AN INVESTIGATION ON FACTORS INFLUENCING BEHAVIORAL INTENTION: A STUDY ON USAGE OF UNIFIED PAYMENTS INTERFACE

Thesis

Submitted in partial fulfillment of the requirements for the degree of

DOCTOR OF PHILOSOPHY

by

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DECLARATION

I hereby ***declare*** that the Research Thesis titled "**An Investigation on Factors Influencing Behavioral Intention: A Study on Usage of Unified Payments Interface**" which is being submitted to the **National Institute of Technology Karnataka, Surathkal** in partial fulfillment of the requirements for the award of the Degree of **Doctor of Philosophy** in **Management** is a *bonafide report of the research work carried out by me.* The material contained in this Research Thesis has not been submitted to any University or Institution for the award of any degree.

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CERTIFICATE

This is to ***certify*** that the Research Thesis titled "**An Investigation on Factors Influencing Behavioral Intention: A Study on Usage of Unified Payments Interface**" submitted by **Poulami Saha** (Register No. 165013SM16F04) as the record of the research work carried out by her, is ***accepted as the Research Thesis submission*** in partial fulfillment of the requirements for the award of degree of **Doctor of Philosophy.**

17/03/2023

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Om bhūr bhuvaḥ svaḥ tatsavitur vareṇyaṃ
bhargo devasya dhīmahi dhiyo yo naḥ prachodayāt

With a prayer to the divine mother, to seclude away the darkness that our hearts are loaded up with and brighten our soul with love, empathy and gratitude; with a declaration of appreciation to the nurturing sun and the divine:

I dedicate this thesis to my ***parents***, my ***husband***, my ***parents-in-law*** and my ***guide***.

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"Whatever happened, happened for the good
Whatever is happening, is happening for the good
Whatever will happen, will also happen for the good"…
- Bhagavad Gita.

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ABSTRACT

Contactless payment, the latest trend in the digital payment industry, has created a revolution in the Indian banking system. Digitization has transformed India from a cash-based economy to a cashless economy driven by people, processes, and products. Indians embraced the notion of making India digitized and concurrently, the National Payments Corporation of India (NPCI) launched India's first homegrown real-time payment interface and named it Unified Payments Interface (UPI). Unified Payments Interface is a smartphone-based money transfer interface that can be integrated into any banking application to facilitate digital payments using a mobile phone. UPI merges various banking features in a single window and aids one-click payment making the payment process simple, quick and contactless. Since UPI is a significant Indian digital innovation in the payment industry, hence to understand the perception of Indians towards UPI usage and to investigate the drivers that influence the intention of users to adopt UPI, the present study aims to identify the influential antecedents of behavioral intention to adopt UPI with UTAUT3 (Unified Theory of Acceptance and Use of Technology 3) as the theoretical lens.

Though the study adopted an established model as its theoretical background, the research also explores the influence of two more vital constructs on behavioral intention. Those two constructs are trust and word of mouth content. Thus the independent variables examined in the study are performance expectancy, effort expectancy, social influence, facilitating conditions, habit, hedonic motivation, personal innovativeness, trust and word of mouth content. In contrast, the dependent variables of the study are behavioral intention and actual usage. Furthermore, the research also examined the mediating role of behavioral intention on the association between performance expectancy, trust and actual usage. The data collected for the research investigation has been statistically analyzed using SPSS and AMOS. SPSS was used for inferential statistics, descriptive statistics, reliability and validity tests, whereas AMOS was used to conduct structural equation modeling. The model proposed in the study has been verified using structural equation modeling, which

comprises two types of model: the measurement and the structural model. Both the measurement and the structural model showed good model fit.

