the respondents.

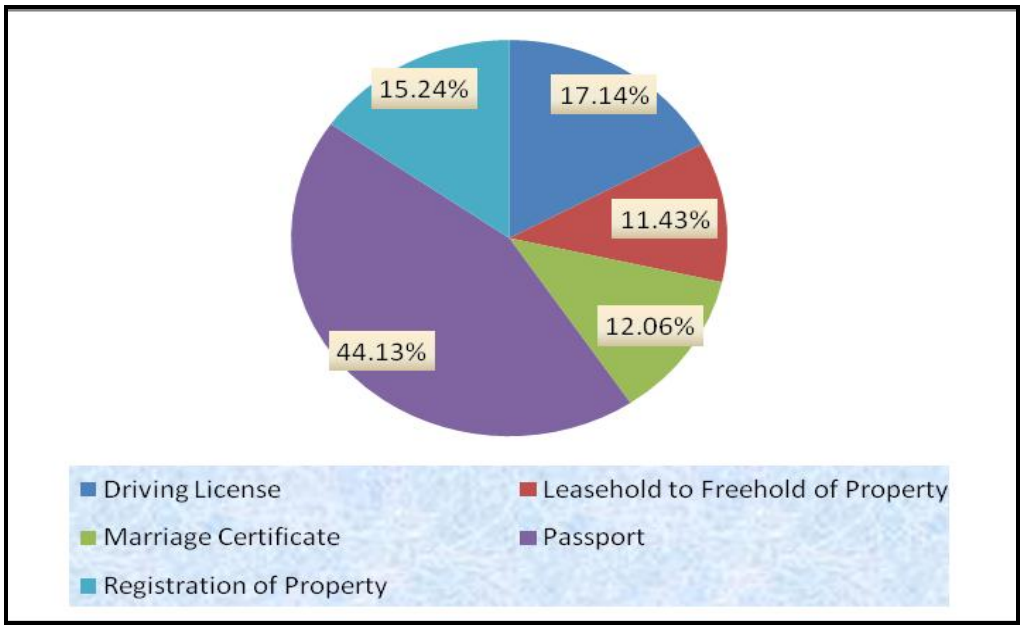

Figure 5.1: Distribution of Services Availed by Respondents

Figure 5.2 presents the gender profile of the respondents. Out of total respondents, 55.33 percent of respondents were males, and 44.67 percent were females. It has been observed that there is no major difference in number of responses on the basis of gender profile of the respondents. Both males and females have responded more than 45 percent of the responses.

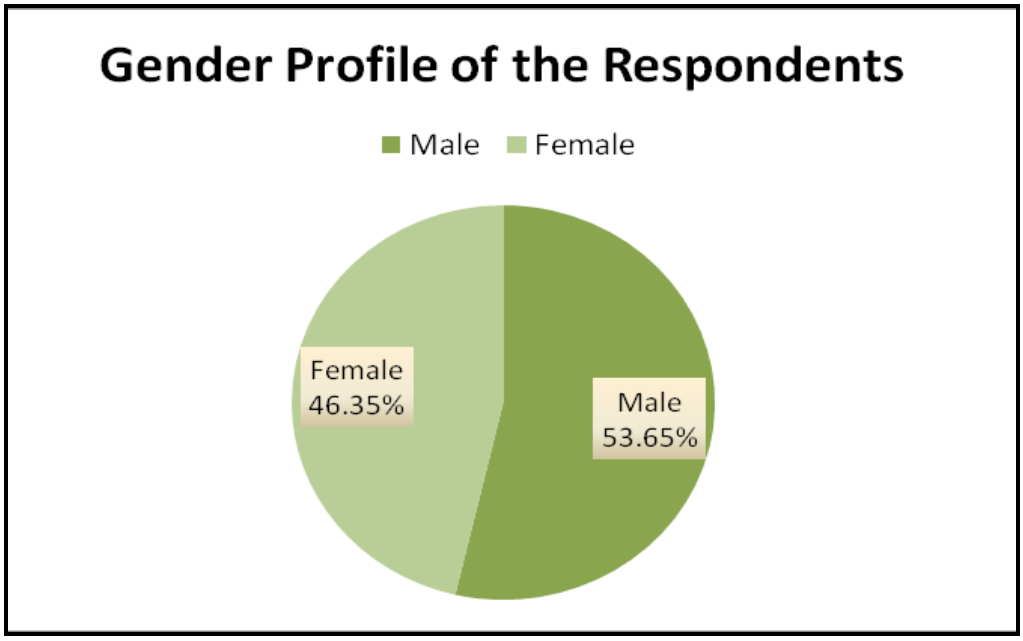

Figure 5.2: The Gender Profile of the Respondents

The age profile of the respondents is shown below in Figure 5.3. According to the data collected for the research, maximum respondents fell in the age range between 31 to 45 years, i.e. 47.30 percent of total responses followed by 124 respondents of age group between 18-30, i.e. 39.37 percent of the total responses. There were only 12 respondents who were above the age of 60 years. People who fell in the age category of 46 to 60 years were 30, i.e. 9.52 percent of total responses. Age profile of the respondents indicates that people with the age of more than 60 years participated least in the survey.

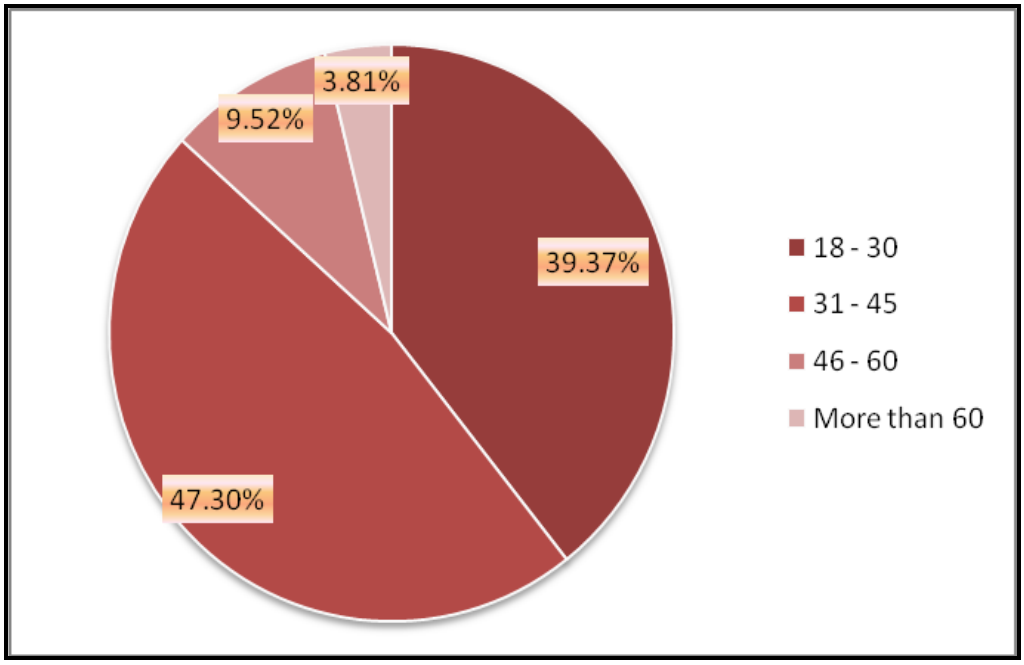

Figure 5.3: The Age Profile of the Respondents

In terms of qualification of the respondents; also, the data collected is diverse in nature. It is revealed that 29.52 percent of respondents were either in school or college and 70.16 percent of respondents completed their post-graduation or professional qualification. Further, the data reflected different income level of respondents which was found to be varying as per the occupation type and qualification level of the respondents.

5.4 Analysis of Data as per Objectives of Research

In this section, the analysis of data has been conducted to fulfill the objectives of the research. As mentioned below, this study has three main objectives:

1. To identify the variables for analyzing the public value of citizen-centric e-governance projects.
2. To identify the situation-actor-process related variables in the context of citizen-centric e-governance projects.
3. To explore the relationship between situation-actor-process related variables and public value in the study context and propose an empirically validated framework for improving the public value of citizen-centric e-governance projects.

An analysis of data to meet the research objectives is presented as follows.

5.4.1 Data Analysis for Research Objective – 1

In order to identify the factors for analyzing the public value of e-governance projects, initially, a few sets of variables were identified on the basis of literature review. As per the context of the study, total factors identified to analyze the public value were twelve (*Chapter 4, Section 4.3*). Exploratory Factor Analysis (EFA) is performed to reduce the large number of variables into a smaller set of variables (Malhotra and Dash, 2011). Additionally, it provides construct validity evidence of self-reporting scales (Thompson, 2004).

5.4.1.1 Exploratory Factor Analysis (EFA)

The main objectives of EFA are to reduce the count of variables, to verify the relationship among different variables, to identify the unidimensionality of a theoretical construct, to analyze the construct validity of a scale, to address the issue of multicollinearity and also to support the development of theoretical constructs (Thompson, 2004).

There are mainly two tests which should be conducted before performing EFA. These are the Kaiser-Meyer-Olkin test (KMO) and Bartlett's test of Sphericity. The Kaiser-Meyer-Olkin (KMO) test is a test to measure the adequacy of sample size. Value of KMO test above 0.6 is considered to be adequate (Tabachnick and Fidell, 2007). Bartlett's test is used to measure statistical significance. The result of Bartlett's test with $p < .05$ is considered to be significant to perform EFA (Williams et al., 2010). Results of KMO and Bartlett's test for the first research objective are shown in Appendix III (a). As per the appendix, the value of the KMO is found to be .954 which is above the required value, i.e. 0.6 and p-value of Bartlett's test is also observed less than .05 which is acceptable to conduct EFA.

For the purpose of analysis, mapping of variables with their respective codes is shown below in Table 5.1.

Table 5.1: Mapping of Public Value Variables with Codes

Public value of e-governance			
Macro Variables	**Micro Variables**	**Codes**	**Statements**
Quality Service Delivery (QSD)	Quality of Information (QUALI)	QUA1	Information delivery is accurate
		QUA2	Information delivery is up-to-date
		QUA3	Information given is relevant
		QUA4	Information given is in detail
		QUA5	Information given is simple and understandable
	System Functioning (SYSTE)	SYS1	Filling and submitting the online application form is easy
		SYS2	Making online payment without any technical error
		SYS3	Getting the application processed without any technical error
		SYS4	Downloading information (e.g., reports, forms, circulars) is easy
		SYS5	Searching information (e.g., process to apply, required documents, delivery time) is easy
	User Orientation (USERO)	USE1	Easy way of application submission for people having little or no formal education
		USE2	Facilities for differently abled, senior citizens, etc. (e.g., wheelchair)
		USE3	Simple website address for easy remembrance
		USE4	User-friendly website for easy access
		USE5	Frequently asked questions (FAQs) to remove any doubt

Public value of e-governance			
Macro Variables	**Micro Variables**	**Codes**	**Statements**
	Cost Savings (COSTS)	COS1	Lesser visits are required to avail service
		COS2	Lesser fees is paid to avail service
		COS3	Lesser efforts are required to avail service
		COS4	No charges are paid to Intermediaries/Middlemen to avail service
		COS5	Lesser cost involved in the preparation of documents
Competence of Public Organizations (CPO)	Efficiency (EFFIC)	EFF1	Duplicate tasks are not performed during the process
		EFF2	Service counters are IT-enabled for better performance (e.g., computers at counters)
		EFF3	There is the use of improved IT infrastructure (e.g., new computer applications, updated software, etc.)
		EFF4	Electronic queue is used at the centre (e.g., token system)
		EFF5	Information is moved electronically across different levels (e.g., online approvals)
	Openness (OPENN)	OPE1	Display of public policy drafts, agreements, laws, and regulations
		OPE2	Display of budget, expenses, and tenders for better transparency
		OPE3	Display of annual plans and progress reports
		OPE4	Display of organizational charts, roles, and responsibilities of staff
		OPE5	Display of contact lists of staff
		OPE6	Display of working hours, lunch timings, address of public organization
	Responsiveness (RESPO)	RES1	Response to inquires
		RES2	Response to complaints
		RES3	Implementation of citizen charter and RTI (Right to Information)
		RES4	Facility of online case tracking
		RES5	Automatic response to online queries
Achievement of Socially Required Outcomes (ASRO)	Equity **(EQUIT)**	EQU1	There is a display of information in local language
		EQU2	Website comply with special features for people with special needs (e.g., visual problem)
		EQU3	Same treatment is given to all applicants other than people with special needs
		EQU4	Service provision is on the basis of First in First out method (FIFO)
		EQU5	There is no discrimination on the basis of gender, money, and status
	Trust (TRUST)	TRU1	Information provided to public organization is secure
		TRU2	There is only authorized access to personal information
		TRU3	Initiatives are taken to discourage the role of middleman

Public value of e-governance			
Macro Variables	**Micro Variables**	**Codes**	**Statements**
		TRU4	Service is delivered within the time defined by public organization
		TRU5	Public organization comply with information given on website
	Self-Development (SELFD)	SEL1	Awareness programmes are conducted for knowledge promotion
		SEL2	Training programmes are organized for non Internet savvy people
		SEL3	Access is provided through common service centres/kiosks
		SEL4	Videos are uploaded on website for easy learning
		SEL5	Assistance is given to new users through call centre
	Citizen-Participation (CITIZ)	CIT1	Regular updates on policies and procedures are shared with citizens
		CIT2	Opportunity is given to participate in public discussions and policy-making
		CIT3	There is provision for suggestions
		CIT4	Opinion is asked for decision making
		CIT5	Contests are organized to gather new ideas from citizens
	Concern for Environment (CONCE)	CON1	There is a reduction in paper printing
		CON2	There is saving of energy (e.g., electricity, manpower)
		CON3	There is a policy on green information technology
		CON4	There is a process of recycling of resources (e.g., papers)
		CON5	There is use of energy efficient equipments

After this step, EFA was performed by selecting the oblique rotation method that is used in the situation when components are allowed to be correlated (Costello and Osborne, 2005). Most commonly orthogonal rotation method is used that produces factors which are not correlated. However, since there may be some correlation among factors, with the use of oblique methods more accurate results can be obtained (Costello and Osborne, 2005). Further, extraction of factors was done by choosing the principal components method which is the most common method to extract factors (Tabachnick and Fidell, 2007). Table 5.2 below reflects the number of public value factors that are extracted through EFA.

Table 5.2: Public Value Factors Extracted through Exploratory Factor Analysis

Macro Variable	Micro Variable	Items	Number of Factors	Number of Items	Loading Value
Quality Service Delivery (QSD)	Quality of Information (QUALI)	QUA1	1	4	.920
		QUA2			.961
		QUA3			.807
		QUA4			.837
	System Functioning (SYSTE)	SYS2	1	4	.828
		SYS3			.923
		SYS4			.879
		SYS5			.883
	User Orientation (USERO)	USE3	1	3	.812
		USE4			.924
		USE5			.832
	Cost Savings (COSTS)	COS1	1	4	.833
		COS3			.930
		COS4			.874
		COS5			.758
Competence of Public Organizations (CPO)	Efficiency (EFFIC)	EFF2	1	3	.753
		EFF3			.810
		EFF5			.815
	Openness (OPENN)	OPE1	1	5	.811
		OPE2			.836
		OPE3			.954
		OPE4			.928
		OPE5			.893
Achievement of Socially Required Outcomes (ASRO)	Equity (EQUIT)	EQU2	1	3	.852
		EQU3			.789
		EQU4			.873
	Trust (TRUST)	TRU1	1	4	.834
		TRU2			.756
		TRU3			.707
		TRU4			.610
	Concern for Environment (CONCE)	CON1	1	5	.774
		CON2			.793
		CON3			.850
		CON4			.842
		CON5			.813

According to the table shown above, the total numbers of factors extracted for analyzing public value are 9 with 35 variables. However, a few variables were dropped due to their low loading. All the items with primary factor loading more than 0.4 were retained. Also, any item having cross loading were also removed while extracting factors. Hence, the final list of items excludes below-mentioned items as per Table 5.3 which could not be included either due to their less than 0.4 factor loading or due to cross loading on another factor.

Table 5.3: List of Items Excluded based on EFA

Item Codes	Statements
RES1	Response to inquires
RES2	Response to complaints
RES3	Implementation of citizen charter and RTI (Right to Information)
RES4	Facility of online case tracking
RES5	Automatic response to online queries
EQU1	There is a display of information in local language
EQU5	There is no discrimination on the basis of gender, money, and status
SEL1	Awareness programmes are conducted for knowledge promotion
SEL2	Training programmes are organized for non Internet savvy people
SEL3	Access is provided through common service centres/kiosks
SEL4	Videos are uploaded on website for easy learning
SEL5	Assistance is given to new users through call centre
CIT1	Regular updates on policies and procedures are shared with citizens
CIT2	Opportunity is given to participate in public discussions and policy-making
CIT3	There is provision for suggestions
CIT4	Opinion is asked for decision making
CIT5	Contests are organized to gather new ideas from citizens
EFF1	Duplicate tasks are not performed during the process
EFF4	Electronic queue is used at the centre (e.g., token system)
USE1	Easy way of application submission for people having little or no formal education
USE2	Facilities for differently abled, senior citizens, etc. (e.g., wheelchair)
COS2	Lesser fees are paid to avail service
QUA5	Information given is simple and understandable
OPE6	Display of working hours, lunch timings, address of public organization
SYS1	Filling and submitting online application form is easy
TRU5	Public organization comply with information given on website

5.4.1.2 Descriptive Statistics of Public Value Variables

The descriptive statistics of the public value variables after executing EFA is presented in Table 5.4 in terms of mean values, standard deviation, skewness, and kurtosis.

Table 5.4: Descriptive Statistics of Public Value Variables

	Mean	Std. Deviation	Skewness	Kurtosis
Information delivery is accurate	3.54	1.10	-.432	-.573
Information delivery is up-to-date	3.49	1.08	-.258	-.782
Information given is relevant	3.59	0.99	-.193	-.813
Information given is in detail	3.53	1.06	-.392	-.452
Making online payment without any technical error	3.63	1.09	-.230	-.927
Getting the application processed without any technical error	3.57	1.05	-.166	-.893
Downloading information (e.g., reports, forms, circulars) is easy	3.70	1.08	-.315	-.986
Searching information (e.g., process to apply, required documents, delivery time) is easy	3.57	1.10	-.161	-.892
Simple website address for easy remembrance	3.50	1.03	-.048	-.807
User-friendly website for easy access	3.47	1.06	-.010	-.962
Frequently asked questions (FAQs) to remove any doubt	3.43	1.07	.021	-.943
Lesser visits are required to avail service	3.34	1.17	-.211	-.940
Lesser efforts are required to avail service	3.45	1.13	-.332	-.756
No charges are paid to Intermediaries/Middlemen to avail service	3.48	1.19	-.424	-.809
Lesser cost involved in preparation of documents	3.54	1.19	-.459	-.741
Service counters are IT-enabled for better performance (e.g., computers at counters)	3.65	1.06	-.271	-.947
There is use of improved IT infrastructure (e.g., new computer applications, updated software, etc.)	3.54	1.10	-.293	-.711
Information is moved electronically across different levels (e.g., online approvals)	3.57	1.16	-.348	-.866
Display of public policy drafts, agreements, laws, and regulations	3.07	1.29	.011	-.978
Display of budget, expenses, and tenders for better transparency	2.99	1.21	-.004	-.931

	Mean	Std. Deviation	Skewness	Kurtosis
Display of annual plans and progress reports	3.07	1.25	-.018	-.993
Display of organizational charts, roles, and responsibilities of staff	3.03	1.27	.075	-.885
Display of contact lists of staff	3.06	1.23	.061	-.959
Website comply with special features for people with special needs (e.g., visual problem)	3.21	1.19	-.196	-.777
Same treatment is given to all applicants other than people with special needs	3.37	1.16	-.251	-.846
Service provision is on the basis of First in First out method (FIFO)	3.45	1.09	-.245	-.678
Information provided to public organization is secure	3.53	1.15	-.307	-.829
There is only authorized access to personal information	3.63	1.12	-.187	-.838
Initiatives are taken to discourage the role of middleman	3.55	1.12	-.324	-.816
Service is delivered within the time defined by public organization	3.57	1.11	-.284	-.827
There is a reduction in paper printing	3.47	1.13	-.181	-.950
There is saving of energy (e.g., electricity, manpower)	3.43	1.12	-.014	-.830
There is a policy on green information technology	3.43	1.12	-.045	-.951
There is a process of recycling of resources (e.g., papers)	3.37	1.14	-.030	-.704
There is use of energy efficient equipments	3.48	1.10	-.091	-.810

The results of descriptive statistics in terms of mean value reflect that most of the variables have a significant contribution in analyzing public value. However, out of all the variables, a few variables such as downloading information is easy (3.70), service counters are IT-enabled for better performance (3.65), only authorized access to personal information (3.63) and making an online payment without any technical error (3.63), have comparatively higher mean values. On the other hand, a few variables having comparatively lower mean values are: display of budget, expenses and tenders for better transparency (2.99), display of organizational charts, roles

and responsibilities of staff (3.03), display of contact lists of staff (3.06), display of annual plans and progress reports (3.07) and display of public policy drafts, agreements, laws and regulations (3.07). While analyzing the lower mean values of variables constituting public value, it has also been explored that all the variables having comparatively lower mean values belong to micro variable ‘Openness.' This may be due to the reason that most of the variables under micro variable ‘Openness' are for better understanding of the functioning of the public organization. However, most likely, citizens give priority to the processing of their application compared to the gathering information about the public organization.

Further, in terms of skewness results, it has been observed that most of the responses are negative which means that the majority of the responses are lying on the right-hand side of the options provided to beneficiaries. However, the overall results of skewness are between 0.75 and -0.75 which are within the threshold (skewness < ±3) (Hair et al., 2010). Results of kurtosis are also found to be within the criteria (kurtosis < ±10) (Hair et al., 2010). However, in many cases, it has been noticed that values are negative which means that there are platykurtic responses. The platykurtic responses reflect that there is variation in the responses.

5.4.1.3 Confirmatory Factor Analysis (CFA)

The use of CFA is essential to confirm the results of EFA and also to determine how well the sample data fits into the conceptual model (Hair et al., 2010). In the present study, analysis of moment structure (AMOS) software is used to execute CFA.