The statistical analysis of the data revealed that the significant antecedents of behavioral intention to adopt UPI are performance expectancy, social influence, habit, personal innovativeness, trust and word of mouth content. The significant drivers of actual usage of UPI are facilitating conditions and behavioral intention. The study also conducted a mediation analysis to examine the mediating role of behavioral intention where it was established that the direct effect of performance expectancy and trust on actual usage is significant. Contrarily, the indirect effect of performance expectancy and trust on actual usage is non-significant, demonstrating that behavioral intention fully mediates the relationship between performance expectancy, trust, and actual usage concerning UPI adoption. Studies concerning the usage of UPI are still in the inception stage, and hence the present study attempted to flourish the literature with more empirical findings on the adoption behavior of UPI. The research work successfully contributed to the existing body of knowledge with critical theoretical and managerial implications. The managerial implications proposed in this research work might help policymakers understand the real-time scenario, formulate policies and customize services based on the requirement.

Keywords: Unified Payments Interface, UPI, Behavioral Intention, Trust, Word of mouth content, UTAUT3.

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LIST OF ABBREVIATIONS

AEPS	: Aadhaar Enabled Payment System
AGFI	: Adjusted Goodness of Fit Index
AMOS	: Analysis of Moment Structures
API	: Application Programming Interface
AU	: Actual Usage
AVE	: Average Variance Extracted
BCA	: Bibliographic Coupling Analysis
BHIM	: Bharat Interface for Money
BI	: Behavioral Intention
CCA	: Co-Citation Analysis
CFA	: Confirmatory Factor Analysis
CFI	: Comparative Fit Index
CAGR	: Compound Annual Growth Rate
CUS	: Cyber University System
EDM	: Expectation Disconfirmation Model
EE	: Effort Expectancy
ERP	: Enterprise Resource Planning
eWOM	: electronic Word Of Mouth
FC	: Facilitating Conditions
GFI	: Goodness of Fit Index
H	: Habit
HM	: Hedonic Motivation
https	: Hypertext Transfer Protocol Secure
IBA	: Indian Banks Association
ICT	: Information and Communications Technology
IDT	: Innovation Diffusion Theory
IFSC	: Indian Financial System Code
IM	: Instant Messaging
IMPS	: Immediate Payment Service
IoT	: Internet of Things

IS	: Information Systems
IT	: Information Technology
KMO	: Kaiser-Meyer-Olkin
LCS	: Lecture Capture System
MCL	: Mobile Cloud Learning
MPCU	: Model of Personal Computer Utilization
NEFT	: National Electronic Funds Transfer
NPCI	: National Payments Corporation of India
P2M	: Person to Merchant
P2P	: Person to Person
PBC	: Perceived Behavioral Control
PE	: Performance Expectancy
PEOU	: Perceived Ease Of Use
PI	: Personal Innovativeness
PLS	: Partial Least Square
PU	: Perceived Usefulness
QR Code	: Quick Response code
RBI	: Reserve Bank of India
RMR	: Root Mean Square Residual
RMSEA	: Root Mean Square Error of Approximation
SEM	: Structural Equation Modeling
SI	: Social Influence
SMS	: Short Message Service
SNIP	: Source Normalized Impact per Paper
SNSs	: Social Networking Sites
SPSS	: Statistical Package for Social Sciences
T	: Trust
TAM	: Technology Acceptance Model
TPAP	: Third Party Application Providers
TPB	: Theory of Planned Behavior
TRA	: Theory of Reasoned Action

UPI : Unified Payments Interface

USSD : Unstructured Supplementary Service Data

UTAUT : Unified Theory of Acceptance and Use of Technology

VIF : Variance Inflation Factor

VPA : Virtual Payment Address

WOMC : Word Of Mouth Content

XML : Extensible Markup Language

CHAPTER 1

INTRODUCTION

1.1 INTRODUCTION

"Knowing who your customers are is great, but knowing how they behave is even better"

- *Jon Miller.*

Human beings, the most civilized group of mammals, possess intricate minds. Human behavior is a complex amalgamation influenced by culture, attitude, knowledge, desire, emotion, values, ethics, persuasion, genetics and intention. There exists no map to consumer behavior. Consumer behavior is multifaceted, challenging to comprehend, and is still a persistent research topic. The growth of technological prowess in the last two centuries is almost exponential, and human mind is the sculptor. Humans have innovated numerous products and with every major breakthrough, the economic operators, in turn, restructure the market to a better tomorrow. Technology has influenced human lives in so many ways that some seem to have imperceptible effects on human consumerism. If innovators could predict factors that could help them perceive favorable consumer behavior, they would structure innovations and technological breakthroughs accordingly – is it not? Therefore, design teams incorporate inputs provided by the business analyst to their design that would empathize with consumers. Currently, every major organization is adopting insights from data analysis performed by professional data analysts, engineers and scientists to reach their goal of becoming a giant player in their respective business domains. Every market and economy is powered by the flow of currency from one entity to another. Centuries have passed and the form of currency has evolved over time – from copper to iron, iron to silver, silver to gold and gold to legal tenders (currency notes). Now every major economy of the world is gradually shifting towards a more digital and centralized currency – the digital money. This kind of money is secured and is an encrypted number in federal bank servers, allowing one to move wealth from one account to another without all the hassle of cash but leaving behind trails of exchanges, making it more secure than cash transactions. Digital currency has been in the Indian market for some time now but did not gain sufficient momentum because of the long-prevailing cash-dependent mindset of Indian consumers. However, after the COVID19 outbreak, cashless

transactions became more popular because they supported contactless payment. UPI is one such payment interface that facilitates digital banking with ease – the only requirement is a smartphone, bank account, and access to internet. In this study, the factors that influence the intention of Indian consumers to adopt UPI as a payment mechanism have been explored.

The chapter began with an introductory note, followed by a brief on the Indian scenario of digital payment and major payment service providers. The chapter explains the context of the study and discusses about the model adopted to carry out the study. The subsequent sections that the chapter focused on comprise of the need for the study, problem statement, research questions and research objectives. The chapter concludes by highlighting the significance of the study, scope of the study and a brief outline of the organization of the thesis.

1.2 DIGITAL PAYMENT: INDIAN SCENARIO

India has been a cash dependent country with more than 90% of the transactions happening via cash. Digitization has lead to a huge transformation altering India from a cash-based economy to a cashless economy driven by people, process and product. During demonetization, the Government of India declared cancellation of all legal tenders of old five hundred (₹500) and one thousand rupee (₹1000) notes. Demonetization was a shocking event for the entire nation and the sole purpose behind this event was to control hoarding and circulation of concealed black money. Amidst the entire pandemonium, what materialized in the true scenario was the shift in consumer's choice of payment mode. Indians switched to digital payment options and slowly started adopting it for day to day transactions. Even though demonetization had an entirely different rationale, yet the natural outcome was the push to India's users towards digital payments. Leading to this situation, existing mobile payment service providers generated enormous revenue and many other new payment service providers jumped into the market. In the aftermath of this scenario, digital payment got a surge leading to a phenomenal growth of UPI. But soon after the improvement in the liquidity scenario, volume of UPI transactions declined. Memdani (2020) in a study about demonetization disclosed that a significant change in the

mode of transaction was observed pre, during and post demonetization amongst Indians, but it did not continue in the later period. It implies that the transformation from cash transaction to digital payment was a kind of forced adoption which implies that the dream of the Government of India to make India a cashless economy is still at stake. However, soon after few years, in 2019, the entire world was challenged by a deadly virus: COVID19. This virus added on to the thrust that demonetization created and contactless payment became a necessity. People from all generations and of all age had to get accustomed to digital payment to perform contactless payments. Baby boomers are from generation when digital payment did not exist, yet they adopted UPI as a mode of payment, noting a multi-generational shift to digital payment. This calls for a research on investigating factors that governed intention of individuals to adopt UPI.