Convergent Validity

For analyzing convergent validity, composite reliability (CR) and average variance extracted (AVE) are calculated. Convergent validity ensures the correlation between the items within a factor (Hair et al., 2010). To confirm the

convergent validity of the measurement model, value of composite reliability should be more than 0.70 and value of average variance extracted should be more than 0.50 and CR value should be more than AVE (Hair et al., 2010). In the present study, values of CR and AVE are found to be as per the acceptable limits. Results of convergent validity are presented in Table 5.5.

Discriminant Validity

Further, discriminant validity test was conducted to check the uniqueness of different constructs. Test of discriminant validity is conducted to ensure that the measure of constructs are unique and value of interest represented by these measures are not represented by other measures in SEM (Hair et al., 2010). It is used to ensure that there is no correlation between different constructs as each construct has its own set of measures to represent the same. The values of average variance extracted (AVE) and maximum shared squared variance (MSV) are analyzed to confirm the discriminant validity of the measurement model. Value of AVE should be more than the value of MSV (Hair et al., 2010). Table 5.5 below shows that no issue related to the discriminant validity was found in the measurement model.

Table 5.5: Discriminant Validity Test of Public Value Constructs

	CR	AVE	MSV	CONCE	QUALI	SYSTE	USERO	COSTS	EFFIC	EQUIT	TRUST	OPENN
Concern for Environment (CONCE)	0.945	0.845	0.667	**0.919**								
Quality of Information (QUALI)	0.925	0.810	0.487	0.549	**0.900**							
System Functioning (SYSTE)	0.926	0.814	0.487	0.630	0.698	**0.902**						
User Orientation (USERO)	0.913	0.822	0.527	0.715	0.648	0.688	**0.907**					
Cost Savings (COSTS)	0.911	0.771	0.549	0.655	0.694	0.632	0.665	**0.878**				
Efficiency (EFFIC)	0.910	0.816	0.588	0.689	0.626	0.660	0.674	0.741	**0.903**			
Equity (EQUIT)	0.896	0.785	0.638	0.749	0.627	0.670	0.700	0.685	0.682	**0.886**		
Trust (TRUST)	0.927	0.816	0.667	0.817	0.622	0.650	0.726	0.671	0.767	0.799	**0.903**	
Openness (OPENN)	0.943	0.838	0.560	0.748	0.551	0.590	0.661	0.692	0.715	0.698	0.678	**0.916**

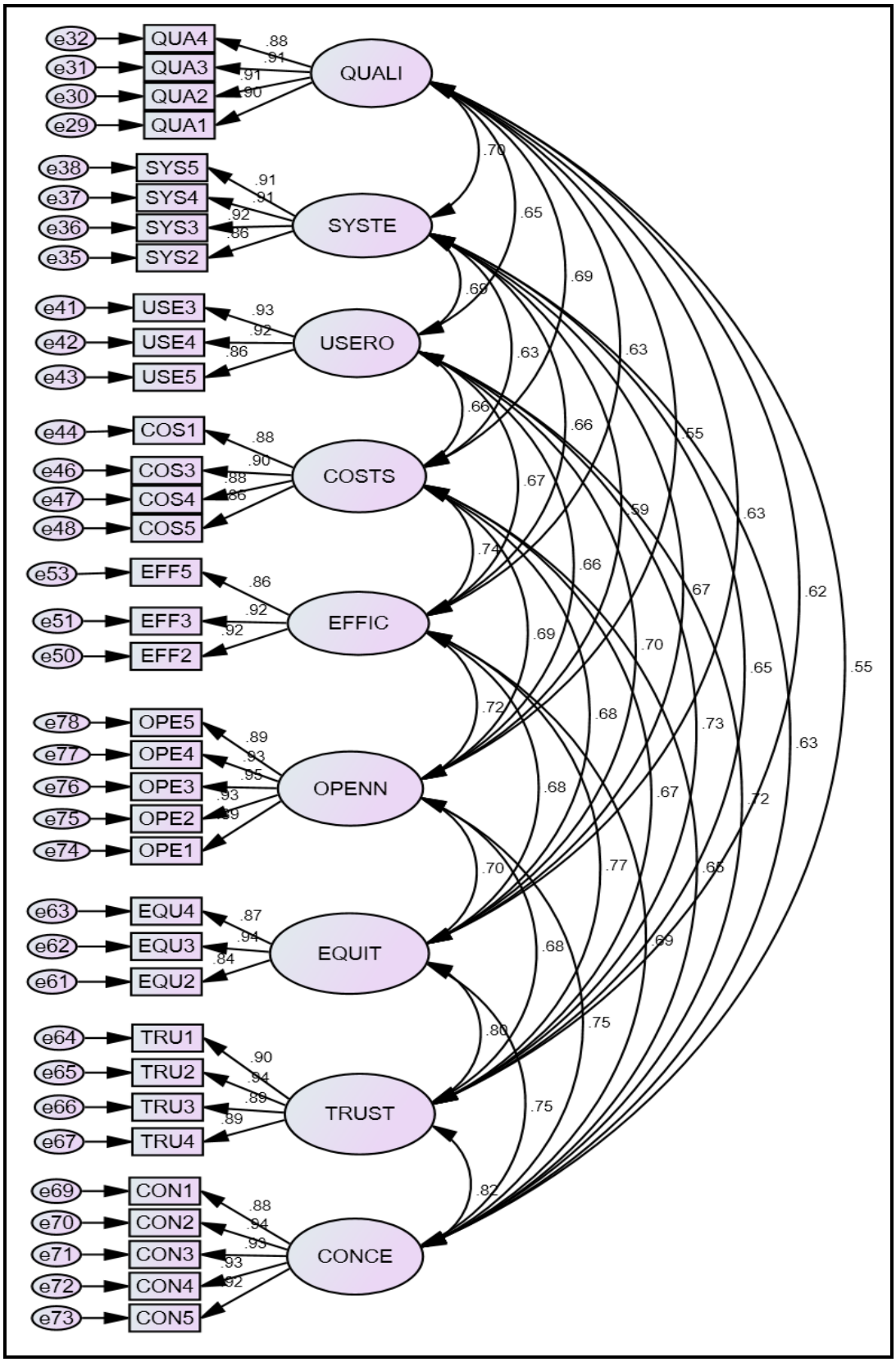

Figure 5.4: Discriminant Validity of Public Value Constructs

5.4.2 Data Analysis for Research Objective – 2

The second research objective is to identify the factors related to situation-actor-process of citizen-centric e-governance projects. In this section, the analysis of data undertaken to meet the second research objective is presented. Initially, a literature review was conducted to identify the factors with respect to situation, actor, and process related to the public organization in the study context (*Chapter 4, Section 4.4*).

5.4.2.1 Exploratory Factor Analysis (EFA)

As per the context of the study, a total of six factors were identified related to situation-actor-process. However, in line with the process followed to meet the first research objective, Kaiser-Meyer-Olkin test (KMO) and Bartlett's test of Sphericity have been conducted before performing EFA for meeting the second objective. Results of KMO and Bartlett's test for the second research objective are shown below in Appendix III (b). As per the Appendix, the value of the KMO is found to be .954 which is above the required value, i.e. 0.6 and p-value of Bartlett's test is also observed less than .05 which is acceptable to conduct EFA.

Mapping of situation-actor-process related variables with their respective codes is shown below in Table 5.6.

Table 5.6: Mapping of Situation-Actor-Process related Variables with Codes

Situation-Actor-Process related variables			
Improved Situation (IST)	Environmental Factors (ENVIR)	ENV1	Closeness of service centre to the applicant's home
		ENV2	Nonavailability of middlemen around the service centre
		ENV3	Need to stand in long queues
		ENV4	Air conditioned environment at the service centre
		ENV5	Provision of feedback mechanism at the centre
	Availability of Basic Amenities (AVAIL)	AVA1	Proper sitting arrangement at the centre
		AVA2	Cleanliness at service area and waiting area
		AVA3	Drinking water for applicants
		AVA4	Clean washrooms for male as well as female
		AVA5	Baby feeding room for mothers
Capability level of Actors (CLA)	Competency (COMPE)	COM1	Effective communication skills
		COM2	Required IT skills
		COM3	Sufficient speed to do the work
		COM4	Complete knowledge about their work
		COM5	Patience to listen to the applicants
	Service Orientation (SERVI)	SER1	Willing to serve the applicants
		SER2	Punctual and available at their seat
		SER3	Honest at their work
		SER4	Polite and friendly with the applicants
		SER5	Comfortable to provide customized services
Flexible Process Workflow (FPW)	Availability of Options (OPTIO)	OPT1	Choice to select date and time for application submission
		OPT2	Option of both manual and online form filling
		OPT3	Option to upload the documents online
		OPT4	Option to select any service centre within the city
		OPT5	Choice to select between regular and fast service (e.g., Tatkal Passport)
	Change Mechanisms (CHANG)	CHA1	Provision for continuous service in case of any technical fault
		CHA2	Back up of employees in case of their absence
		CHA3	Mechanism to recover data in case of loss of data
		CHA4	Process to put application on hold in case of lack of documents
		CHA5	Availability of backup plan in case of any natural calamities

After this step, EFA was performed by selecting oblique rotation and principal components methods (Costello and Osborne, 2005; Tabachnick and Fidell, 2007). Table 5.7 below reflects the number of situation-actor-process related factors that are extracted through EFA.

Table 5.7: Situation-Actor-Process related Factors Extracted through EFA

Macro Variable	Micro Variable	Items	Number of Factors	Number of Items	Loading Value
Improved Situation (IST)	Environmental Factors (ENVIR)	ENV1	1	4	.877
		ENV2			.735
		ENV4			.681
		ENV5			.636
	Availability of Basic Amenities (AVAIL)	AVA1	1	4	.797
		AVA2			.885
		AVA3			.922
		AVA4			.851
Capability level of Actors (CLA)	Competency and Service Orientation (COMSE)	COM1	1	10	.788
		COM2			.820
		COM3			.860
		COM4			.841
		COM5			.891
		SER1			.905
		SER2			.905
		SER3			.925
		SER4			.889
		SER5			.838
Flexible Process Workflow (FPW)	Availability of Options (OPTIO)	OPT1	1	5	.721
		OPT2			.839
		OPT3			.890
		OPT4			.863
		OPT5			.817
	Change Mechanisms (CHANG)	CHA1	1	5	.510
		CHA2			.724
		CHA3			.880
		CHA4			.926
		CHA5			.889

According to the table shown above, the total number of situation-actor-process related factors extracted is 5 with 28 variables. All the items with primary factor loading more than 0.4 were retained. Also, any item having cross loading were also removed while extracting factors. The items excluded after conducting EFA are shown in Table 5.8.

Table 5.8: List of Items Excluded based on EFA

Item Codes	Statements
ENV3	Need to stand in long queues
AVA5	Baby feeding room for mothers

Apart from the deletion of above-mentioned items, two factors have to be merged as per EFA. These are 'Competency' (COMPE) and 'Service Orientation' (SERVI) under the macro variable 'Capability level of Actors' (CLA). As they fall under the same macro variable; hence, both were merged as one factor and name of the new factor has been given as 'Competency and Service Orientation' (COMSE).

5.4.2.2 Descriptive Statistics of Variables related to Situation-Actor-Process

The descriptive statistics of situation-actor-process related variables after executing EFA is presented in Table 5.9 in terms of mean values, standard deviation, skewness, and kurtosis.

Table 5.9: Descriptive Statistics of Variables related to Situation-Actor-Process

	Mean	**Std. Deviation**	**Skewness**	**Kurtosis**
Closeness of service centre to the applicant's home	3.41	1.09	-.221	-.722
Non-availability of middlemen around the service centre	3.42	1.07	-.155	-.669
Air-conditioned environment at the service centre	3.52	1.16	-.288	-.904
Provision of feedback mechanism at the centre	3.43	1.18	-.257	-.866
Proper sitting arrangement at the centre	3.65	1.14	-.218	-.970
Cleanliness at service area and waiting area	3.70	1.08	-.307	-.955
Drinking water for applicants	3.66	1.13	-.278	-.807
Clean washrooms for male as well as female	3.57	1.17	-.289	-.905
Effective communication skills	3.56	1.12	-.320	-.757
Required IT skills	3.61	1.09	-.142	-.853
Sufficient speed to do the work	3.62	1.10	-.196	-.923
Complete knowledge about their work	3.63	1.07	-.245	-.949
Patience to listen to the applicants	3.50	1.20	-.189	-.869
Willing to serve the applicants	3.59	1.07	-.190	-.889
Punctual and available at their seat	3.49	1.11	-.182	-.894
Honest at their work	3.59	1.05	-.150	-.910
Polite and friendly with the applicants	3.62	1.06	-.147	-.898
Comfortable to provide customized services	3.57	1.09	-.290	-.608
Choice to select date and time for application submission	3.54	1.08	-.258	-.645
Option of both manual and online form filling	3.42	1.15	-.243	-.718

	Mean	Std. Deviation	Skewness	Kurtosis
Option to upload the documents online	3.51	1.06	-.078	-.893
Option to select any service centre within the city	3.48	1.11	-.109	-.939
Choice to select between regular and fast service (e.g., Tatkal Passport)	3.58	1.11	-.243	-.916
Provision for continuous service in case of any technical fault	3.28	1.16	.066	-.844
Back up of employees in case of their absence	3.36	1.09	-.111	-.672
Mechanism to recover data in case of loss of data	3.42	1.12	-.090	-.911
Process to put application on hold in case of lack of documents	3.46	1.08	-.149	-.834
Availability of backup plan in case of any natural calamities	3.38	1.15	-.082	-.959

The results of descriptive statistics in terms of observed mean value reflect that most of the variables have significant contribution with respect to situation-actor-process. However, among all the variables, a few variables such as cleanliness at the service area and waiting area (3.70), drinking water for applicants (3.66), the proper sitting arrangement at the centre (3.65) and complete knowledge about work (3.63) have comparatively higher mean values. On the other hand, a few variables having comparatively lower mean values are provision for continuous service in case of any technical fault (3.28), back up of employees in case of their absence (3.36), availability of backup plan in case of any natural calamity (3.38) and closeness of service centre to the applicant's home (3.41). While analyzing the higher mean values of variables related to the situation, actor, and process, it has also been explored that most of the variables having comparatively higher mean values belong to micro variable 'Availability of basic Amenities'. This may be due to

the reason that most of the variables under micro variable ‘Availability of basic Amenities’ are measured for better facilities at public organizations. As these variables relate to basic requirements at the service centre, they have achieved comparatively high mean values.

Further, in terms of skewness results, it has been observed that most of the responses are negative which means that the majority of the responses are lying on the right-hand side of the options provided to beneficiaries. However, the overall results of skewness are between 0.32 and -0.32 which are within the threshold (skewness < ±3) (Hair et al., 2010). Results of kurtosis are also found to be within the criteria (kurtosis < ±10) (Hair et al., 2010).

5.4.2.3 Confirmatory Factor Analysis (CFA)

Further, Confirmatory Factor Analysis (CFA) is performed to measure the convergent and discriminant validity.

Convergent and Discriminant Validity

Results of convergent and discriminant validity tests are reflected in Table 5.10 and Figure 5.5. As per the results, no issues were identified with respect to the validity of the constructs as values obtained were found well within the defined ranges.

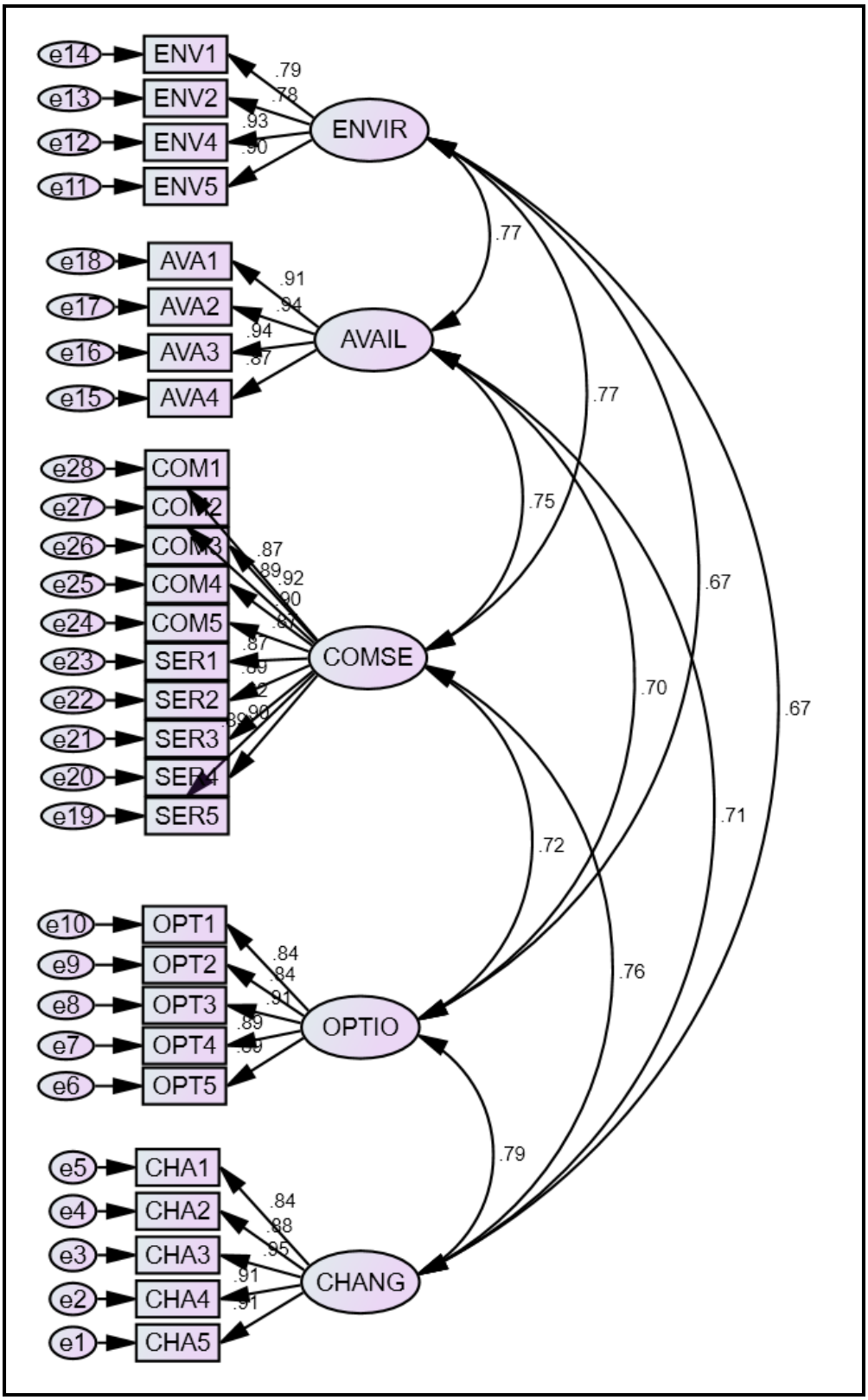

Figure 5.5: Discriminant Validity of Situation-Actor-Process related Constructs

Table 5.10: Discriminant Validity Test of Situation-Actor-Process related Constructs

	CR	AVE	MSV	AVAIL	CHANG	OPTIO	ENVIR	COMSE
Availability of Basic Amenities	0.936	0.843	0.585	**0.918**				
Change Mechanisms	0.935	0.810	0.630	0.708	**0.900**			
Availability of Options	0.922	0.766	0.630	0.702	0.794	**0.875**		
Environmental Factors	0.893	0.724	0.588	0.765	0.671	0.671	**0.851**	
Competency and Service Orientation	0.945	0.794	0.588	0.750	0.761	0.724	0.767	**0.891**

5.4.3 Data Analysis for Research Objective – 3

The third research objective is to explore the relationship between situation-actor-process related variables and public value in the study context and propose an empirically validated framework for improving the public value of citizen-centric e-governance projects. In this section, the analysis of data in order to meet the third research objective is presented.

5.4.3.1 Structural Model

Initially, a structural model constituting variables related to S-A-P and public value is constructed as shown in Figure 5.6. The model shown below consists of two layers of S-A-P related latent factors. The S-A-P related latent factors, viz. 'Environmental Factors' (ENVIR), 'Availability of Basic Amenities' (AVAIL), 'Competency and Service Orientation' (COMSE), 'Availability of Options' (OPTIO) and 'Change Mechanisms' (CHANG) reflect the first layer of the model. The second layer comprise latent factors, i.e. 'Improved Situation' (IST), 'Capability level of Actors' (CLA) and 'Flexible Process Workflow' (FPW). These factors are highlighted in pink colour in Figure 5.6.

Also, the model reflects three layers of public value latent factors. The public value latent factors, i.e. 'Quality of Information' (QUALI), 'System Functioning' (SYSTE), 'User Orientation' (USERO), 'Cost Savings' (COSTS), 'Efficiency' (EFFIC), 'Openness' (OPENN), 'Equity' (EQUIT), 'Trust' (TRUST) and 'Concern

for Environment' (CONCE) are in the first layer of the model. 'Quality Service Delivery' (QSD), 'Competence of Public Organizations' (CPO) and 'Achievement of Socially Required Outcomes' (ASRO) constitute the second layer of the model (highlighted in pink colour). The latent factor 'Public Value' (PV) is the third layer of the structural model.

A third order structural model is prepared in those cases where latent factors at first and second order are explained by the latent factor at the third level (Schumacker and Lomax, 2004). In the present study, S-A-P related latent factors have two orders and public value latent factors have three orders. The model shown in Figure 5.6 is prepared on the basis of reflective measurement theory (Hair et al., 2010). As per the theory, latent factors reflect indicator variables. Therefore, indicator variables are used to measure the latent factors. Thus, arrows are indicated from latent factors towards indicator variables.

In the model (Figure 5.6) first-order constructs are loaded by statements shown in rectangles. For example, items ENV1, ENV2, ENV4, and ENV5 are loaded on factor 'Environmental Factors' (ENVIR) and items AVA1 to AVA4 are loaded on factor 'Availability of Basic Amenities' (AVAIL). This way there are total twenty-eight items loading on five S-A-P related factors and thirty-five items loading on nine public value factors. In the structural model, an error is associated with each indicator variable. This error term reflects the degree to which variable does not describe the latent factor (Hair et al., 2010).

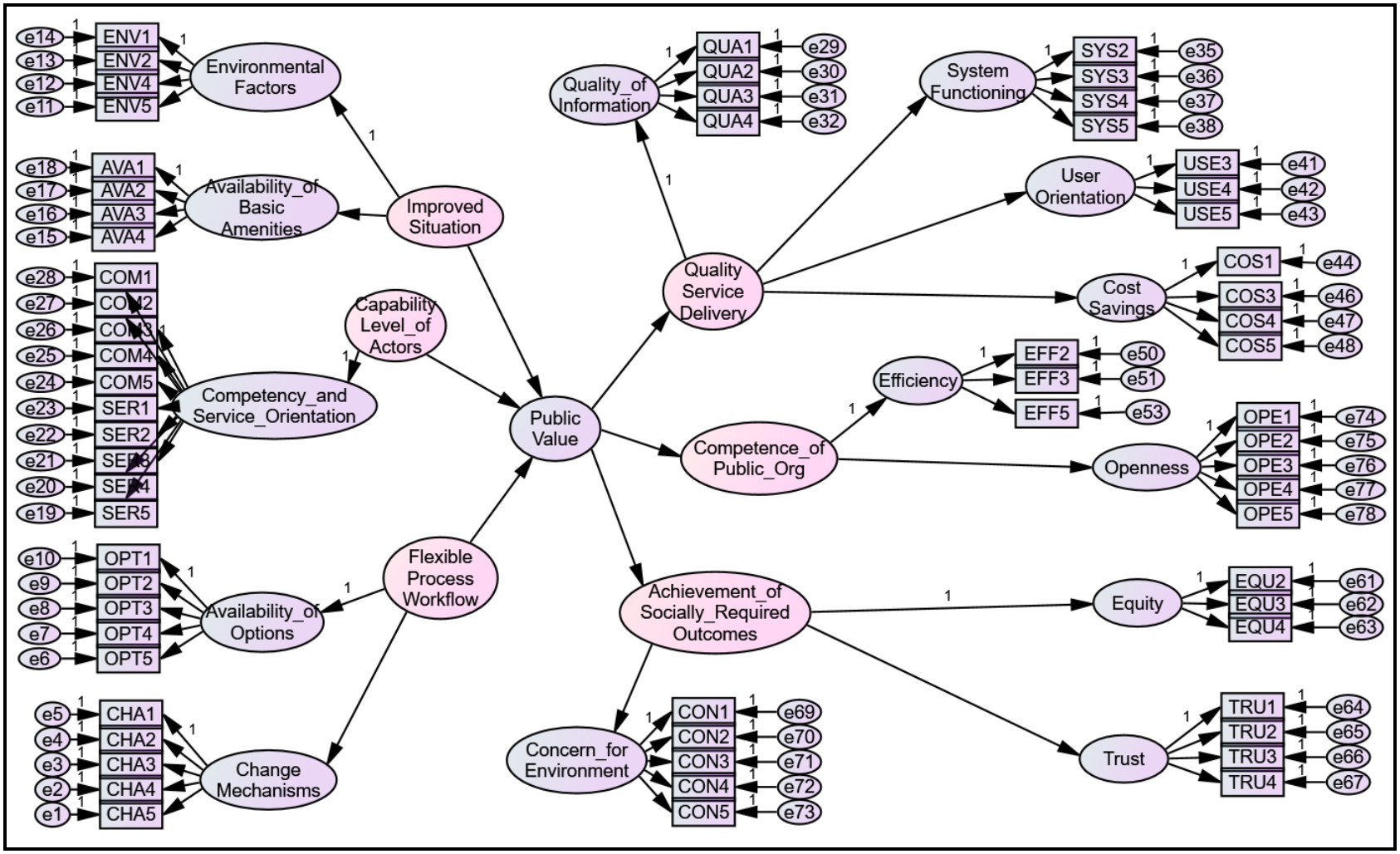

Figure 5.6: The Structural Model

5.4.3.2 Structural Model Validity

In order to validate the structural model, a few indices are analyzed. These indices are used to assess the fitment of sample data into the theoretical model.

Absolute fit indices that are used to assess the fitment of the model are mainly Chi-square (χ2), Root means square error of approximation (RMSEA) and root mean square residual (RMR). Chi-square (χ2) value is used to assess the magnitude of discrepancy among sample data and fitted covariance matrices (Hu and Bentler, 1999). Since the value of Chi-square (χ2) is affected by sample size; hence, it is not much credible as a fit index. However, the value of CMIN/DF is more reliable and accepted value of CMIN/DF is less than 3 (Kline, 1998). However, a few studies have also recommended that this value should be between two to five (Schumacker and Lomax, 2004). In the present study, we have considered CMIN/DF value should be less than 3. However, CMIN/DF value obtained from the initial structural model was 3.228 which is above the recommended value.

Root mean square error of approximation (RMSEA) and root mean square residual (RMR) are other fit indices which are also known as the badness of fit indices. As the name suggests, minimum the value of RMSEA and RMR better the fitment of the model. The recommended value of RMSEA and RMR are less than .08 (Browne and Cudeck, 1993). However, as a result of an initial measurement model, value of RMSEA was found to be .084 whereas RMR was .043.

On the other hand, some goodness of fit (GOF) indices are the comparative fit index (CFI) and incremental fit index (IFI). The value of GOF indices recommended are above 0.90 (Hair et al. 2010). A value above 0.95 is considered as evidence of good model fit and a value between 0.85 to 0.89 is considered to be evidence of mediocre fit (Hu and Bentler, 1999). In the present study, as per the initial results of the measurement model, the value of CFI was found as .855 and value of IFI was found to be .856. The values obtained as a result of the initial structural model are shown in Appendix IV (a).

The GOF values were obtained through AMOS to assess the validity of the model. The next step was to compare the values obtained through the model with the recommended values of GOF indicators. The analysis of GOF values reflects that the model does not meet the sufficient validity requirements. Therefore, the model was re-examined with the use of modification indices (MI) measure (Schumacker and Lomax, 2004; Hair et al., 2010).

Modification index can be conceptualized as a $\chi 2$ statistic with one degree of freedom (Byrne, 2010). During the assessment of a structural model, MI values reflect the amount the overall model's total $\chi 2$ value decrease when a single parameter is estimated freely (Hair et al., 2010). High MI values reflect that the model's fit can be improved by allowing corresponding path free (Hair et al., 2010). By identifying all items, MI values were obtained along with the suggested correlation between errors. Appendix IV (b) shows items whose errors reflected the correlation between them. Since the items were related to the same factor and there was no correlation found with the different construct, the errors were correlated with each other to improve the model fit.

Once the errors suggested by MI were correlated to each other, the structural model was assessed again to check its fitness. Correlation of errors suggested through MI reduces the value of the $\chi 2$ statistic and also the number of degree of freedom. This resulted in a lower value of CMIN/DF. Therefore, during the assessment of model second time, it was found that the values of CMIN/DF was reduced and was less than three which is as per the recommended value (Kline, 1998) for the fitment of the model. Also, goodness of fit (GOF) indices, i.e. comparative fit index (CFI) and incremental fit index (IFI) were also observed to be improved. Additionally, values of root mean square error of approximation (RMSEA) and root mean square residual (RMR) were decreased as a result of an improved model. The comparison of values obtained as per the initial and final structural model is shown in Appendix IV (c).

5.4.3.3 Structural Equation Modeling (SEM)

To test the research hypotheses as per the conceptual research framework shown in Figure 5.7, the next step is to perform structural model analysis:

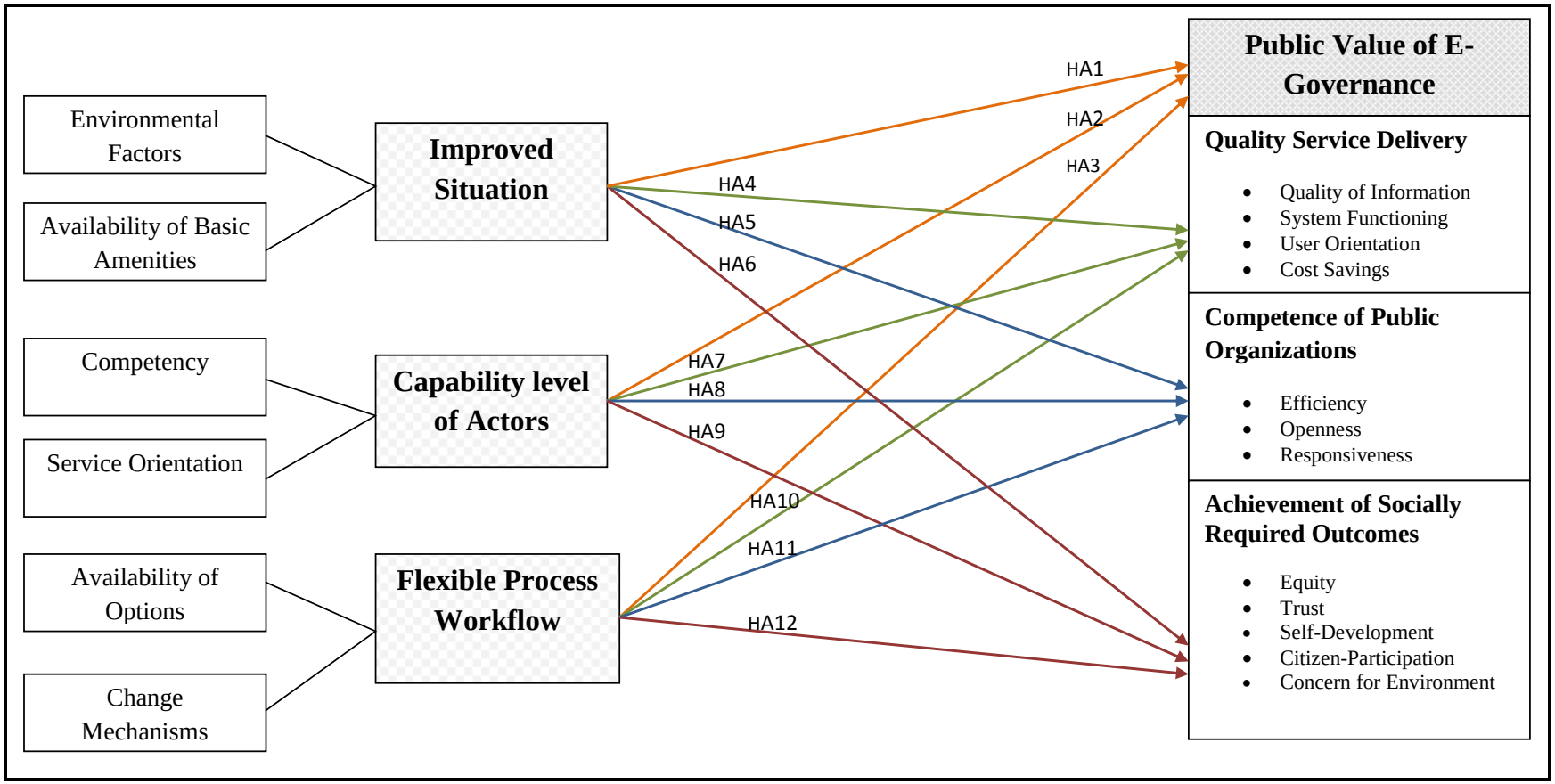

Figure 5.7: Conceptual Research Framework

An overview of all research hypotheses to be tested in the study context is presented below:

Table 5.11: Research Hypotheses

Hypothesis	Description
HA1	An improved situation of service centre influences the public value of citizen-centric e-governance projects.
HA2	Capability level of service centre actors influences the public value of citizen-centric e-governance projects.
HA3	Flexible process workflow at service centre influences the public value of citizen-centric e-governance projects.
HA4	An improved situation of service centre influences the quality service delivery of citizen-centric e-governance projects.
HA5	An improved situation of service centre influences the competence of public organizations of citizen-centric e-governance projects.
HA6	An improved situation of service centre influences the achievement of socially required outcomes of citizen-centric e-governance projects.
HA7	Capability level of service centre actors influences the quality service delivery of citizen-centric e-governance projects.
HA8	Capability level of service centre actors influences the competence of public organizations of citizen-centric e-governance projects.
HA9	Capability level of service centre actors influences the achievement of socially required outcomes of citizen-centric e-governance projects.
HA10	Flexible process workflow of service centre influences the quality service delivery of citizen-centric e-governance projects.
HA11	Flexible process workflow of service centre influences the competence of public organizations of citizen-centric e-governance projects.
HA12	Flexible process workflow of service centre influences the achievement of socially required outcomes of citizen-centric e-governance projects.

'Improved Situation' (IST), 'Capability level of Actors' (CLA) and 'Flexible Process Workflow' (FPW) are independent constructs with the path leading to 'Public Value' of e-governance projects, and its constituents, viz. 'Quality Service Delivery,' 'Competence of Public Organizations' and 'Achievement of Socially Required Outcomes.' The analysis has tested twelve hypotheses, and all the hypotheses are accepted.

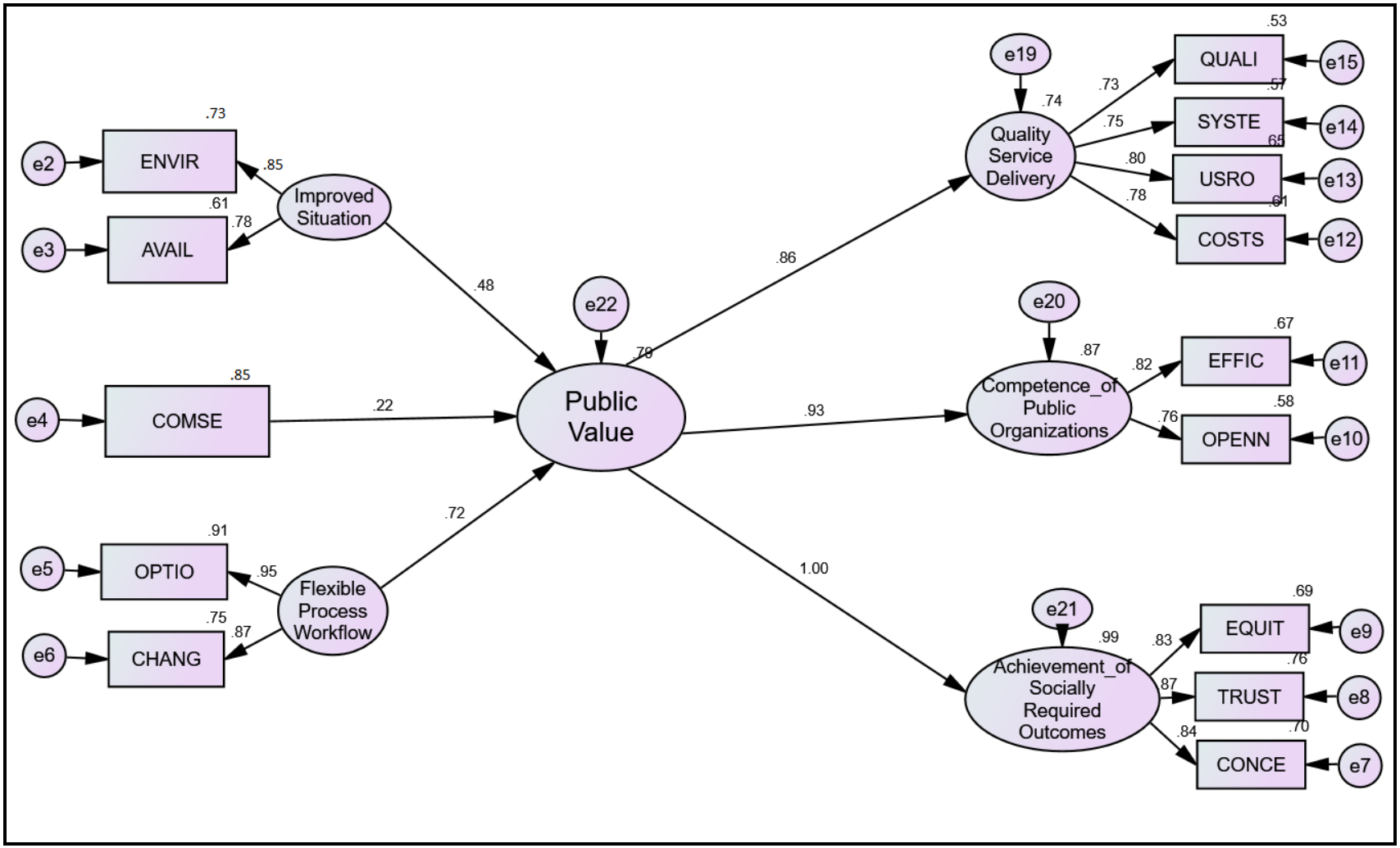

Figure 5.8: The Structural Model of Public Value

Figure 5.8 shows the influence of 'Improved Situation' (IST), 'Capability level of Actors' (CLA) and 'Flexible Process Workflow' (FPW) on 'Public Value' of e-governance projects.

Table 5.12 below reflects the structural results with respect to the HA1, HA2, and HA3. In the table, the critical ratio (CR) test statistic is the crucial measure. It is obtained by dividing the un-standardized regression weight (URW) by its standard error (SE). Value of CR above +1.96 and value of probability (P) less than 0.05 reflects the statistical significance at the level of 0.05 (Byrne, 2010). For example, CR value of regression coefficient PV ← IST is 9.711 which is more than +1.96 and P value is near to zero (P value close to zero is shown as ***). It reflects that this particular regression coefficient is significant and different from zero. As such, this path should be kept in the model (Byrne, 2010). Therefore, the alternate hypothesis, viz. HA1 is accepted. Same way HA2 and HA3 are also accepted.

Table 5.12: Structural Results – Part A

Hypothesis	**Relation**			**Estimate**	**S.E.**	**C.R.**	**P Value**	**Standardized Regression Weights**	**Remarks**
HA1	PV	<---	IST	0.254	0.027	9.545	***	0.48	Supported
HA2	PV	<---	CLA	0.130	0.020	6.367	***	0.22	Supported
HA3	PV	<---	FPW	0.441	0.035	12.547	***	**0.72**	Supported

Figure 5.9 showing influence of 'Improved Situation' (IST), 'Capability level of Actors' (CLA) and 'Flexible Process Workflow' (FPW) on 'Quality Service Delivery' (QSD), 'Competence of Public Organizations' (CPO) and 'Achievement of Socially Required Outcomes' (ASRO).

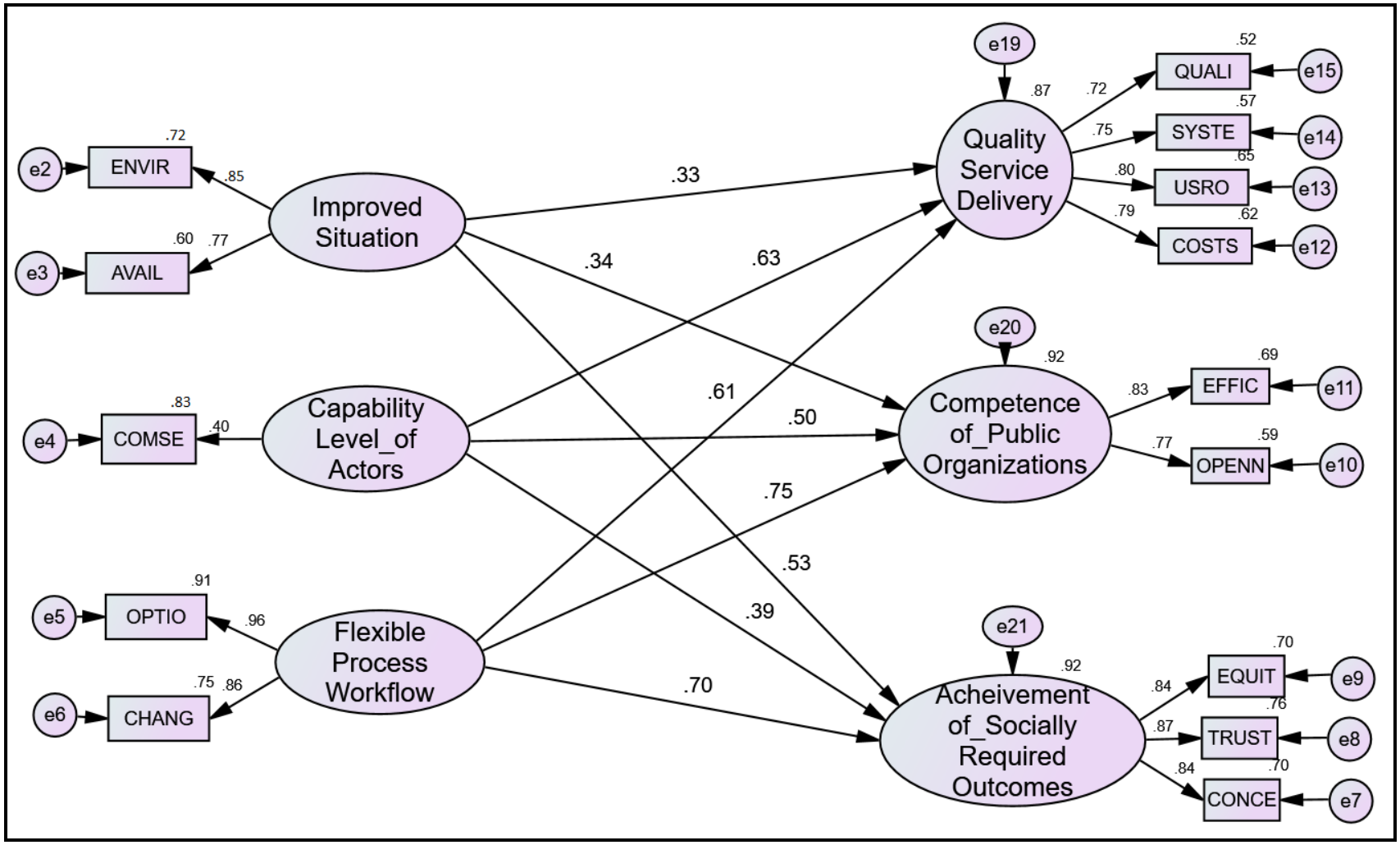

Figure 5.9: The Structural Model of Macro Variables

Table 5.13 below reflects the structural results with respect the HA4, HA5, HA6, HA7, HA8, HA9, HA10, HA11, and HA12 which are accepted.

The result of the research analysis reflects that 'Improved Situation' (IST), 'Capability level of Actors' (CLA) and 'Flexible Process Workflow' (FPW) have significant influence on 'Quality Service Delivery' (QSD), 'Competence of Public Organizations' (CPO) and 'Achievement of Socially Required Outcomes' (ASRO).

Table 5.13: Structural Results – Part B

Hypothesis	Macro variables of public value	Relation	S-A-P related variables	Estimate	S.E.	C.R.	P	Standardized Regression Weights	Remarks
HA4	QSD	<---	IST	0.202	0.030	6.665	***	0.33	Supported
HA5	CPO	<---	IST	.204	.028	7.328	***	0.34	Supported
HA6	ASRO	<---	IST	.321	.028	11.559	***	**0.53**	Supported
HA7	QSD	<---	CLA	1.101	.204	5.402	***	**0.63**	Supported
HA8	CPO	<---	CLA	.845	.160	5.288	***	**0.50**	Supported
HA9	ASRO	<---	CLA	.660	.128	5.153	***	0.39	Supported
HA10	QSD	<---	FPW	.439	.040	11.001	***	**0.61**	Supported
HA11	CPO	<---	FPW	.522	.036	14.295	***	**0.75**	Supported
HA12	ASRO	<---	FPW	.495	.031	15.813	***	**0.70**	Supported

5.5 Project wise Interpretation

After obtaining the results of research hypotheses reflecting that all S-A-P related variables have a significant influence on the public value of e-governance in the study context, the observed mean values of variables in respect of each project (Appendix V) are analyzed. The purpose of the project-wise analysis is to develop insights about the performance of all variables with respect to public value and S-A-P and draw interpretations in a direction to achieve improved public value.

5.5.1 Project wise Interpretation based on Univariate Analysis

An interpretation for each project by analyzing the observed mean values of variables related to public value and S-A-P is presented here for the purpose to suggest corrective actions in respective contexts for improving the public value of e-governance projects.

5.5.1.1 Interpretation for Passport Seva Project

The observed average of public value in the context of the passport seva project is found to be above the medium extent level, i.e. 3.62. Also, the observed mean value of S-A-P related variables is found to be more than the medium extent level, i.e. 3.75. It has also been identified that the mean value of the passport project is more than the mean value of all the other four projects. The reason behind the improved public value of the passport project compared to other projects could be the nature of the project. Passport project is a national level mission mode project which is operational under Public-Private-Partnership (PPP) mode. The project has clear objectives, implementation timelines and measurable results. Therefore, it is expected that compared to other projects, passport project is closely being monitored to perform within the prescribed timelines which results into a better public value of the project.

The highest observed mean value of any project in the study context could be five whereas maximum observed mean value of passport project is found to be 3.62 which indicate that there is still scope to improve the level of public value of passport project. Observed mean value of variables such as ‘Information is moved electronically across different levels’ and ‘Authorized access to personal information’ is found to be more than 3.90, i.e. 3.93 and 3.92 respectively. There are various variables that have observed mean values below the overall average public value of the project. However, it has been found that out of five constituents of the micro variable ‘Openness,' four are having observed mean values below 3.5. These are in terms of display of budget, expenses, tenders for better transparency, display of annual plans

and progress reports, display of organizational charts, roles and responsibilities of staff and display of contact lists of staff. It indicates that at the passport project, it is required to share project-related information with citizens to further increase the transparency and ensure high level of openness.

The observed mean values of variables in terms of S-A-P are also found to be above the medium extent and more than the overall public value of the project. This indicates that under passport project, due consideration has been given on micro variables related to S-A-P such as ‘Environmental Factors,' ‘Availability of Basic Amenities,' ‘Competency and Service Orientation,' ‘Availability of Options' and ‘Change Mechanisms'. It has been noticed that a few variables in terms of macro variable ‘Improved Situation' have the highest mean value compared to other variables. These few variables are air-conditioned environment at the service centre, cleanliness at service and waiting area, and drinking water for applicants having mean value, 3.88, 3.97 and 3.94 (close to very large extent) respectively. However, there are still some variables with an observed mean value below the overall average values of S-A-P related variables. These are provision for continuous service in case of any technical fault and non-availability of middlemen around the service centre. This reflects upon scope for further improvement particularly in terms of taking actions to eliminate role of intermediaries.

5.5.1.2 Interpretation for Driving Licence Project

The observed average of public value in the context of driving license project is found to be above the medium extent level, i.e. 3.50. Also, the observed mean value of S-A-P related variables is found to be more than the medium extent level, i.e. 3.48. The mean value of the public value of driving license project is found to be less than the public value of the passport project but more than the other three projects. It has also been identified that the mean value of the macro variable ‘Quality Service Delivery’ with respect to public value is above the mean values of the other two macro variables, viz.

‘Competence of Public Organizations' and ‘Achievement of Socially Required Outcomes.' Also, under the macro variable ‘Quality Service Delivery,' micro variables having mean value above the overall average value of public value are ‘System Functioning' and ‘User Orientation.' This reflects that in the case of driving license project, there are improved services in terms of getting the application processed without any technical error, downloading and searching ease, availability of frequently asked questions on the website, etc.

The observed mean value of the macro variable ‘Capability level of Actors' is found to be better than those of other two macro variables, viz. ‘Improved Situation' and ‘Flexible Process Workflow.' The overall mean value of micro variable ‘Competency and Service Orientation' is observed to be more than all other S-A-P related micro variables under driving license project. This indicates that compared to other variables, mean values of constituents of ‘Capability level of Actors’ such as required IT skills with actors, sufficient speed and complete knowledge of actors to do the work, the willingness of actors to serve the applicants, etc. are better in the case of driving license project. This has also been found that a few S-A-P related variables having lowest mean value compared to other variables are the closeness of service centre to the applicant’s home and provision of feedback mechanism at the centre. Mean values of all the variables under driving license project were found to be within the range of 3 to 4. This states that overall performance of all the variables is above the average, however, values below the mean value of 4 indicate that there is still scope to improve the performance of public value as well as variables related to S-A-P.

5.5.1.3 Interpretation for Marriage Certificate Project

The observed average of public value in the context of marriage certificate project (3.41) is found to be above the medium extent level. Also, the observed mean value of S-A-P related variables (3.49) is found to be more

than the medium level. The mean value of the public value of marriage certificate project is found to be less than the public value of passport and driving license project but more than the other two projects. It has also been identified that the mean value of the macro variable ‘Quality Service Delivery’ with respect to public value is above the mean values of the other two macro variables, viz. ‘Competence of Public Organizations' and ‘Achievement of Socially Required Outcomes.' Also, under the macro variable ‘Quality Service Delivery,' micro variables having mean value above the overall average value of public value are ‘Quality of Information' with an overall mean value of 3.94. This reflects that at marriage certificate project information delivery is accurate, up-to-date, relevant and comprehensive.

The performance of the macro variable ‘Capability level of Actors' is found to be better than other two macro variables with regards to S-A-P, viz. ‘Improved Situation' and ‘Flexible Process Workflow.' The overall mean value of micro variable ‘Competency and Service Orientation,' viz. 3.68 is observed to be more than all other S-A-P related micro variables under marriage certificate project. This indicates that compared to other variables, variables in terms of ‘Capability level of Actors’ such as effective communication skills of actors, required IT skills with actors, sufficient speed and complete knowledge of actors to do the work, patience to listen to the applicants, etc. are performing better under marriage certificate project. This has also been found that a few S-A-P related variables having lowest mean value compared to other variables are provisions for continuous service in case of any technical fault, the process to put the application on hold in case of lack of documents having mean value 3.13 and 3.08 respectively. This indicates that at marriage certificate project, it is required to enhance the flexibility of processes to ensure un-interrupted service delivery.

Mean values of all the variables under the marriage certificate project were found to be within the range of 2.5 to 4. This reflects that overall performance of all the

variables is above the average, however, values below the mean value of 4 indicate that there is still scope to improve the performance of public value as well as variables related to S-A-P.

5.5.1.4 Interpretation for Registration of Property Project

The observed average of public value in the context of registration of property project is found to be above the medium extent level, i.e. 3.00. Also, the observed mean value of S-A-P related variables (3.23) is found to be more than the medium level. The mean value of the public value of registration of property project is found to be less than the public value of passport, driving license and marriage certificate project but equal to the conversion of leasehold to freehold of property project. It has also been identified that the mean value of the macro variable 'Quality Service Delivery' with respect to public value is above the mean values of the other two macro variables, viz. 'Competence of Public Organizations' and 'Achievement of Socially Required Outcomes.' Also, under the macro variable 'Quality Service Delivery,' micro variables having mean value above the average value of public value are 'Quality of Information' with an overall mean value of 3.47. This reflects that at registration of property project information delivery is accurate, up-to-date, relevant and in detail.

The performance of the macro variable 'Improved Situation' is found to be better than other two macro variables with regards to S-A-P, viz. 'Capability level of Actors' and 'Flexible Process Workflow.' The overall mean value of micro variable 'Availability of Basic Amenities', viz. 3.54 is observed to be more than all other S-A-P related micro variables under registration of property project. This indicates that compared to other variables, aspects such as proper sitting arrangement at the centre, cleanliness at the service area and waiting area, availability of drinking water for applicants and availability of clean washrooms for male as well as female are better in the case of registration of property project. This has also been found that a few S-

A-P related variables having lowest mean value compared to other variables are provision for continuous service in case of any technical fault, provision of feedback mechanism at the centre having mean value 3.00 each.

Mean values of all the variables under registration of property project were found to be within the range of 2.42 to 3.60. This reflects that there is immense scope to improve the performance of public value as well as variables related to S-A-P.

5.5.1.5 Interpretation for Leasehold to Freehold of Property Project

The observed average of public value in the context of leasehold to freehold of property project is found to be above the medium extent level, i.e. 3.00. Also, the observed mean value of S-A-P related variables (3.12) is found to be more than the medium level. The mean value of the public value of leasehold to freehold of property project is found to be less than the public value of passport, driving license and marriage certificate project but equal to the registration of property project. It is also observed that the mean value of the macro variable ‘Achievement of Socially Required Outcomes’ with respect to public value is above the mean values of the other two macro variables, viz. ‘Quality Service Delivery’ and ‘Competence of Public Organizations.' Also, under the macro variable ‘Achievement of Socially Required Outcomes,' the micro variables ‘Trust’ and ‘System Functioning’ are having mean values above the overall average of public value. Further examination reflects that in the context of leasehold to freehold property project, constituting items in terms of downloading information, security of information provided to the public organization, authorized access to personal information and initiatives taken to discourage the role of intermediaries are performing better.

The performance of macro variable ‘Capability level of Actors' is found to be better than the other two macro variables with regards to S-A-P, viz. ‘Improved Situation' and ‘Flexible Process Workflow.' The overall mean value

of micro variable ‘Competency and Service Orientation' is observed to be more than all other S-A-P related micro variables. This indicates that compared to other variables, constituents of ‘Capability level of Actors’ such as effective communication skills of actors, required IT skills with actors, sufficient speed and complete knowledge of actors to do the work, patience to listen to the applicants, etc. are performing better in the case of leasehold to freehold property conversion project. It has also been found that a few S-A-P related constituting items having lowest mean value compared to others are option to select any service centre within the city and the process to put the application on hold in case of lack of documents. This indicates that in this project, it is required to enhance the flexibility of processes to ensure un-interrupted service delivery. Overall, the observed mean values reflect scope for further improvement in this project also.

5.6 Concluding Remarks

The chapter has presented validation of the conceptual research framework to analyze the influence of ‘Improved Situation,' ‘Capability level of Actors’ and ‘Flexible Process Workflow’ on the public value of e-governance projects. The proposed research hypotheses have been tested and found to be supporting the structural model of research. Further, a univariate analysis has been performed to develop insights about the performance of the study variables of each project in terms of public value and S-A-P. In the next chapter, the empirically validated research framework is presented and the research questions are re-visited.

Chapter 6

Case Study on Measures for Improving Public Value using Interpretive Ranking Process (IRP) Method*

6.1 Introduction

As per the results of hypotheses testing in the study context, it has been identified that variables in terms of 'Improved Situation,' 'Capability level of Actors' and 'Flexible Process Workflow' have a significant influence on 'Public Value' of e-governance projects. While comparing the results of standardized regression weights obtained for each hypothesis, it has been observed that standardized regression weight (0.72) is comparatively high with respect to HA3: 'Flexible process workflow at service centre influences the public value of citizen-centric e-governance projects.' This means that compared to the other two macro variables, viz. 'Improved Situation' and 'Capability level of Actors' with standardized regression weight 0.48 and 0.22 respectively, 'Flexible Process Workflow' has more influence on the public value of e-governance.

Also, micro level hypotheses testing results in the study context have indicated that macro variable 'Flexible Process Workflow' has comparatively more influence on micro variables of the public value of e-governance, viz. 'Quality Service Delivery,' 'Competence of Public Organizations' and 'Achievement of Socially Required Outcomes' with standardized regression weights as 0.61, 0.75 and 0.70 respectively. Hence, it is important for planners and implementers to ensure un-interrupted and flexible process workflow for smooth delivery of services to citizens.

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There may be various issues faced by public organizations while attempting to offer continuous services to citizens. These issues may be in terms of insufficient deployment of manpower involved in the service delivery process, lack of training programmes organized to develop skills and knowledge level of employees, improper planning to manage the process workflow in case of absenteeism of staff, etc. Therefore, it is required to analyze the process workflow of public organizations to understand the role performed by staff at each step to identify the issues in the overall service delivery process. Further, these issues can be brought into the notice of implementers for timely resolutions which may result in smooth delivery of services. For this purpose, an e-governance initiative of Delhi Development Authority (DDA) for 'conversion of immovable property from leasehold to freehold' has been studied in greater detail.

The key objectives of the case study are:

- To explore the association between conceptualized S–A–P related variables and public value in the context of e-governance
- To identify such dominant actors who may be playing a critical role in the aspired realization of the public value of an e-governance service

6.2 Methodology

To collect detailed information about the process of service delivery, three personal interviews were conducted from November 2016 to April 2017 with four senior officers at Delhi Development Authority. This was followed by a study of several projects related documents such as office circulars, user manuals, application forms, yearly reports and other relevant information available on the website (www.dda.org.in). Meetings with personnel at different departments, i.e. IT department, housing department and Nagrik Suvidha Kendra (NSK) (Citizen Facilitation Centre) were also held in April 2017 to get more insights about service delivery. This has helped in

developing understanding about the transformation of processes and improvement in service delivery at different stages since the implementation of the service. It also facilitated to understand the applicability of conceptualized situation, actors and process related variables in the study context before conducting the field survey. A list of activities performed by actors is prepared based on the knowledge gained during the visit to DDA as shown in Appendix VI (a). The list has further helped in understanding the number of activities performed by each actor during the process (Table 6.3).

A survey was conducted in April 2017 in Delhi city to collect responses from the beneficiaries. Citizens visiting Nagrik Suvidha Kendra for the execution of their conveyance deed were approached to fill-up the questionnaire based on a five-point Likert-type scale. However, due to limited time, responses could only be collected from a few applicants initially. Hence, it was felt appropriate to seek contact details of such applicants who could not respond due to a shortage of time to approach them later.

Based on the survey, univariate statistical analysis has been performed and presented in Table 6.2. Descriptive statistics have been used to draw interpretations. Further, by understanding developed about S-A-P related variables, L-A-P synthesis is performed (Table 6.4) explaining the processes, reasons for delay along with suggested measures to be taken for improving each process.

6.2.1 Interpretive Ranking Process (IRP) Method

Interpretive Ranking Process (IRP) method (Sushil, 2009b, 2017b) is used for decision making by ranking available choices on the basis of paired comparisons and their interpretations. The method has been implemented in different areas such as manufacturing (Haleem et al., 2012; Sharma et al., 2016), supply chain management (Ware et al., 2014; Mangla et al., 2015), etc.

Due to the paired comparisons, this method offers judgment convenience to the experts while deciding about the importance of one variable over another. This is unlike other multi-criteria decision making (MCDM) methods for example 'Analytical Hierarchy Process' (Saaty, 1980) where experts are required to rank *n* number of variables taken together. Due to which cognitive load on experts increases and they are also needed to devote more time. Hence, to handle large size problems consisting of many variables, an efficient IRP method (Sushil, 2017b) is used.

In the present study, IRP method has been used to rank different actors involved in the process of conversion of immovable property from leasehold to freehold. The purpose to rank actors on the basis of their dominance is to identify the actors who have comparatively more influence over the process. According to the process flowchart issued by the housing department, the total time taken to complete the process should be 45 days. However, as per the feedback received from citizens, the mean value of the variable, 'Delivery of service is fast' under the micro variable 'Efficiency' is found to be only 0.25. This means that actual service time is much more than the timelines defined by DDA. In this situation, it becomes imperative to analyze the crucial role performed by various employees and their influence on total process duration. Therefore, with the help of IRP method, it has been attempted to identify actors who have more control over the process. This means that their availability, speed and skill level have implications on the overall process time. Performance of such identified key actors can thus be closely monitored, and corrective actions can be taken in order to reduce the overall service time.

IRP methodology used in the present study is explained in brief as follows:

- In IRP, the first step is to recognize two groups of variables which include one group of those variables that are required to be ranked and another group of reference variables. This means that one group comprises the options to be ranked and another group consists of criteria on the basis of

which ranking is to be done (Sushil, 2009b). Therefore, in the study context, as we were required to rank different actors on the basis of their involvement in the overall process, ranking variables have been identified as actors (A1 to A8) and reference variables have been identified as processes (P1 to P8). In the present study, ranking variables and reference variables as shown in Table 6.1 have been derived from the flowchart defined by DDA to execute the service delivery process (Table 6.4).

- In the second step contextual relationship between ranking and reference variables is defined, and a cross-interaction binary matrix viewing their relationship is prepared. In the study context, cross interaction binary matrix is presented in Appendix VI (b).
- The third step is to convert the binary matrix into the interpretive matrix as presented in Appendix VI (c) This is done by interpreting '1' entries of the binary matrix based on the contextual relationship of ranking and reference variables.
- Further, experts are approached based on identified paired comparisons as per the interpretive matrix, and interpretive logics are listed based on their judgment for each paired comparison as shown in Appendix VI (d).
- It is then followed by preparing dominating interaction matrices of all actors with respect to each process. In the present study, the same has been shown in Appendix VI (e).
- Then an overall dominance matrix is prepared by adding all the dominance matrices for each process. In the present study, consolidate dominating matrix reflecting the ranking of actors with respect to all the processes is shown in Appendix VI (f).
- An actor with the highest dominance is given the first rank which reflects the importance of that actor in the whole process in terms of dependence on the actor. In the study context, actor A5, i.e. the dealing assistant is found to be dominating with rank 1. An efficient IRP method reduces the

dependence on interpretive comparisons by considering implicit and transitive dominance (Appendix VI (g)). An implicit dominance is a dominance of '1' over '0' in a cross-interaction binary matrix, and an implicit non-dominance is considered to be when both alternatives have '0' entries. As per an efficient IRP method, such cases are not presented to experts due to their implied nature. Also, in case of three alternatives having '1' entry each, experts are asked for two interpretations only as one interpretation is implied which is known as transitive dominance. During the study, we identified eleven interpretive dominance comparisons, for which three senior officials at DDA were approached in July 2017. Interpretation based on the application of IRP method in the study context is presented in Section 6.4.2.

6.3 Case Description

The Delhi Development Authority (DDA) was established as per the provisions of Delhi Development Act 1957 to encourage and protect the planned development of Delhi. Major functions performed by the DDA are acquisition and disposal of lands and properties, development of sports infrastructure and shopping places, launching housing schemes for residential flats and houses, allotment and payment management, conversion of leasehold immovable property into freehold, etc. Housing department is the main branch of the DDA which was started in the year 1968 mainly to construct and provide houses to the society as per the requirements. The project details have been presented in Chapter 4 (Section 4.8.6).

6.4 Situation – Actor – Process Analysis

In this section, it has been attempted to analyze the situation, key processes and associated actors of housing department of DDA to present a holistic view of the study context.

6.4.1 Situation

Housing activities were taken up by the DDA in the year 1968. For several years, the functioning of the housing department was characterized by manual processes and physical record maintenance. In the year 1992, the government decided to computerize the records of all allotments made by the DDA under various schemes. As per discussion held with the senior officers of DDA in April 2017, only 50-60 percent of the data could be computerized till 2016. The department is to complete the computerization of all manual records by 2018. Apart from the ongoing processes, a few other initiatives were also taken by the DDA towards computerization.

Although considerable efforts were put by introducing IT-based solutions, the housing department could not achieve the desired results. Citizens continued to face issues related to an un-friendly user interface and were required to visit the DDA office frequently. Hence, four Nagrik Suvidha Kendras (NSKs) were opened in June 2014 as part of the re-engineering of government processes to facilitate receipt of applications for conversion of property from leasehold to freehold.

6.4.2 Actors and Process Interfaces

An actor – process matrix, based on the study of steps involved in the conversion of immovable property from leasehold to freehold, is presented in Appendix VI (a). As shown in Appendix VI (a), a minimum of 18 steps are required to be performed by actors. It depicts a detailed explanation of every step required during the process. However, as per the process workflow defined by the housing department, a total of eight steps are involved which are performed by mainly eight actors. As this flowchart (Table 6.4) is defined by DDA to monitor the days taken at each step, it has been used for the purpose of IRP analysis. Table 6.1 shows the list of actors (ranking variables) and processes (reference variables) for further interpretations.

Table 6.1: Ranking and Reference Variables

Ranking Variables - Actors
A1 - Central Diarist
A2 - Record room In-charge
A3 - Applicant
A4 - Accounts Officer of Accounts Branch
A5 - Dealing Assistant
A6 - Assistant Director
A7 - Deputy Director
A8 - Director
Reference Variables - Processes
P1 - Receipt of conversion applications
P2 - Transfer of conversion applications from centralized post
P3 - Demand of files from record room and its receipt from the record room
P4 - Preliminary examination of documents and issuance of deficiency letter
P5 - Receipt of reply along with documents from the applicant
P6 - Checking of documents and processing of file for in principal approval and reference to Accounts Department
P7 - Payment verification and No Objection Certificate (NOC) from the Accounts Department
P8 - Receipt of file from Accounts Department and processing for approval of conversion application

On the basis of ranking and reference variables, cross interaction binary and interpretive matrices are prepared (Appendix VI (b and c)) followed by interpretive logic of paired comparisons (Appendix VI (d)) and dominance matrices (Appendix VI (e and f)). In all, there are 117 dominances as shown in Appendix VI (f). As per the IRP analysis, Dealing Assistant is found at highest rank with 20 net dominances followed by Assistant Director and Applicant with eight and three net dominances respectively. Hence, it would be appropriate to state that Dealing Assistants are playing the most critical role in the process of conversion of immovable property from leasehold to freehold. This needs to be

kept in view while taking corrective measures to make the processes more flexible and effective for improved public value.

Further, to validate the results obtained through the IRP method, count of activities performed by each actor (Table 6.3) are compared with dominance matrix (Appendix VI (f)). Table 6.3 has been prepared on the basis of understanding of processes and involvement of actors during visits conducted to DDA (Appendix VI (a)). It shows that the highest number of activities is performed by Dealing Assistant, i.e. eight. However, it reflects that the Applicant is in the second position with seven activities followed by Assistant Director with six activities which are different from results received through IRP. Therefore, discussions were held with senior officers at DDA in July 2018 to understand the difference between the level of dominance of an applicant and an assistant director. During the discussion, it was informed that as per a recent development, visits performed by applicants had been reduced by executing activities fifteen to seventeen (Appendix VI (a)) on the same day. It means that now total visits required by an applicant have reduced from seven to five. Therefore, levels of the dominance of the top three actors obtained through IRP was found to be similar to the observation made at DDA along with feedback received from experts.

6.5 Analysis and Discussion

A univariate statistical analysis presented in Table 6.2 shows the values of the range, the mean and standard deviation of public value and variables related to S-A-P in the study context. Also, a list comprising macro and micro study variables with their observed mean values is presented in Appendix VI (i). The noticeable gap between minimum and maximum observed mean values of variables related to S-A-P may be due to the complete or partial involvement of the applicants in the process. In a few cases, applicants take help of private agents to save their time due to which they do not get completely involved with the process, and thus they do not experience S-A-P related variables.

However, applicants performing the tasks at their own get fully involved and experience all the S-A-P related variables.

The small value of standard deviation linked with all the study variables indicates the closeness of the data to the observed mean values. The overall observed mean values of both S-A-P related variables and public value are below the average value which reflects the likely positive relationship between them. Detailed interpretation of observed mean values of variables related to S-A-P and public value is explained below:

Table 6.2: Univariate Statistical Analysis

Univariate statistical analysis of conversion of immovable property from leasehold to freehold scheme						
Variable	**N**	**Range**	**Minimum**	**Maximum**	**Mean**	**Std. Deviation**
Public value	**44**	**0.36**	**0.31**	**0.67**	**0.48**	**0.09**
Quality Service Delivery	44	0.42	0.29	0.71	0.52	0.1
Competence of Public Organizations	44	0.64	0.17	0.81	0.47	0.15
Achievement of Socially Required Outcomes	44	0.46	0.25	0.71	0.44	0.1
S-A-P related variables	**44**	**0.38**	**0.24**	**0.62**	**0.45**	**0.08**
Improved Situation	44	0.7	0.2	0.9	0.5	0.14
Capability level of Actors	44	0.46	0.33	0.79	0.53	0.1
Flexible Process Workflow	44	0.5	0.1	0.6	0.32	0.14

(0 - 0.2: Nil, 0.2 - 0.4: to a small extent, 0.4 – 0.6: to a medium extent, 0.6 – 0.8: to a large extent, 0.8 – 1.0: to a very large extent)

6.5.1 Interpretation of Linkage between Public Value and S-A-P related Variables

The overall observed mean value of S-A-P related variables (0.45) is found to be in medium extent range. The macro variable ‘Flexible Process Workflow’ has the lowest mean value which is due to the lesser mean values of the

constituting variables ‘Provision to avail service without visiting service centre’ and ‘Option of both manual and online application’.

It has also been found that the mean value of variable ‘Provision to avail service without visiting the service centre’ is lowest compared within the other constituting variables. This is expected to be so due to the requirement of multiple visits by applicants to avail the service. As per the Appendix VI (a), an applicant is required to visit the service centre seven times for the execution of the conveyance deed. Table 6.3 below shows the count of activities required to be performed by all the actors involved in an ordinary process for the conversion of immovable property from leasehold to freehold.

Table 6.3: Count of Activities Performed by Actors

Name of Actors	Central Diarist	Record room In-charge	Applicant	Accounts Officer	Dealing Assistant	Assistant Director	NSK Staff	Bank Employees	Computer Department	Witnesses	Sub Registrar
Count of activities per Actor	2	1	7	5	8	6	3	2	1	2	3

Other variables characterized with the lowest mean value associated with their respective macro variables are ‘Fast execution of work’ and ‘Provision of feedback mechanism.' However, variable ‘Proper sitting arrangements’ is observed to be having the highest mean value among all the variables constituting the macro variable ‘Improved Situation.' It has also been observed during analysis that employees at the public organization in the study context have satisfactory knowledge about service delivery.

The mean value of the public value is also found to be in medium extent range. Among the constituting macro variables, ‘Achievement of socially required outcomes’ has the lowest mean value which may be due to the low level of citizens’ participation in policy formulation and decision making, non

sharing of regular updates on policies and procedures, absence of taking suggestions from citizens and lesser emphasis given on conducting awareness and training programmes for enhancing knowledge of citizens. Also, a lower mean value of the variable, viz. 'Lesser visits required to avail service' is due to the requirement of multiple visits by the applicant as shown above in Table 6.3. The observed mean value of the variable 'Delivery of service is fast' under the micro variable 'Efficiency' is found to be in small extent range. It may be due to the delay in service delivery as compared to the officially specified time limits. The causes of such delays and suggested measures in this respect are also explained through a synthesis of learning on the basis of S-A-P analysis.

The relatively high mean value of 'Quality service delivery' is expected due to the quality of information provided and low system interruption faced by applicants during the process. It may also be kept in view that the reason for less number of system glitches faced could be due to the preference for manual execution of most of the tasks at the service centre. The lowest mean value of the micro variable 'Cost savings' among all micro variables may be due to the more number of visits required by applicants to avail services. This is expected to be so because of lesser flexibility of the process resulting in the requirement of multiple visits by the applicant at the public organization. Studies have found that it has become crucial for organizations to incorporate flexibility in strategic processes for better performance (Sharma and Jain, 2010; Bishwas, 2015; Haldar et al., 2016). A flexible process workflow enables public organizations to fulfill the requirement of customers without conducting multiple visits (Kumar et al., 2018a).

The case study in the e-governance context suggests that it is expected that variables based on situation, actors, and processes may be influencing the public value of public organizations. Hence, the conceptual research

framework is proposed for further testing by conducting a comprehensive study of a few important citizen-centric e-governance projects.

6. 6 L-A-P Synthesis

Based on the study of Situation-Actors-Processes (S-A-P), Learning-Actions-Performance (L-A-P) synthesis is performed and is presented in Table 6.4. For this purpose, a process chart issued by the DDA has been used which was prepared to define average time required at each stage to complete the process. As per this chart, directions were given to the housing department to complete the process of leasehold to freehold of property within 45 days from the filing of an application. However, as per the result of the survey, observed mean value of the corresponding variable, viz. 'Delivery of service is fast' is only 0.25. It reflects that applicants, in general, are not able to get the services within specified time limits. Hence, it is crucial to synthesize learning based on S-A-P analysis which may be acted upon for improving the public value.

Table 6.4: Learning-Actions-Performance (L-A-P) Synthesis

Sr. No.	Process	Branch/ Officer	Average Time	Process Description	Reasons for Delay	Measures to be taken
1	Receipt of conversion applications	Central Diary	-	The moment the applicant submits the request at NSK, it gets reflected in the internal portal of DDA.	This process is automated and requires no manual intervention for execution. Hence, the delay is not applicable here.	A close watch should be kept on a number of requests received on a daily basis for a timely transfer of applications to different branches.
2	Transmission of conversion applications from central post	Concerned Branch	2 days	A person from the concerned branch collects physical applications from the central diary and transfers applications	The designated person for this task is also responsible for retrieval of physical files from the record room which is a time taking	As this activity does not consume much time, it should be completed every day. By transferring files to the concerned branch, actual

Sr. No.	Process	Branch/ Officer	Average Time	Process Description	Reasons for Delay	Measures to be taken
				from the common pool to the concerned branch through an internal portal.	activity. In his absence, another person does the retrieval. Hence, the transfer gets delayed.	pendency can also be known, and plan can be prepared for further action.
3	The requirement of files from the record room and its receipt	Concerned Record room In-charge	3 days	After receiving of application, it is required to retrieve the main physical file from the record room.	Record of main files is still not fully computerized. Hence, a large number of physical files are stored in the record room at DDA central office. It requires a lot of efforts and time to retrieve physical files from the record room.	All the records should be computerized for easy access and quick action to improve service delivery.
4	Initial examination of documentation and issuance of deficit letter	Concerned Branch	5 Days	In this process, documents submitted by the applicant along with application and requirement of documents as per the main file are matched. In case of an additional requirement, a deficiency letter is sent to the applicant.	As there is no computerized record of old files, every case requires repetitive efforts and time.	Record of physical files should be maintained electronically along with the requirement to convert the property from leasehold to freehold. It would help to match the documents submitted by the applicant and raise notice for any further requirement in lesser time.
5	Receipt of reply along with		7 Days	Once a deficiency letter is issued,	Sometimes documents are submitted late by	Communication should be sent to the applicants

Sr. No.	Process	Branch/ Officer	Average Time	Process Description	Reasons for Delay	Measures to be taken
	documents from the applicant			the applicant is asked to submit the required documents within a specified time.	the applicant. This may be due to the slowness of postal communication or lack of understanding about the required documents.	electronically to avoid delay. SMS service can also be used to receive a quick response from applicants.
6	Verification of documents and processing of file for principal approval and referred to Accounts Department		7 Days	After receiving all required documents, files are shared with the accounts department for further processing.	Once the documents are received, the same are attached with the main file, and the complete fil is shared with the accounts section. In few cases, actual requirement is overlooked, and a new requirement may have to be raised from the applicant which causes a delay in the process.	Regular training programmes should be conducted on documentations and employees should be updated on the latest circulars issued by the government. This would help in bringing uniformity and avoiding duplication of work.
7	Payment verification and No Objection Certificate (NOC) from the Accounts Department	Concerned Accounts Officer of Accounts Branch	12 Days	NOC is issued by accounts department after verifying the receipt of payment made by the applicant.	Payments made by the applicant with the application and actual dues calculated by the accounts department are compared, and in case of deficiency, the applicant is asked to pay the difference. Also, an amount of more than rupees five thousand is cross-verified with the computer department to get confirmation of	Dues calculated by applicant online or at NSK should be the same as an actual requirement. However, in case of any additional requirement, the applicant should be given an option to make the payment electronically which would be useful for verification purpose also.

Sr. No.	Process	Branch/ Officer	Average Time	Process Description	Reasons for Delay	Measures to be taken
					the payment.	
8	Receipt of file from Accounts Department and processing for approval of conversion application	Dealing Assistant	3 Days	After receiving of NOC from the accounts department, the file is processed for further approvals.	Delay may be due to the rechecking of complete file before forwarding the same for further approvals.	To save time and efforts, a checklist should be attached in each physical file for an easy reference.
	do	Assistant Director	2 days	Approval of Assistant Director	It may be due to the requirement of physical documents verification at each level.	Approval through electronic mode along with automatic access to previous comments should be enabled for reducing process time.
	do	Deputy Director	2 days	Approval of Deputy Director	Same as above	Same as above
	do	Director	2 days	Approval of Director	Same as above	Same as above
		Total	**45 Days**			

6.7 Learning from Case Study

Findings of the case study reinforce the existence of a likely relationship between S-A-P related variables and public value. Observed mean values of both public value and S-A-P related variables in the study context were found to be below 0.50 which reflect that a public organization which lacks in terms of improved situation, efficient actors and flexible process flow as conceptualized in the study context may be characterized with lesser public

value. The observed mean value of a few public value variables, viz. ‘Lesser visits required to avail service’ (Osman et al., 2014) and ‘Delivery of service is fast’ (Dash and Sangita, 2011; Suri, 2014) were found to be low due to the requirement of multiple visits by applicant and delay in service delivery. Reasons for lower mean values of both the variables have been further analyzed and shown in Tables 6.3 and 6.4. Lesser observed mean values of a few S-A-P related variables, viz. ‘Fast execution of work’ (Cavana et al., 2007; Suri and Sushil, 2011; Suri, 2014) and ‘Provision to avail service without visiting service centre’ (Lovelock, 1983; Brown et al., 1993; Satapathy, 2014) also indicate the delay in services and requirement of repetitive visits by applicants.

While exploring deeper into the process flow of ‘conversion of immovable property from leasehold to freehold’ public service, it has been found that total duration of the complete process officially stated by DDA is 45 days. However, the lower observed mean value of respective conceptualized variables indicates the overall delay in the process. In order to identify actors performing crucial roles during the process, an Interpretive Ranking Process (IRP) (Sushil, 2017b) has been used which helped to identify three dominating actors, viz. Dealing Assistant, Assistant Director, and Applicant which may play a critical role in reducing the overall duration of service completion. It is expected to be so due to the highest level of involvement of these three actors at various steps in the overall process of conversion of immovable property from leasehold to freehold.

6.8 Concluding Remarks

The pilot study presented in this chapter is attempted to provide suggestions to planners and implementers for achieving improved public value through flexible process workflow. As ‘Flexible Process Workflow’ has been identified relatively more significant influencing factor compared to other factors, viz. ‘Improved Situation’ and ‘Capability level of Actors’. It was felt appropriate to analyze the key variables for ensuring smooth service delivery at public

organizations. As a result of the pilot study conducted at Delhi Development Authority using Interpretive Ranking Process Method, three key actors, viz. Dealing Assistant, Assistant Director, and Applicant have been identified which may be playing a crucial role in reducing the overall service delivery time. The next chapter presents an empirically validated framework of public value of e-governance based on detailed survey. A few recommendations based on learning-action-performance synthesis are also brought in the next chapter.

Chapter 7

Empirically Validated Framework

7.1 Introduction

The objective of this chapter is to synthesize the results of a quantitative analysis conducted in Chapter 5 and present the empirically validated framework of the public value of e-governance projects. The outcome of the analysis of survey data is presented to confirm the fulfilment of research objectives. Factors with respect to public value and situation-actor-process are brought together to present the empirically validated framework. Also, results of hypotheses tests are discussed along with a few recommendations on the basis of learning-action-performance (L-A-P) synthesis to improve the public value of organizations in the study context.

7.2 Key Variables to Analyze Public Value

This section presents all the critical variables revealed from the data analysis related to public value of public organizations as per the study context. Table 7.1 below reflects the list of variables identified with respect to public value of public organizations.

As reflected in Table 7.1 ‘Quality of Information’, ‘System Functioning’, ‘User Orientation’, ‘Cost Savings’, ‘Efficiency’, ‘Openness’, ‘Equity’, ‘Trust’ and ‘Concern for Environment’ are the key micro variables to analyze the public value of citizen-centric e-governance projects.

Table 7.1: List of Variables to Analyze Public Value of E-Governance

Public value of e-governance			
Macro Variables	**Micro Variables**	**Codes**	**Statements**
Quality Service Delivery (QSD)	Quality of Information (QUALI)	QUA1	Information delivery is accurate
		QUA2	Information delivery is up-to-date
		QUA3	Information given is relevant
		QUA4	Information given is in detail
	System Functioning (SYSTE)	SYS2	Making online payment without any technical error
		SYS3	Getting the application processed without any technical error
		SYS4	Downloading information (e.g., reports, forms, circulars) is easy
		SYS5	Searching information (e.g., process to apply, required documents, delivery time) is easy
	User Orientation (USERO)	USE3	Simple website address for easy remembrance
		USE4	User-friendly website for easy access
		USE5	Frequently asked questions (FAQs) to remove any doubt
	Cost Savings (COSTS)	COS1	Lesser visits are required to avail service
		COS3	Lesser efforts are required to avail service
		COS4	No charges are paid to Intermediaries/Middlemen to avail service
		COS5	Lesser cost involved in the preparation of documents
Competence of Public Organizations (CPO)	Efficiency (EFFIC)	EFF2	Service counters are IT-enabled for better performance (e.g., computers at counters)
		EFF3	There is use of improved IT infrastructure (e.g., new computer applications, updated software, etc.)
		EFF5	Information is moved electronically across different levels (e.g., online approvals)
	Openness (OPENN)	OPE1	Display of public policy drafts, agreements, laws, and regulations
		OPE2	Display of budget, expenses, and tenders for better

Public value of e-governance			
Macro Variables	**Micro Variables**	**Codes**	**Statements**
			transparency
		OPE3	Display of annual plans and progress reports
		OPE4	Display of organizational charts, roles, and responsibilities of staff
		OPE5	Display of contact lists of staff
Achievement of Socially Required Outcomes (ASRO)	Equity (EQUIT)	EQU2	Website comply with special features for people with special needs (e.g., visual problem)
		EQU3	Same treatment is given to all applicants other than people with special needs
		EQU4	Service provision is on the basis of First in First out method (FIFO)
	Trust (TRUST)	TRU1	Information provided to public organization is secure
		TRU2	There is only authorized access to personal information
		TRU3	Initiatives are taken to discourage the role of middleman
		TRU4	Service is delivered within the time defined by public organization
	Concern for Environment (CONCE)	CON1	There is a reduction in paper printing
		CON2	There is saving of energy (e.g., electricity, manpower)
		CON3	There is a policy on green information technology
		CON4	There is a process of recycling of resources (e.g., papers)
		CON5	There is use of energy efficient equipments

Figure 7.1 reflects the key variables identified to analyze the public value of e-governance projects in the study context.

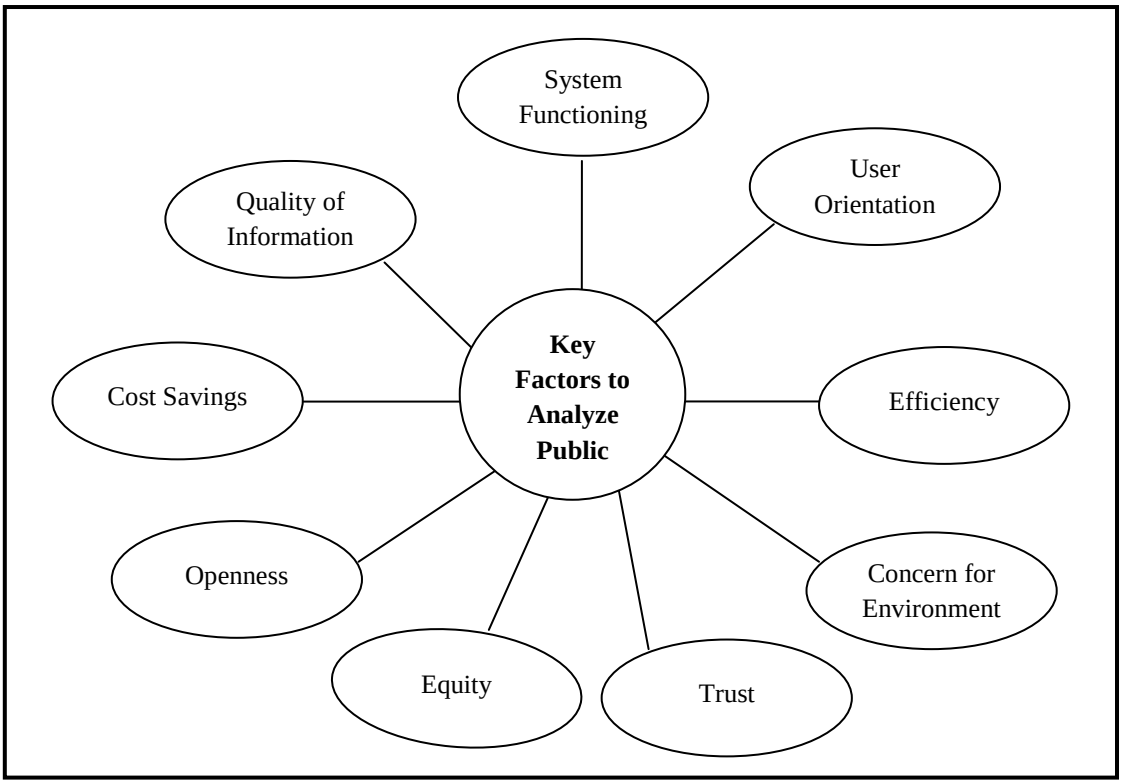

Figure 7.1: Key Variables to Analyze Public Value of E-Governance in India

Providing quality information is crucial while evaluating the public value of e-governance. Information that is accurate in all aspects, up-to-date, relevant and provided in detail is useful for citizens (Yusoff et al., 2008; Harrison et al., 2011; Suri and Sushil, 2011; Bhattacharya et al., 2012; Papadomichelaki and Mentzas, 2012; Karunasena, 2012; Osman et al., 2014; Jeon and Jeong, 2017). Quality of information also assists citizens in saving of time and money. They do not have to depend on other sources to gather information about public services. Also, online mode of information reduces physical visits of citizens to public organizations which results in savings of efforts.

The smooth functioning of the system facilitates citizens to get their application processed easily. Enabling citizens to make an online payment and getting the processing of application without any technical error gives them satisfaction about service delivery (Madu and Madu, 2002; Wolfinbarger and Gilly, 2003; Satapathy, 2014; Osman et al., 2014). Also, facilitating citizens to search and download the information easily provides convenience to them (Deity 2008; Bhattacharya et al., 2012; Papadomichelaki and

Mentzas, 2012). Therefore, fast and error-free system functioning contributes to the measurement of public value.

Orientation towards users is necessary for assessing the public value of e-governance. It is about providing facilities from the perspective of users to make them feel comfortable. Such as keeping the website address simple so that is easy to remember by citizens, developing user friendly website for easy use of citizens and adding frequently asked questions (FAQs) (Bhattacharya et al., 2012; Papadomichelaki and Mentzas, 2012; Karunasena, 2012; Lindgren and Jansson, 2013; Osman et al., 2014; Satapathy, 2014; Jeon and Jeong, 2017). The focus of public organizations towards users ensures easy accessibility for citizens to get the application processed. It is thus, appropriately revealed as an important factor to analyze public value.

Saving of cost is important to analyze the public value of e-governance. It consists of savings of time, money and efforts of citizens while availing services from a public organization. Savings of time and efforts are in terms of a lesser number of visits made by applicants to the public organization. Savings of money is with regards to lesser cost occurred in the preparation of documents and no amount paid to the intermediaries to avail services (Kearns, 2004; Deity 2008; Belwal and Zoubi, 2008; Bidyarthi and Srivastava, 2011; Osman et al., 2014).

With the use of ICTs, the citizens expect public organizations to perform more efficiently. As they become aware of the usefulness of ICTs, they demand better service delivery from public organizations. Efficiency in terms of IT equipped service counters, better and updated IT infrastructure and movement of information at public organizations in an electronic way is measured to analyze performance of e-governance (Dash and Sangita, 2011; Suri and Sushil, 2011; Papadomichelaki and Mentzas, 2012; Karunasena, 2012; Chatzoglou et al., 2013; Al-Borie and Damanhouri, 2013; Suri, 2014; Osman et al., 2014; Vela et al., 2015).

Information that could be useful for citizens should be willingly disclosed by public organizations. Such information not only informs citizens about the activities of

public organizations but also make it easy for them to take any decision before availing services from the public organization. Disclosure of information with respect to policy, drafts, laws, budget, annual plans and roles and responsibility of staff plays important role in analyzing public value of e-governance (Harrison et al., 2011; Papadomichelaki and Mentzas, 2012; Karunasena, 2012; Al-Borie and Damanhouri, 2013; Osman et al., 2014).

Equity is a key factor to analyze the public value of e-governance. This includes website with special features to help people with a special need such as a visual problem. Also, equal treatment given to all the applicants at public organization and management of queue on the basis of First in First out (FIFO) method (Muylle et al., 1999; Agus et al., 2007; Deity, 2008; Dash and Sangita, 2011; Karunasena, 2012; Lindgren and Jansson, 2013; Osman et al., 2014). Citizens value the concept of equity applied by public organizations, and hence, it is considered as an essential factor contributing to the public value of e-governance.

Findings from the study suggest that trust is an important factor to analyze the public value of e-governance. With the use of ICTs, it has become possible for public organizations to bring transparency about their functioning among citizens. By ensuring security of the information provided by citizens to public organizations, provision of only limited access of citizen's personal information, delivery of services as per defined timelines, and steps taken to discourage the role of intermediaries, public organizations are progressively becoming capable of building trust in the mind of citizens (Papadomichelaki and Mentzas, 2012; Karunasena, 2012; Al-Borie and Damanhouri, 2013; Chatzoglou et al., 2013; Kalsi and Kiran, 2013; Osman et al., 2014; Satapathy, 2014).

Public organizations having concerns for the environment are also generally successful in exhibiting the public value of e-governance. It is reflected in saving of papers, energy, ensuring effective use of technical equipments, recycling of resources and formulation of policies towards saving of environment (Kearns 2004; Suri and Sushil, 2011; Karunasena, 2012; Zhang et al., 2014; Suri, 2014). As citizens are getting more aware of the safety of

the environment, this aspect is considered important in the perceived public value of e-governance.

7.3 Key Variables related to Situation-Actor-Process

This section presents all the critical variables revealed from the data analysis related to situation-actor-process of public organizations as per the study context. Table 7.2 below reflects the list of variables identified with respect to situation-actor-process of public organizations.

Table 7.2: List of Situation-Actor-Process related Variables

Situation-Actor-Process Related Variables			
Improved Situation (IST)	Environmental Factors (ENVIR)	ENV1	Closeness of service centre to the applicant's home
		ENV2	Non-availability of middlemen around the service centre
		ENV4	Air conditioned environment at the service centre
		ENV5	Provision of feedback mechanism at the centre
	Availability of Basic Amenities (AVAIL)	AVA1	Proper sitting arrangement at the centre
		AVA2	Cleanliness at service area and waiting area
		AVA3	Drinking water for applicants
		AVA4	Clean washrooms for male as well as female
Capability level of Actors (CLA)	Competency and Service Orientation (COMSE)	COM1	Effective communication skills
		COM2	Required IT skills
		COM3	Sufficient speed to do the work
		COM4	Complete knowledge about their work
		COM5	Patience to listen to the applicants
		SER1	Willing to serve the applicants
		SER2	Punctual and available at their seat
		SER3	Honest at their work
		SER4	Polite and friendly with the applicants
		SER5	Comfortable to provide customized services
Flexible Process Workflow (FPW)	Availability of Options (OPTIO)	OPT1	Choice to select date and time for application submission
		OPT2	Option of both manual and online form filling
		OPT3	Option to upload the documents online

Situation-Actor-Process Related Variables			
		OPT4	Option to select any service centre within the city
		OPT5	Choice to select between regular and fast service (e.g., Tatkal Passport)
	Change Mechanisms (CHANG)	CHA1	Provision for continuous service in case of any technical fault
		CHA2	Back up of employees in case of their absence
		CHA3	Mechanism to recover data in case of loss of data
		CHA4	Process to put application on hold in case of lack of documents
		CHA5	Availability of backup plan in case of any natural calamities

As shown in Table 7.2 'Environmental Factors' of a public organization, 'Availability of Basic Amenities' at the service centre, 'Competency and Service Orientation' of actors, 'Availability of Options' and 'Change Mechanisms' at public organization are the micro variables constituting situation-actor-process related macro variables at play in the study context. Figure 7.2 depicts the situation-actor-process related micro variables of a public organization identified after analysis of data.

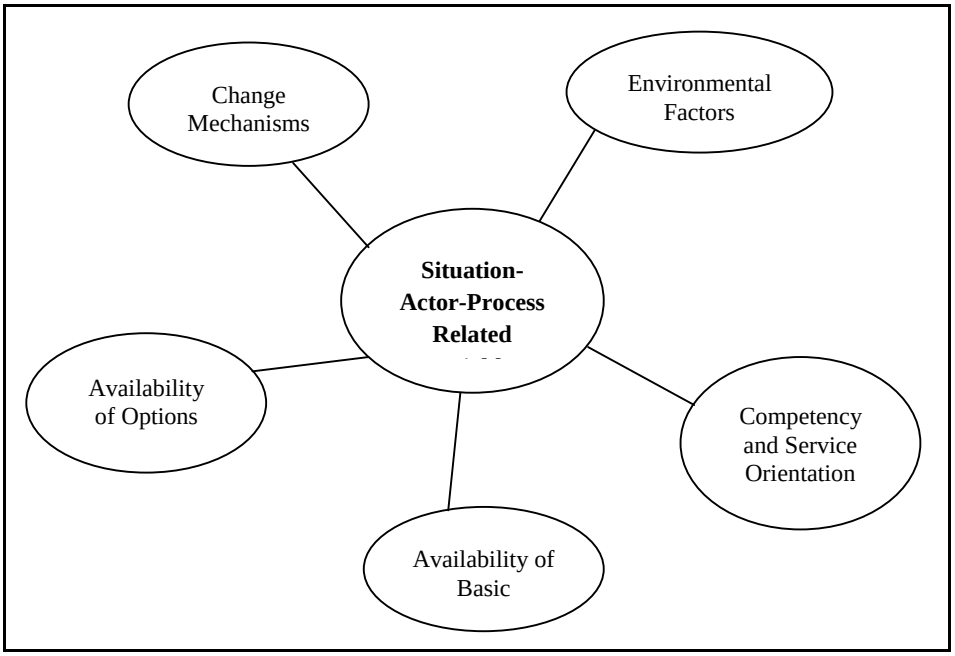

Figure 7.2: Key Variables related to Situation-Actor-Process of Public Organization

Environmental factors at public organization play an important role at the time of visits of applicants at the public organization. As per the result of data analysis, these are identified as easy reach of applicants to the service centre, non availability of intermediaries around the service centre, air-conditioned environment and provision of feedback mechanism at the centre (Cavana et al., 2007; Yusoff et al., 2008; DeitY, 2008; Bharwani and Jauhari, 2013; Satapathy, 2014). Situational factors with respect to the environment are considered to be crucial as identified in the study. Citizens value these factors as they have to face these during their visit to the public organization. Therefore, it is appropriate to mention that improvement in such factors is expected to enhance the perceived public value of e-governance.

It is expected by citizens before visiting the public organization that basic amenities such as proper sitting space, cleanliness, clean drinking water, and clean washrooms would be available (Cavana et al., 2007; Drea and Hanna, 2000; Yusoff et al., 2008; Al-Borie and Damanhouri, 2013; Islam et al., 2014). These are the basic requirement which should be fulfilled by all the public organizations towards providing convenience to the applicants. Thus, such factors have been identified as key situational factors as per analysis conducted.

After experiencing the situational factors in terms of environment and basic amenities, an applicant interacts with the employees of the public organization. It has been revealed from the study that citizens give importance to the competency level and service orientation of the staff at the public organization. He evaluates the communication skills, IT skills, speed to do the work and knowledge and patience level of the actors with whom he deals at the time of service delivery (Ciavolino and Dahlgaard, 2007; Agus et al., 2007; Yusoff et al., 2008; Bitner et al., 2010). Also, he gives value to the willingness of employees to serve the applicants, their punctuality, honesty, politeness, and ability to provide customized service (Agus et al., 2007; Cavana et al., 2007; Deity, 2008; Chatzoglou et al., 2013; Bharwani and Jauhari, 2013). As applicants experience in terms of these variables, they expect that public

organizations should have competent employees who are oriented to deliver public service to citizens in an effective manner.

Next significant factor is related to the flexibility of the process workflow, i.e. availability of options to the applicants. It consists of option to select the date and time for application submission, to fill both manual and online forms, to upload the documents online, to select any service centre within the city and to select between regular and fast service delivery modes (Sloan, 1992; Madu and Madu, 2002; Deity, 2008; Siddiquee, 2008; Chatzoglou et al., 2013; Momparler et al., 2015). As citizens are becoming aware of the benefits of ICTs, they expect more flexibility from public organizations which can provide them convenience with respect to application submission. Therefore, these factors have been identified as the important factors which are required by citizens to avoid the rigid of processes followed by a few public organizations.

To ensure the flexibility of process workflow, it is also significant that public organizations have effective change mechanisms that allow applicants to get their application processed without any technical fault (Na-Qian Deng et al., 2018). Additionally, it is expected by citizens that there is continuity of work even in the absence of a few employees, mechanism to recover the data in case of any loss, process to put application on hold and availability of a backup plan in case of any natural calamity (Howarth, 2005; Deity, 2008; Badhel and Chole, 2014). Such factors are crucial as they ensure the continuous process workflow by avoiding the expected hurdles. These have been identified as key factors as per the result of the study.

7.4 Empirically Validated Framework

On the basis of above mentioned key factors identified as per the result of the study with respect to public value and situation-actor-process of public organizations, the empirically validated framework is presented in Figure 7.3.

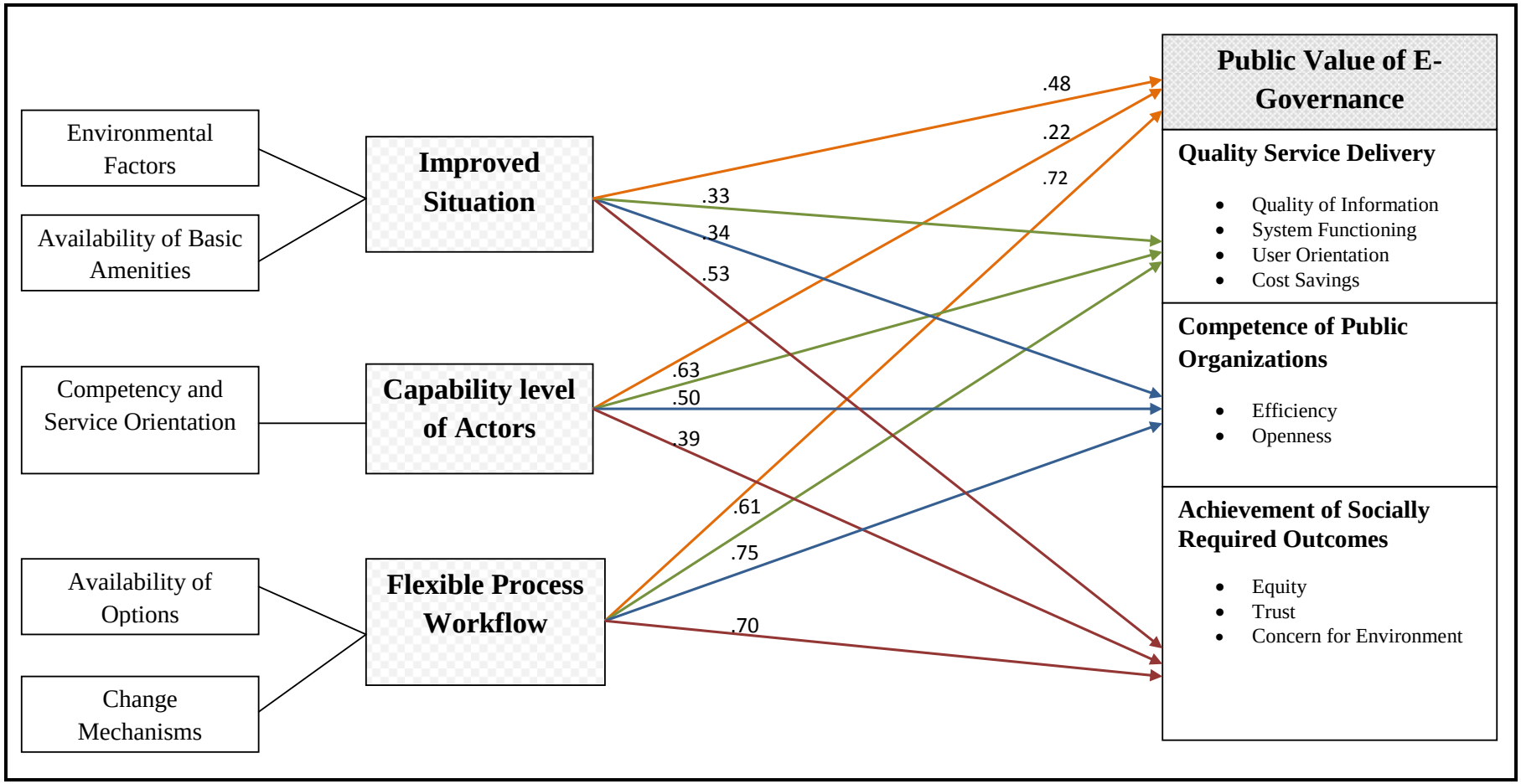

Figure 7.3: The Empirically Validated Framework

The empirically validated research framework (Figure 7.3) consists of twenty-eight items related to S-A-P which are mapped to five micro variables and three macro variables. As a result of data analysis, these items have been reduced from thirty to twenty-eight, and two micro variables have been merged into one and resulted in a total of five micro variables. With regards to public value, the empirically validated framework consists of thirty-five items mapped to nine micro variables and three macro variables. Items to analyze the public value of e-governance have been reduced from sixty-one to thirty-five which are mapped to total nine micro and three macro variables.

As shown above, the revised framework arrived at as a result of hypotheses testing reflects that 'Improved Situation,' 'Capability level of Actors' and 'Flexible Process Workflow' have a significant influence on 'Public Value' of e-governance project. It has also been identified that constituent macro variables of public value, viz. 'Quality Service Delivery,' 'Competence of Public Organizations' and 'Achievement of Socially Required Outcomes' are also influenced by these factors. On the basis of research findings and learning from the influence of situation-actor-process related variables on public value, a learning-action-performance synthesis is presented below in Table 7.3.

Table 7.3: Learning-Actions-Performance (L-A-P) Synthesis for Improving Public Value

Situation-Actor-Process related Variables			**Learning-Action-Performance Synthesis**
Macro Variables	**Micro Variables**	**Items**	**Description**
Improved Situation (IST)	Environmental Factors (ENVIR)	The closeness of service centre to the applicant's home	Proximity to the service centres not only saves the time of applicants but also saves their efforts and money. A better network of the public services to the citizens contributes to their improved satisfaction level as they find it convenient to visit the service centres of public organizations. Hence, those public organizations where it is mandatory for applicants to visit the service centres need to keep accessibility aspect into view while planning for service delivery.
		Non-availability	Citizens, during their visits to the public

Situation-Actor-Process related Variables			Learning-Action-Performance Synthesis
Macro Variables	**Micro Variables**	**Items**	**Description**
		of middlemen around the service centre	organizations, expect a transparent system and are ready to pay officially notified service charges. However, quite often they fall in the trap of middlemen. Presence of middlemen creates a negative image of the organization as citizens are forced to pay much above the notified charges. Citizen-centric services should be so user-friendly that dependence on middlemen is eliminated. This would help in improving the public value of e-governance initiatives.
		Air-conditioned environment at the service centre	Comfort and convenience are the two important aspects which citizens look for at the time of their visits to the service centre. Thus, it should be kept into consideration that applicants get a comfortable environment at the service centre.
		Provision of feedback mechanism at the centre	It is found that citizens find it important that public organizations should work on their feedbacks for improving service delivery. Hence, this practice should be adopted by organizations to achieve better public value.
	Availability of Basic Amenities (AVAIL)	Proper sitting arrangement at the service centre	Citizens while availing services from the public organizations, spend sufficient time in terms of waiting time, service time, etc. Thus, public organizations should ensure proper seating arrangements for the convenience of visiting citizens.
		Cleanliness at service area and waiting area	Public organizations in developing countries such as India, attract a large number of citizens to avail specific services. It is, therefore, necessary for public organizations to take appropriate measures for ensuring spic and span environment at the service centre.
		Drinking water for applicants	Basic facility such as pure drinking water for applicants is important and should be made available at the public organizations all the time.
		Clean	Hygiene is an important factor which impacts the

Situation-Actor-Process related Variables			Learning-Action-Performance Synthesis
Macro Variables	**Micro Variables**	**Items**	**Description**
		washrooms for citizens	view of citizens immediately. If the washrooms at the service centres are not clean and maintained properly, it negatively affects the perception of citizens' about public value.
Capability level of Actors (CLA)	Competency and Service Orientation (COMSE)	Effective communication skills	Applicants while interacting with staff at the service centre observe their communication skills. The staff at the service counters represents the organization. Their polite way of interaction with citizens contributes to public value of the organization.
		Required IT skills	It is expected that employees at the public organization possess required IT skills. It facilitates them to do their work without seeking help which not only saves time but also ensures continuity of the work. This aspect has been considered significant by citizens that should be ensured by public organizations.
		Sufficient speed to do the work	Employees performing their work in a speedy manner are able to complete their work on time. This also results in comparatively less waiting and processing time of applications. Employees who do their work without spending much time contribute to public value.
		Complete knowledge about their work	It is expected by users that employees delivering services to them are equipped with sufficient knowledge about their work. It assists in the smooth processing of applications and also avoids any kind of escalations. Therefore, public organizations are required to focus on enhancing the knowledge level of their employees for better public value.
		Patience to listen to the applicants	It has been responded by citizens that they should be given opportunities to convey their issues, requests or feedback which is possible when staff present at public organizations have good listening skills. It is expected that employees listen to applicants with patience. This helps in smooth resolving of any

Situation-Actor-Process related Variables			Learning-Action-Performance Synthesis
Macro Variables	**Micro Variables**	**Items**	**Description**
			dispute with applicants during service delivery.
		Willing to serve the applicants	Employees having service orientation are capable of providing effective service delivery to citizens as they serve applicants willingly. Hence, public organizations are required to deploy only such employees at the service counters who are service oriented. This contributes to public value.
		Punctual and available at their seat	Citizens waiting for service delivery expect that employees at public organizations reach to the organization on time and available at their desk during working hours. The absence of staff from their desk increases the overall service delivery time that results in a relatively low level of satisfaction from the perspective of citizens. Hence, public organizations should ensure that all staff members adhere to the timelines with respect to working hours.
		Honest at their work	Honesty is a key variable particularly in public organizations where citizens are being served directly. This not only increases the transparency at the public organizations but also build confidence among society. Citizens expect employees to be fair and unbiased while delivering services. Their honest conduct contributes to public value of organization.
		Polite and friendly with the applicants	To make applicants feel comfortable at public organizations, it is important that employees behave politely with them. Friendly attitude helps in developing a positive view of applicants about service delivery which helps to achieve the increased public value of public organizations.
		Comfortable to provide customized services	People may have different requirements and they need customized solutions for their issues. For this purpose, employees who feel comfortable to solve the issues of individual applicants as per their needs contribute in achieving an improved public value of public organizations.

Situation-Actor-Process related Variables			Learning-Action-Performance Synthesis
Macro Variables	**Micro Variables**	**Items**	**Description**
Flexible Process Workflow (FPW)	Availability of Options (OPTIO)	Choice to select date and time for application submission	A public organization giving an option to citizens to choose a suitable date and time for application submission and visit the organization leads to improved public value.
		Option of both manual and online form filling	Many citizens in a developing country like India still find themselves unable to fill online forms. Therefore, keeping their limitations into consideration both manual and online options should be made available to the applicants for improving public value.
		Option to upload the documents online	Certain services require uploading of supportive documents at the time of filling up the application form online. Though this feature is added to save service time, it acts as a deterrent for a large number of applicants who lack basic IT skills. Flexibility to submit documents in physical form is expected to improve public value.
		Option to select any service centre within the city	In case of a few public services, citizens are restricted to apply from a particular service centre only. In terms of selection of service centre, flexibility should be given to the applicants to choose any service centre as per their convenience.
		Choice to select between regular and fast service (e.g., Tatkal Passport)	In addition to regular mode of service delivery, public organizations should introduce a faster mode of delivery to meet any urgent requirements of applicants.
	Change Mechanisms (CHANG)	Provision for continuous service in case of any technical fault	In many situations, due to a sudden technical fault in the system, applications processing at the public organizations gets disrupted which leads to long queues. Public organizations need to ensure continuity of the service delivery by introducing redundancy at suitable levels.
		Back up of	In the absence of employees at service counter, it

Situation-Actor-Process related Variables			Learning-Action-Performance Synthesis
Macro Variables	**Micro Variables**	**Items**	**Description**
		employees in case of their absence	becomes difficult for public organizations to deliver services on time. It is necessary for organizations to avoid such situations by ensuring back-up of employees.
		Mechanism to recover data in case of loss of data	Public organizations collect personal data of applicants which should be kept confidential and secured with them. In case of any loss to the data, they are required to have defined mechanisms to recover the same. Any loss of information impacts public organizations negatively as citizens lose their trust in government.
		Process to put the application on hold in case of lack of documents	In some situations, due to insufficient documents at the time of the applicant's visit to the service centre, they are out rightly denied for further engagement. This results in inconvenience to applicants. Applicants with incomplete documents should be allowed to get their application processed which may be kept on hold for further processing.
		Availability of backup plan in case of any natural calamities	Public organizations should be ready to face any kind of natural calamity. This requires a proper recovery plan to ensure continuity of service delivery.

7.5 Concluding Remarks

In this chapter, the key outcome of the study in the form of an empirically validated framework is presented to analyze the influence of Situation – Actor – Process related variables on the public value of citizen-centric e-governance projects. Based on the learning from situation-actor-process analysis, a learning-action-performance synthesis is presented which includes a few recommendations to be considered by public organizations to achieve improved public value. The next chapter presents major conclusions of the study.

Chapter 8
Conclusions

8.1 Introduction

This study aimed at bringing out a research based framework in the direction to improve public value of citizen-centric e-governance projects in India. In this pursuit, two research questions were developed, i.e. *1) what are the situation, actor and process related variables that significantly influence the public value of citizen-centric e-governance projects in India? 2) Which are the crucial factors that constitute the public value of citizen-centric e-governance projects in India?* Situation-actor-process (S-A-P) related variables are conceptualized as those variables which are experienced by citizens at the time of their visits to the public organizations. Citizens observe the situational factors at public organizations such as environmental factors and the availability of basic amenities. They interact with employees of the organizations and notice their level of competency and orientation towards service delivery. Citizens follow a process or a set of processes during service delivery and build perception about the availability of multiple options and provision of change mechanisms at public organizations. It has been conceptualized in the study context that S-A-P related variables of a public organization are expected to have an influence on the public value of that organization.

To answer the research questions, a conceptual research framework was developed on the basis of a review of literature and Situation-Actors-Process (S-A-P) – Learning-Actions-Performance (L-A-P) framework (Sushil 2000, 2009a, 2017a). A comprehensive review of the literature has helped to identify the key factors to analyze the public value of e-governance and to explore the variables related to situation-actors-process of public organizations. To

execute the study, five citizen-centric e-governance projects have been selected, viz. issuance of passport, issuance of driver's license, issuance of marriage certificate, registration of property and conversion of immovable property from leasehold to freehold. Further, to test and validate the conceptual research framework, analysis of survey data has been performed using SEM technique. Findings of the analysis then are compiled here and presented to draw further research conclusions.

The aim of this chapter is to present a summary of the research. In the first section, research findings have been discussed. The main research contribution includes the development of an empirically validated framework that reflects the influence of situation-actor-process related variables on the public value of e-governance. Apart from that, there are other research findings which have been described in detail in this chapter. In the second section of this chapter, the implications of the research for e-governance practitioners and researchers are discussed. Finally, in the last section, limitations of the present research and scope for future research are outlined.

8.2 Research Findings

E-governance is increasingly being adopted by public organizations across the world. In India, a few e-governance projects have been running successfully, and many are at various stages of implementation. Many of the public services are not yet fully e-governed and citizens visiting these public organizations for seeking services such as the issuance of ration card, birth certificate, election card, etc. have to go through processes which are only partially computerized. They face a 'Situation' during their visit, interact with 'Actors' and are subjected to a 'Process.' It has been conceptualized that their experience based on S-A-P related variables may influence the perceived public value of respective public organizations.

The research has brought out an empirically validated framework depicting the influence of situation-actor-process related variables on the public value of e-governance in the study context. For this purpose, significant variables analyzing the public value of e-governance and situation-actor-process related variables at play in the context of public organizations are identified on the basis of literature review. There are three macro variables identified to assess the public value of e-governance, viz. 'Quality Service Delivery,' 'Competence of Public Organizations' and 'Achievement of Socially Required Outcomes.' Each macro variable has constituent micro variables (*Chapter 7*, *Table 7.1*).

Based on the analysis of survey data, the macro variable analyzing public value has been identified as the 'Quality Service Delivery' with constituent micro variables as quality of information provided by public organizations for easy understanding of applicants, smooth functionality of system at public organizations to ensure service delivery without any technical interruption, orientation of public organizations towards users and savings of cost by citizens in terms of time, money and efforts.

The another macro variable identified is the 'Competency of Public Organizations' with constituent micro variables as efficiency of public organizations in terms of implementation of information and communication technology at service counters and openness of public organization with respect to display of information related to policies, budget, annual plans, organizational charts, contact details of public organizations, etc.

The last macro variable is the 'Achievement of Socially Required Outcomes' with constituent micro variables as equal treatment given by public organizations to all the applicants, development of trust among citizens by providing secure information and concern for the environment by public

organizations in terms of saving of paper and energy by efficient use of information technology.

Situation-actor-process related variables of a public organization identified as a result of data analysis consist of mainly three macro variables. As per the research findings, these three macro variables are ‘Improved Situation’ at a public organization which consists of environmental factors of a public organization and availability of basic amenities at the service centre. The second macro variable is the ‘Capability level of Actors’ which is reflected by competency and the service orientation of employees dealing with applicants and the third is ‘Flexible Process Workflow’ which is represented by availability of options with applicants at the time of service delivery and the change mechanisms in practice at the public organization to deal with any unexpected contingency.

‘Improved Situation’ at the public organization is reflected by the environmental factors of a public organization which includes closeness of the service centre to the applicant’s home, non-availability of middlemen around the service centre, air-conditioned environment at the service centre and provision of feedback mechanism at the centre. It also consists of another micro variable, viz. availability of basic amenities at the service centre. It includes proper sitting arrangement at the centre, cleanliness at the service area and waiting area, availability of drinking water for applicants and clean washrooms for male as well as females.

‘Capability level of Actors’ is represented by competency and the service orientation of actors which includes their effective communication and IT skills, sufficient speed to do the work, knowledge level about their work, patience level to listen the applicants, willingness to serve the applicants, punctuality, and availability at the seat, honesty at work, politeness and

friendliness with applicants and comfortableness to provide customized services to the applicants.

'Flexible Process Workflow' is presented by two micro variables, i.e. availability of options with applicants during their application processing which consists of option to select date and time for application submission, option of both manual and online form filling, choice to upload the documents online, choice to select any service centre within the city and choice to select between regular and fast service modes. Another micro variable is change mechanisms at the public organization which consists of provision for continuous service in case of any technical fault, back up of employees in case of their absence, mechanism to recover data in case of loss of data, process to put application on hold in case of lack of documents and availability of backup plan in case of any natural calamity.

On the basis of literature review and analysis of survey data, above-mentioned variables with respect to public value and situation-actor-process of public organizations are identified. To conduct the study, five e-governance projects were selected based on the criteria such as project should be citizen-centric in nature, it should have completed minimum one year after implementation, it should be of either national level of state-level e-governance project and it requires the physical presence of citizens to the public organization for availing services.

To examine the influence of situation-actor-process related variables on public value, a conceptual research framework was formulated (*Chapter 4, Figure 4.1*) based on literature review. For empirical validation of the conceptual research framework, a survey of actual beneficiaries was conducted. An analysis of survey data is brought out in Chapter 5.

- The results of the study reflect that 'Improved Situation' of public organizations in terms of better environment and availability of basic

amenities have significant influence on ‘Quality Service Delivery’, ‘Competence of Public Organizations’, ‘Achievement of Socially Required Outcomes’ and on overall ‘Public Value’ of public organizations.

- ‘Capability level of Actors’ in terms of their competency and orientation towards service delivery has a significant influence on ‘Quality Service Delivery’, ‘Competence of Public Organizations,' ‘Achievement of Socially Required Outcomes’ and on overall ‘Public Value’ of public organizations.
- Further, ‘Flexible Process Workflow’ in terms of availability of options with applicants during service delivery and provisions of change mechanisms at the public organizations in case of any contingency has significant influence on ‘Quality Service Delivery’, ‘Competence of Public Organizations’, ‘Achievement of Socially Required Outcomes’ and on overall ‘Public Value’ of public organizations.

Based on study results and learning from situation-actor-process related variables, a few actions are recommended for public organizations to achieve an improved public value of e-governance. These suggestions have been synthesized in the form of learning, action, and performance (*Chapter 7, Table 7.3*). Public organizations are required to focus on situational factors as described in the study. They are suggested to improve the capability levels of actors for realizing the improved public value and also need to ensure a flexible process workflow for uninterrupted service delivery.

8.3 Research Implications

This study has contributed to the area of analysis of the public value of e-governance projects. The empirical validation of the conceptualized research framework has revealed that situation-actor-process related variables have a

significant influence on the public value in the study context. Implications of the study for e-governance practitioners and researchers are discussed in the following section.

8.3.1 Research Implications for Practitioners

Public organizations in India are progressively being computerized under various e-governance initiatives to automate government service delivery. However, providing comfort, convenience, assistance, flexibility, etc. to citizens are also important for effective service delivery. Hence, it is critical for public organizations to focus on situational factors such as seating arrangements, cleanliness, air-conditioned environment, availability of drinking water, provision of feedback mechanism, etc. It is also important for public organizations to depute employees with better communication skills, knowledge level, service orientation, etc. at service counters to achieve improved public value. The positive influence of flexible process workflow on public value, as revealed in this study, reflects that public organizations need to keep the processes flexible for the convenience of the citizens.

It is expected that research findings would benefit both planners and implementers while planning for new projects or analyzing existing ones to improve the realization of public value. The findings are expected to be beneficial for effective execution of citizen-centric e-governance projects which require improvement in service delivery. The planners of public services in respective organizations are expected to keep a provision in the project plans for periodic assessment of e-governance initiatives in terms of constituents of public value viz. ‘Quality Service Delivery,' ‘Competence of Public Organizations’ and ‘Achievement of Socially Required Outcomes.' In view of the influence of situation, actor, and process related variables on public value, practitioners are expected to be conscious of improving the situation at service delivery locations, deploying skilled personnel for service delivery and designing flexible processes equipped with enough options.

8.3.2 Research Implications for Researchers

The research is aimed to identify the influence of situation-actor-process related variables on public value. Five citizen-centric e-governance projects have been selected where the beneficiaries are required to physically visit the concerned public organizations. The experience of beneficiaries has been captured as they get subjected to the interplay of situation, actors, and processes while availing such public services. The research opens a window for analyzing more such public services of similar nature to increase the scope of the study for generalized findings.

Based on a review of the literature, it has been found that many studies have been executed to measure the public value of e-governance projects. However, there is hardly any such study in the Indian context. In particular, the influence of situation–actor-process related variables on the public value of e-governance remained unexplored. The research opens a window for researches to explore the construct proposed for analyzing the public value of e-governance and situation–actor-process related variables further and contribute to the strengthening of these.

8.3.3 Research Implications for Society

E-governance projects can perform a vital role in enhancing public value. In the context of India, a key objective of e-governance projects is to improve the service delivery of citizen-centric projects. The findings of the research, based on the select five citizen-centric e-governance projects in India, reflect upon the influence of situation-actor-process related variables on public value. Thrust on improving situational aspects, as identified in this study, is likely to improve the comfort level of citizens while taking benefit of IT-enabled services of government organizations. A better capability of actors at public organizations is likely to build trust and confidence among citizens towards these services. Adoption of flexible processes by public organizations is

expected to ensure seamless delivery of services to citizens through alternate options. Enhanced delivery of services satisfies the need for improved public value and creates a positive attitude among society towards public organizations. It contributes to the satisfaction level of citizens with respect to saving time, money and efforts.

8.4 Significant Research Contributions

The research has contributed in terms of:

- An attempt to address the gap related to literature being dominated by measurement of public value in most of the developed countries through evaluation of websites of public organizations (Garcia et al., 2005; Wang et al., 2005; Torres et al., 2005; Jong and Lentz, 2006; Rorissa and Demissie, 2010; Elling et al., 2012; Karkin and Janssen, 2014; Faulkner, 2018; Anna, 2018).
- An effort to identify the influence of Situation – Actor – Process related variables on public value of e-governance projects for improving public value. There is hardly any such past attempt which could be traced in e-governance and public value literature.
- Bringing out empirically validated research framework and case studies which are expected to guide e-governance practitioners for improving public value.
- Interpretation of research based empirically validated framework in five citizen-centric e-governance projects of both nation and state level importance for improving public value.

8.5 Research Limitations and Suggestion for Future Research

In spite of expected useful implications of this research in the field of e-governance, there are a few limitations of the study. Firstly, there is a requirement to re-test and re-validate the research framework. Due to the

exploratory nature of the study, it becomes crucial to re-test and re-validate the research framework before using the same as an instrument to identify the influence of situation-actor-process related variables on the public value of e-governance projects. Repetitive studies of this nature are required for further refinement of the results particularly in terms of addressing the influence of first order constructs of public value.

The responses collected for the study are of only those citizens who have availed any of the five e-governance services selected to execute the research. However, views of citizens who have availed a service other than selected for the present research have not been captured. Also, the study is limited to Delhi – National Capital Region. In order to analyze geographical variations, it is required to study similar projects across the states. Therefore, for proposing generalized findings, it is required to study more such projects by expanding the scope to other regions.

The specific context of the study is another limitation of the research. This study has been executed keeping Indian context into consideration or keeping all those services into account where citizens are required to visit the public organizations. However, different countries have different processes in terms of delivery of services at public organizations. The present study considers only those organizations where the presence of citizens is mandatory. Therefore, the limited scope of the study with respect to the specific nature of the projects selected to execute the research is another limitation of the study. A comparative study by analyzing public value in the context of a few such projects in developed countries, where the services are fully digitalized, can throw further light on the factors influencing public value of e-governance.

8.6 Concluding Remarks

The main objective of the study was to analyze the public value of citizen-centric e-governance projects in India and identify the influence of Situation –

Actor – Process related variables on public value. It has been conceptualized that a citizen visiting a public organization faces a situation such as facilities in terms of seating arrangements, temperature, availability of drinking water, cleanliness, etc. He interacts with employees to avail services and observes their communication skills, service orientation, speed and knowledge to execute the work, presence at the service counter, etc. He also follows a process or a set of processes and experience in terms of easiness and convenience of the process, flexibility and continuity of the process, etc.

For this, five e-governance projects both national and state level, where citizens are required to be present to avail the services, were studied in depth. Both quantitative and qualitative research methods have been used for conducting the study. Qualitative research method using SAP-LAP framework has helped to identify the situation-actor-process related variables in the study context which is followed by recommendations based on learning-action-performance synthesis. As part of the quantitative research, data collected through a survey questionnaire is analyzed with the help of SEM to identify the influence of situation-actor-process related conceptual variables on the public value of e-governance projects.

The empirically validated framework in the study context can be treated as a stepping stone for enhancing the public value of e-governance projects. This needs to be refined and enriched based on learning from its implementation and further studies in this direction.

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Appendix I

Research Questionnaire

Survey on Public Value of e-Governance Projects		
Objective: The research aims at measuring the public value of e-governance project and to identify variables influencing public value.		
Declaration: This information shall be used only for academic purpose. The identity of the respondent shall not be disclosed.		
Please (√) on the scale below to express your opinion:- 4=Very large extent, 3=Large extent, 2=Medium extent, 1=Small extent, 0=Nil		
1	Please select any service availed by you recently -	√
	Passport	
	Driving License	
	Marriage Certificate	
	Registration of Property	
	Leasehold to Freehold of Property	
2	I am -	√
	Male	
	Female	
3	My age is between -	√
	18 - 30	
	31 - 45	
	46 - 60	
	More than 60	
4	I am employed -	√
	Yes	
	No	
	No, retired employee	
5	My occupation belongs to -	√
	Information Technology	
	Medical/Health	
	Education	
	Financial Institution	
	Student	

	Other					
6	My education level is -			√		
	No schooling					
	School					
	Undergraduate degree					
	Postgraduate degree					
	Professional education					
7	My approximate earning per annum (in INR) is -			√		
	Less than 2 lacs					
	2 lacs - 5 lacs					
	5 lacs - 10 lacs					
	10 lacs - 20 lacs					
	More than 20 lacs					
8	In my opinion, information delivery by the public organization is -	0	1	2	3	4
8a	Accurate					
8b	Up-to-date					
8c	Relevant					
8d	Detailed					
8e	Simple and understandable					
9	I feel it is easy to -	0	1	2	3	4
9a	Fill and submit an online application form					
9b	Make online payment without any technical error					
9c	Get the application processed without any technical error					
9d	Download information (e.g., reports, forms, circulars, etc.)					
9e	Search information (e.g., process to apply, required documents, delivery time, etc.)					
10	I think there is -	0	1	2	3	4
10a	Easy way of application submission for people having little or no formal education					
10b	Facility for differently abled, senior citizens, etc. (e.g., wheelchair, special queue)					
10c	Simple website address for easy remembrance					
10d	User-friendly website for easy navigation					
10e	Availability of frequently asked questions (FAQs) in case of any doubt					

11	In my opinion -	0	1	2	3	4
11a	Lesser visits are required to avail service					
11b	Lesser fees are paid to avail service					
11c	Lesser efforts are required to avail service					
11d	Charges are not paid to Intermediaries/Middlemen to avail service					
11e	Lesser cost involved in preparation of documents to avail service					
12	In my opinion -	0	1	2	3	4
12a	Duplicate work is not performed during the process					
12b	Service counters are IT-enabled (e.g., computers at counters)					
12c	There is improved IT infrastructure (e.g., new computer applications and software)					
12d	There is an electronic queue at the centre (e.g., token system)					
12e	Information moves electronically across different levels (e.g., online approvals)					
13	In my opinion, there is a display of -	0	1	2	3	4
13a	Public policy drafts, agreements, laws, and regulations					
13b	Budget, expenses, and tenders for better transparency					
13c	Annual plans and progress reports					
13d	Organizational charts, roles, and responsibilities of staff					
13e	Contact lists of staff					
13f	Working hours, lunch timings, contact details of public office					
14	I feel there is -	0	1	2	3	4
14a	Response to inquires					
14b	Response to complaints					
14c	Implementation of citizen charter* and RTI (Right to Information)					
14d	Facility of online case tracking					
14e	Automatic response to queries					
15	In my opinion -	0	1	2	3	4
15a	There is a display of information in the local language					
15b	Website complies with special features for people with special needs (e.g., visual problem)					
15c	Same treatment is given to all other than people with special needs					
15d	Service provision is on the basis of First in First out method (FIFO)					
15e	There is no discrimination on the basis of gender, income level and					

	status of the beneficiary					
16	I think -	0	1	2	3	4
16a	Information provided to the public organization is secure					
16b	There is only authorized access to personal information					
16c	Initiatives are taken to discourage the role of middleman					
16d	Service is delivered within the time defined by the public organization					
16e	Public organization complies with the procedure given on website					
17	As per my understanding -	0	1	2	3	4
17a	Awareness programmes are conducted for knowledge promotion					
17b	Training programmes are organized for people not familiar with the Internet					
17c	Access is provided through common service centres/kiosks					
17d	Videos are uploaded on the website for easy learning					
17e	Assistance is given to new users through the call centre					
18	I feel -	0	1	2	3	4
18a	Regular updates on policies and procedures are shared with citizens					
18b	Opportunity is given to participate in public discussions and policy-making					
18c	There is provision for taking suggestions from beneficiaries					
18d	Opinion is asked from citizens for decision making					
18e	Contests are organized to gather new ideas from citizens					
19	In my opinion, there is -	0	1	2	3	4
19a	Reduction in paper printing					
19b	Saving of energy (e.g., electricity, manpower)					
19c	A policy on green information technology					
19d	Process of recycling of resources (e.g., papers)					
19e	Use of energy efficient equipments					
20	In my opinion -	0	1	2	3	4
20a	Service centre is near to my home					
20b	Middlemen are not found near the centre					
20c	No need to stand in long queues					
20d	There is air-conditioned environment at the centre					
20e	There is a provision of feedback mechanism at the centre					
21	In my opinion, there is -	0	1	2	3	4

21a	Proper sitting arrangement at the centre					
21b	Cleanliness at the service area and waiting area					
21c	Drinking water for applicants					
21d	Clean washroom for male as well as female					
21e	Baby feeding room for mothers					
22	In my opinion, employees at the service centre have -	0	1	2	3	4
22a	Effective communication skills					
22b	Required IT skills					
22c	Sufficient speed to do the work					
22d	Complete knowledge about their work					
22e	Patience to listen to the applicants					
23	In my opinion, employees at the service centre are -	0	1	2	3	4
23a	Willing to serve the applicants					
23b	Punctual and available at their seat					
23c	Honest at their work					
23d	Polite and friendly with the applicants					
23e	Comfortable to provide customized services					
24	In my opinion, there is -	0	1	2	3	4
24a	Choice to select date and time for application submission					
24b	Option of both manual and online form filling					
24c	Option to upload the documents online					
24d	Option to select any service centre within the city					
24e	Choice to select between regular and fast service (e.g., Tatkal Passport)					
25	In my opinion, there is -	0	1	2	3	4
25a	Provision for continuous service in case of any technical fault					
25b	Back up of employees in case of their absence					
25c	Mechanism to recover data in case of loss of data					
25d	Process to put the application on hold in case of lack of documents					

Appendix II

Reliability of the Questionnaire

Latent factor	Questionnaire items	Cronbach's α value
Quality of Information	8a to 8e	0.929
System Functioning	9a to 9e	0.932
User Orientation	10a to 10e	0.919
Cost Savings	11a to 11e	0.919
Efficiency	12a to 12e	0.910
Openness	13a to 13f	0.945
Responsiveness	14a to 14e	0.933
Equity	15a to 15e	0.906
Trust	16a to 16e	0.933
Self-Development	17a to 17e	0.939
Citizen-Participation	18a to 18e	0.942
Concern for Environment	19a to 19e	0.944
Environmental Factors	20a to 20e	0.909
Availability of Basic Amenities	21a to 21e	0.924
Competency	22a to 22e	0.937
Service Orientation	23a to 23e	0.939
Availability of Options	24a to 24e	0.922
Change Mechanisms	25a to 25e	0.934

Appendix III

(a) KMO and Bartlett's Test – Objective 1

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.954
Bartlett's Test of Sphericity	Approx. Chi-Square	26886.097
	df	1830
	Sig.	0.000

(b) KMO and Bartlett's Test – Objective 2

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.95
Bartlett's Test of Sphericity	Approx. Chi-Square	12239.69
	df	435
	Sig.	0.00

Appendix IV

(a) GOF Statistics of Initial Structural Model

	Goodness of Fit Indices		Badness of Fit Indices	
CMIN/DF	**CFI**	**IFI**	**RMSEA**	**RMR**
3.228	.855	.856	.084	.043

(b) Correlation between Errors as Result of Modification Index

Item Codes	Statement	Correlation Between Errors	Item Codes	Statement
SER4	Polite and friendly with the applicants	<-->	SER5	Comfortable to provide customized services
SYS2	Making online payment without any technical error	<-->	SYS3	Getting the application processed without any technical error
SYS4	Download information (e.g., reports, forms, circulars) is easy	<-->	SYS5	Searching information (e.g., process to apply, required documents, delivery time) is easy
TRU1	Information provided to public organization is secure	<-->	TRU2	There is only authorized access to personal information
CON1	There is a reduction in paper printing	<-->	CON2	There is saving of energy (e.g., electricity, manpower)

(c) Comparison of GOF Statistics of Initial and Final Structural Model

		Goodness of Fit Indices		Badness of Fit Indices	
	CMIN/DF	**CFI**	**IFI**	**RMSEA**	**RMR**
Initial Structural Model	3.228	.855	.856	.084	.043
Final Structural Model	2.891	.878	.879	.078	.044

Appendix V

Project Wise Observed Mean Values

	Passport Seva Project (N = 139)	Driving License Project (N = 54)	Marriage Certificate (N = 38)	Registration of Property (N = 48)	Leasehold to Freehold of Property (N = 36)
Variable Code	**Mean Values**				
QSD	**3.60**	**3.61**	**3.69**	**3.32**	**3.19**
QUA1	3.55	3.30	3.95	3.50	3.47
QUA2	3.50	3.46	3.87	3.44	3.14
QUA3	3.57	3.67	3.97	3.48	3.33
QUA4	3.51	3.52	3.97	3.46	3.22
SYS2	3.73	3.76	3.58	3.42	3.42
SYS3	3.66	3.57	3.74	3.40	3.31
SYS4	3.81	3.85	3.76	3.35	3.42
SYS5	3.64	3.63	3.74	3.38	3.31
USE3	3.59	3.81	3.39	3.27	3.14
USE4	3.60	3.63	3.34	3.13	3.28
USE5	3.50	3.67	3.42	3.15	3.22
COS1	3.41	3.43	3.61	3.21	2.83
COS3	3.54	3.56	3.66	3.15	3.14
COS4	3.58	3.65	3.66	3.29	2.92
COS5	3.81	3.65	3.63	3.21	2.69
CPO	**3.59**	**3.41**	**3.02**	**2.74**	**2.60**
EFF2	3.88	3.56	3.76	3.40	3.14
EFF3	3.78	3.37	3.63	3.25	3.14
EFF5	3.93	3.59	3.53	3.06	2.92
OPE1	3.52	3.37	2.61	2.46	2.17
OPE2	3.32	3.31	2.66	2.42	2.36
OPE3	3.44	3.43	2.61	2.48	2.36

	Passport Seva Project (N = 139)	Driving License Project (N = 54)	Marriage Certificate (N = 38)	Registration of Property (N = 48)	Leasehold to Freehold of Property (N = 36)
Variable Code	**Mean Values**				
OPE4	3.40	3.39	2.66	2.42	2.25
OPE5	3.48	3.20	2.66	2.44	2.47
ASRO	**3.68**	**3.47**	**3.53**	**2.93**	**3.20**
EQU2	3.35	3.37	3.21	2.88	2.86
EQU3	3.60	3.43	3.32	2.94	3.06
EQU4	3.75	3.35	3.32	3.02	3.14
TRU1	3.73	3.39	3.71	2.98	3.50
TRU2	3.92	3.59	3.76	2.98	3.25
TRU3	3.78	3.48	3.68	2.98	3.42
TRU4	3.79	3.56	3.82	2.96	3.25
CON1	3.66	3.61	3.55	2.83	3.28
CON2	3.65	3.52	3.58	2.88	3.08
CON3	3.66	3.48	3.45	2.94	3.08
CON4	3.55	3.43	3.50	2.81	3.17
CON5	3.68	3.48	3.50	3.02	3.28
IST	**3.79**	**3.43**	**3.49**	**3.35**	**3.09**
ENV1	3.58	3.28	3.47	3.29	3.06
ENV2	3.52	3.39	3.50	3.23	3.22
ENV4	3.88	3.48	3.26	3.13	3.00
ENV5	3.77	3.31	3.21	3.00	3.06
AVA1	3.87	3.44	3.74	3.56	3.11
AVA2	3.97	3.50	3.66	3.50	3.22
AVA3	3.94	3.50	3.68	3.48	3.06
AVA4	3.78	3.50	3.39	3.60	3.00
CLA	**3.79**	**3.54**	**3.68**	**3.17**	**3.28**
COM1	3.78	3.41	3.71	3.17	3.33

	Passport Seva Project (N = 139)	Driving License Project (N = 54)	Marriage Certificate (N = 38)	Registration of Property (N = 48)	Leasehold to Freehold of Property (N = 36)
Variable Code	**Mean Values**				
COM2	3.85	3.56	3.76	3.21	3.14
COM3	3.87	3.54	3.68	3.17	3.28
COM4	3.86	3.63	3.71	3.15	3.36
COM5	3.69	3.48	3.82	3.04	3.08
SER1	3.75	3.59	3.66	3.17	3.47
SER2	3.71	3.44	3.55	3.13	3.17
SER3	3.82	3.54	3.53	3.21	3.36
SER4	3.80	3.63	3.68	3.25	3.36
SER5	3.76	3.57	3.68	3.19	3.25
FPW	**3.67**	**3.46**	**3.31**	**3.19**	**3.00**
OPT1	3.76	3.46	3.55	3.23	3.22
OPT2	3.63	3.35	3.32	3.31	2.94
OPT3	3.76	3.43	3.53	3.19	3.08
OPT4	3.73	3.46	3.34	3.33	2.83
OPT5	3.81	3.54	3.66	3.21	3.19
CHA1	3.47	3.39	3.13	3.00	2.92
CHA2	3.56	3.46	3.24	3.02	2.97
CHA3	3.65	3.52	3.16	3.19	2.92
CHA4	3.73	3.54	3.08	3.35	2.86
CHA5	3.63	3.46	3.11	3.04	3.03

Appendix VI

(a) List of Activities Performed by Actors

Sr.No.	Description of Process	Central Diarist	Record room in charge	Applicant	Accounts Officer	Dealing Assistant	Assistant Director	NSK Staff	Bank Employees	Computer Department	Witnesses	Sub Registrar
	COUNT OF ACTIVITIES PER ACTOR	**2**	**1**	**7**	**5**	**8**	**6**	**3**	**2**	**1**	**2**	**3**
1	Submission of application at NSK by Applicant			√				√				
2	Receiving of files by Diarist from NSK Staff	√						√				
3	Diarist handover files to Dealing Assistant	√				√						
4	Record room in charge retrieve main file from the record room and handovers to Dealing Assistant		√			√						
5	Dealing Assistant sends the complete file to Accounts Officer to calculate the dues				√	√						
6	Accounts Officer calculates the dues and sends the file to Dealing Assistant				√	√						
7	Demand letter signed by Assistant Director is sent to Applicant by Dealing Assistant					√	√					
8	Applicant makes payment of dues in Branch located in DDA office and submits receipt to Assistant Director			√			√		√			
9	Dealing assistant sends the file to Accounts Officer to issue "No dues certificate"				√	√						
10	If dues amounts more than INR 5000 the Accounts Officer sends file to Computer Department to get the confirmation of payment				√					√		

Sr.No.	Description of Process	Central Diarist	Record room in charge	Applicant	Accounts Officer	Dealing Assistant	Assistant Director	NSK Staff	Bank Employees	Computer Department	Witnesses	Sub Registrar
11	Accounts Officer issues "No dues certificate" and sends file to Assistant Director				√		√					
12	Dealing Assistant sends conversion letter and three conversion deed papers signed by Assistant Director to Applicant					√	√					
13	Applicant fills up forms and pay stamp duty in the bank. Further, he submits filled up forms, payment receipt and request letter of execution of conveyance deed to Assistant Director			√			√		√			
14	Dealing Assistant sends call letter signed by Assistant Director for the execution of conveyance deed to Applicant					√	√					
15	Applicant visits NSK along with witnesses for the execution of conveyance deed			√				√			√	
16	Applicant visits Sub Registrar's Office along with Witnesses for the registration of conveyance deed			√							√	√
17	Applicant makes payment of registration fees through online mode and henceforth a date is given by Sub Registrar to the applicant to collect the registered conveyance deed			√								√
18	Applicant visits Sub Registrar's office to collect the registered conveyance deed			√								√

(b) Cross-Interaction Binary Matrix

Actor	A1	1	1	0	0	0	0	0	0
	A2	0	0	1	0	0	0	0	0
	A3	0	0	0	1	1	0	1	0
	A4	0	0	0	0	0	1	1	1
	A5	0	1	1	1	1	1	0	0
	A6	0	0	0	1	0	1	0	1
	A7	0	0	0	0	0	0	0	1
	A8	0	0	0	0	0	0	0	1
		P1	P2	P3	P4	P5	P6	P7	P8
		Process							

(c) Cross-Interaction Interpretive Matrix

Actor	A1	Record of online and physical applications is maintained with Central Diarist	Diarist handovers files to Dealing Assistant						
	A2			Concerned record room In-charge retrieve physical files from the record room					
	A3				Applicant receives deficiency letter in case requirement of additional documents	Applicant submits pending documents to the Dealing Assistant		Applicant may have to pay an additional amount in case of any deficit	
	A4						Accounts Officer receives the file for payment verification	Accounts Officer verifies payment made by applicant and issues 'No Objection Certificate.'	Accounts Officer sends the file with NOC for further approvals and processing
	A5		Dealing Assistant receives files from Central Diarist	Record room In-charge hands over a retrieved file to the Dealing Assistant	Dealing Assistant verifies the file and sends the deficiency letter to the Applicant	Dealing Assistant receives pending documents from Applicant	Dealing Assistant again verifies the documents and sends the file to Accounts Officer		
	A6				Assistant Director signs the deficiency letter		Assistant Director signs the file for further processing		Approval of Assistant Director
	A7								Approval of Deputy Director
	A8								Approval of Director
		P1	P2	P3	P4	P5	P6	P7	P8
		Process							

(d) Interpretive Logic - Knowledge Base - Ranking of Actors with respect to Processes

Interpretive Logic - Knowledge Base - Ranking of Actors with respect to Processes		
Paired Comparison	**Interaction with Process**	**Interpretive Logic**
A5 Dominating A1	P2	Dealing Assistant of housing department approaches Central Diarist to receive files
A2 Dominating A5	P3	Timely retrieval of a file by record room In-charge is important for further actions
A5 Dominating A3	P4	Proper verification of documents and raising correct requirement first time is crucial
A6 Dominating A5	P4	Assistant Director needs to sign the requirement before forwarding to the applicants
A3 Dominating A5	P5	Timely submission of pending documents from applicant is important for further actions
A5 Dominating A4	P6	Final verification by Dealing Assistant before forwarding the file to the Accounts Officer
A6 Dominating A5	P6	Assistant Director needs to sign the file before forwarding to the Accounts Officer
A4 Dominating A3	P7	Raising timely and correct requirement of pending dues by Accounts Officer is important
A6 Dominating A4	P8	Assistant Director approves the file received from Accounts Officer
A7 Dominating A6	P8	Deputy Director approves the file received from Assistant Director
A8 Dominating A7	P8	Director approves the file received from Deputy Director

(e) Pair-Wise Dominance of Actors for Different Processes

(a) Dominating Interaction Matrix of Actors for Process P1

	A1	A2	A3	A4	A5	A6	A7	A8
A1	-	1	1	1	1	1	1	1
A2	-	-	0	0	0	0	0	0
A3	-	-	-	0	0	0	0	0
A4	-	-	-	-	0	0	0	0
A5	-	-	-	-	-	0	0	0
A6	-	-	-	-	-	-	0	0
A7	-	-	-	-	-	-	-	0
A8	-	-	-	-	-	-	-	-

(b) Dominating Interaction Matrix of Actors for Process P2

	A1	A2	A3	A4	A5	A6	A7	A8
A1	-	1	1	1	-	1	1	1
A2	-	-	0	0	-	0	0	0
A3	-	-	-	0	-	0	0	0
A4	-	-	-	-	-	0	0	0
A5	1	1	1	1	-	1	1	1
A6	-	-	-	-	-	-	0	0
A7	-	-	-	-	-	-	-	0
A8	-	-	-	-	-	-	-	-

(c) Dominating Interaction Matrix of Actors for Process P3

	A1	A2	A3	A4	A5	A6	A7	A8
A1	-	-	0	0	-	0	0	0
A2	1	-	1	1	1	1	1	1
A3	-	-	-	0	-	0	0	0
A4	-	-	-	-	-	0	0	0
A5	1	-	1	1	-	1	1	1
A6	-	-	-	-	-	-	0	0
A7	-	-	-	-	-	-	-	0
A8	-	-	-	-	-	-	-	-

(d) Dominating Interaction Matrix of Actors for Process P4

	A1	A2	A3	A4	A5	A6	A7	A8
A1	-	0	-	0	-	-	0	0
A2	-	-	-	0	-	-	0	0
A3	1	1	-	1	-	-	1	1
A4	-	-	-	-	-	-	0	0
A5	1	1	1	1	-	-	1	1
A6	1	1	1	1	1	-	1	1
A7	-	-	-	-	-	-	-	0
A8	-	-	-	-	-	-	-	-

(e) Dominating Interaction Matrix of Actors for Process P5

	A1	A2	A3	A4	A5	A6	A7	A8
A1	-	0	-	0	-	0	0	0
A2	-	-	-	0	-	0	0	0
A3	1	1	-	1	1	1	1	1
A4	-	-	-	-	-	0	0	0
A5	1	1	-	1	-	1	1	1
A6	-	-	-	-	-	-	0	0
A7	-	-	-	-	-	-	-	0
A8	-	-	-	-	-	-	-	-

(f) Dominating Interaction Matrix of Actors for Process P6

	A1	A2	A3	A4	A5	A6	A7	A8
A1	-	0	0	-	-	-	0	0
A2	-	-	0	-	-	-	0	0
A3	-	-	-	-	-	-	0	0
A4	1	1	1	-	-	-	1	1
A5	1	1	1	1	-	-	1	1
A6	1	1	1	1	1	-	1	1
A7	-	-	-	-	-	-	-	0
A8	-	-	-	-	-	-	-	-

(g) Dominating Interaction Matrix of Actors for Process P7

	A1	A2	A3	A4	A5	A6	A7	A8
A1	-	0	-	-	0	0	0	0
A2	-	-	-	-	0	0	0	0
A3	1	1	-	-	1	1	1	1
A4	1	1	1	-	1	1	1	1
A5	-	-	-	-	-	0	0	0
A6	-	-	-	-	-	-	0	0
A7	-	-	-	-	-	-	-	0
A8	-	-	-	-	-	-	-	-

(h) Dominating Interaction Matrix of Actors for Process P8

	A1	A2	A3	A4	A5	A6	A7	A8
A1	-	0	0	-	0	-	-	-
A2	-	-	0	-	0	-	-	-
A3	-	-	-	-	0	-	-	-
A4	1	1	1	-	1	-	-	-
A5	-	-	-	-	-	-	-	-
A6	1	1	1	1	1	-	-	-
A7	1	1	1	1	1	1	-	-
A8	1	1	1	1	1	1	1	-

1	Transitive Dominance
1	Interpretive Dominance
1	Implicit Dominance
0	Implicit non-Dominance

(f) Dominance Matrix - Ranking of Actors with respect to Processes

Dominance Matrix - Ranking of Actors with respect to Processes											
	A1	**A2**	**A3**	**A4**	**A5**	**A6**	**A7**	**A8**	**No. Dominating**	**Net Dominance**	**Rank Dominating**
A1	-	2	2	2	1	2	2	2	13	-4	5
A2	1	-	1	1	1	1	1	1	7	-10	7
A3	3	3	-	2	2	2	3	3	18	3	3
A4	3	3	3	-	2	1	2	2	16	1	4
A5	5	4	4	5	-	3	5	5	31	20	1
A6	3	3	3	3	3	-	2	2	19	8	2
A7	1	1	1	1	1	1	-	0	6	-10	7
A8	1	1	1	1	1	1	1	-	7	-8	6
	17	17	15	15	11	11	16	15	117		

(g) Different Types of Dominance Comparisons

Reference Variables	Implicit Dominance Comparisons	Implicit Non-Dominance Comparisons	Transitive Dominance Comparisons	Interpretive Dominance Comparisons	Total Comparisons	% Interpretive Comparisons
P1	7	21	0	0	28	0
P2	12	15	0	1	28	9.09%
P3	12	15	0	1	28	9.09%
P4	15	10	1	2	28	18.18%
P5	12	15	0	1	28	9.09%
P6	15	10	1	2	28	18.18%
P7	12	15	0	1	28	9.09%
P8	16	6	3	3	28	27.27%
Total	101	107	5	11	224	
Percentage	45.09%	47.77%	2.23%	4.91%		

(h) Description of Situation - Actor - Process related Variables

Macro Variables	Micro Variables	Description
Improved Situation	Distance covered to reach service centre	It refers to the number of service centres available for service delivery
	Influence of middleman	Presence of middleman near the service centres to approach citizens
	Queue to avail services	Time spent by citizens in the physical and electronic queues
	Seating arrangements	Availability of sufficient chairs for citizens
	Air-conditioned environment	Availability and effectiveness of air conditioners at service centres
	Cleanliness of work area and washrooms	Level of cleanliness maintained at public service centres
	Drinking water	Availability of drinking water for citizens
	Provision of feedback	Existence of feedback forms at the end of the service delivery
Capability level of Actors	Communication skills	Capability of employees to provide information with effective communication skills
	Service orientation	Willingness of employees to deliver services
	Fast execution of work	Speed of employees at service centre
	Knowledge level about service delivery	Clarity of processes and updated information with employees
	Respect for ethics and values	Employees providing services as per the ethics and values of the public organization
	Availability at service counters	Presence of employees at their counter to deliver services
Flexible Process Workflow	Flexibility in date and time of application submission	Providing options to citizens' with respect to time and date of application submission
	Provision of uninterrupted services in case of a technical fault	Arrangements of back up as per process in case of technical fault to continue with service delivery
	Option of both manual and online applications	Availability of both manual and online options for citizens' keeping their literacy level into consideration
	Flexibility to apply from any service centre within the city	Availability of choice with applicants to submit application at any service centre within the city
	Provision to avail services without visiting service centre	Provision for physically challenged applicants to submit application without visiting to service centre

(i) Study Variables and their Observed Mean Values

Micro Variables	Question Items	Mean Value
Quality of information	Accurate	0.65
	Up-to-date	0.65
	Relevant	0.68
	Detailed	0.65
	Simple and understandable	0.74
System functioning	Easy to fill and submit an application form	0.62
	Easy to make payment	0.62
	Easy to get the application processed without any technical error	0.67
User orientation	Easy access for people having little or no formal education	0.39
	Facilities for differently abled, senior citizens, infants, etc.	0.45
Cost savings	Lesser visits required to avail service	0.19
	Excess money is paid to avail service	0.38
	Lesser efforts required to avail service	0.24
	Charges paid to Intermediaries to avail service	0.39
Efficiency	Duplicate tasks are not performed during the process	0.53
	Delivery of service is fast	0.25
	Reach of service through service centres has increased	0.64
Openness	Display of information such as policies, expenses, agreements, tenders, etc.	0.34
	Display of organization charts, roles, and responsibilities and contact lists of staff, etc.	0.43
	Display of working hours, lunch timings, office addresses, applicable fees, etc.	0.49
Responsiveness	Response to inquires	0.49
	Response to complaints	0.61
	Display citizen charter and RTI	0.44
Equity	Display of content in local language	0.61
	Same treatment to all applicants other than people with special needs	0.76
Trust	Security and privacy of personal information	0.70
	Initiatives to discourage the role of middleman	0.37
Self-development	Awareness programmes for knowledge promotion	0.21
	Training programmes for non-internet savvy people	0.20
	Access through common service centres/Kiosk available	0.56

Micro Variables	Question Items	Mean Value
Citizens' participation	Regular updates on policies and procedures	0.25
	The opportunity to participate in discussions, policy and decision making	0.22
	Provision for suggestions	0.27
Concern for environment	Reduction in paper printing	0.60
	Energy saving (electricity, manpower, etc.)	0.57
Improved Situation	Lesser distance of service centre from home	0.54
	More influence of middleman	0.51
	Long queue to avail services	0.54
	Proper sitting arrangements	0.63
	Air-conditioned environment	0.48
	Clean work area and washrooms	0.51
	Availability of drinking water	0.56
	Provision of feedback mechanism	0.27
Capability level of Actors	Communication skills	0.53
	Service orientation	0.53
	Fast execution of work	0.28
	Knowledge level about service delivery	0.66
	Respect for ethics and values	0.58
	Punctuality and presence at service counters	0.56
Flexible Process Workflow	Flexibility in date and time of application	0.44
	Provision of uninterrupted service in case of any technical fault	0.34
	Option of both manual and online application	0.27
	Flexibility to apply from any service centre within Delhi/NCR	0.52
	Provision to avail service without visiting the service centre	0.03

Curriculum Vitae

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EDUCATIONAL QUALIFICATIONS:

B.Com. from Kurukshetra University, Haryana, 2004, Marks: 64%

MBA (Finance and Marketing), Kurukshetra University, Haryana, 2006, Marks: 74%

PROFESSIONAL EXPERIENCE:

IndusInd Bank, Delhi

June 2006 – Dec 2006: Marketing Officer

Jan 2007 – Dec 2007: Executive Trainee

Jan 2008 – Sep 2008: Assistant Manager

Oct 2008 – May 2009: Deputy Manager

June 2009 – July 2010: Manager

Aug 2010 – Dec 2011: Chief Manager

Tata Consultancy Service (Passport Seva Project)

Jan 2012 – Sep 2015: Citizen Service Manager

Oct 2015 – Till Date: Analyst

PUBLICATIONS (as part of present research work at DTU, Delhi):

Journals

Gupta, P. J., & Suri, P. K. (2017). Measuring public value of e-governance projects in India: citizens' perspective. *Transforming Government: People, Process and Policy*, *11*(2), 236-261.

Gupta, P. J., & Suri, P. K. (2018). Analyzing the Influence of Improved Situation, Capability Level of Actors and Flexible Process Workflow on Public Value of E-Governance Projects in India. *Global Journal of Flexible Systems Management*, *19*(4), 349-372.

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