The payment industry is in a fluctuating mode as digital payment has interrupted the power paradigm. The 'World Payment Report, 2020" stated that the global volume of non cash transactions is expected to grow at 11.5% compound annual growth rate (CAGR) and hit 1.1 trillion by the end of 2023 (Capgemini 2020). The report added, by 2023, out of 45% of the total volume of non-cash transactions constituted by the Asia Pacific, India and China will drive region's phenomenal CAGR by around 20% - and that justifies the reason behind conducting the study in Indian context.

1.3 MAJOR PAYMENT SERVICE PROVIDERS

The National Payments Corporation of India (NPCI) has made a noteworthy impact on the retail payment systems in the country. NPCI, who owns and drives UPI, launched Bharat Interface for Money (BHIM) which is a payment app which allows effortless, easy and quick transactions using Unified Payments Interface (UPI). Both UPI and BHIM have been recognized as the revolutionary products in the payment system. NPCI allows participation of Payment Service Providers, Customer Banks, Third Party Application Providers (TPAP) and Prepaid Payment Instrument issuers in UPI. NPCI stated that two hundred and fifty one banks act as issuers and forty six banks are payment service providers as well as issuers. Issuers are the banks which do not possess its own application but the account holders of those banks can use UPI

though applications of other banks. On the other hand, Payment Service Providers are the banks which have their own UPI enabled app. There subsists twenty Third Party Application Providers which are namely Google Pay, Phonepe, Amazon Pay, MobiKwik, Samsung Pay, Bajaj Finserv Direct Ltd., ChintaMoney, CoinTab, CRED, FinShell Pay, Goibibo, Jupiter Money, JustDial, Make My Trip, Maxwholesale, Mi Pay, Timepay, Ultracash, WhatsApp and YuvaPay (NPCI Report). Third Party Application Providers performs the function of providing service to the payment service providers. The TPAPs which gained more popularity and dominates the UPI ecosystem are namely BHIM, Google Pay, Phonepay, AmazonPay and Paytm.

1.4 CONTEXT OF THE STUDY

As rightly stated by Richard Leider - "Information does not change behavior, practices do". Human civilization has faced loads of transformations. As early humans, we have witnessed the transformation of the cave men building fire to rocket boosters, invention of wheel to modern steam turbines, river dependent agriculture to irrigation based agriculture and the list goes on. Technology acted and will always act as a boon. Technological innovation has made our lives easier and faster. Advancement in technology has made communication effortless, improved productivity, gave access to information, allowed remote education and provided us with mobility options. Transformation is all about enhancement of capabilities to expand capacity. In this era of modernization and digitization, information is available with no trouble. But despite of having information, do people actually use it properly? It is not only information or awareness that matters, practice and intention is required to change behavior.

India is one of the most thrilling markets for digital payments throughout the globe (Mandal 2018), yet it accounts to only 8% of transactions done digitally and 92% of the transactions are still happening via cash (Sobti 2019). Despite of people being aware of digital payment and contactless payments, they are not using it extensively and their behavior still remains unaltered. Our 21stcentury society has witnessed major technological breakthroughs and one such technological innovation is India's home-grown instant real-time payment system: Unified Payments Interface widely

acknowledged as UPI. National Payments Corporation of India (NPCI) - an umbrella organization for all retail payment systems in India, set up with the supervision and support of the Reserve Bank of India (RBI) and Indian Banks Association (IBA), has launched UPI. UPI is a smartphone-based money transfer system that can be integrated on any banking application. UPI has been one of the most thrilling inventions in India's digital payments landscape over the last few years. This study considers UPI as the domain of the study and explores how people perceive UPI as a payment mechanism in India. On that context, identification of the antecedents of behavioral intention of people towards adoption of UPI remains the central objective of this research work.

Human nature is complex, and so is their behavior. There reside some factors on which the behavior of an individual depends. The readiness of a user to perform a particular behavior is called behavioral intention (Ajzen 1991). Behavioral intention is an antecedent of behavior (Madden et al. 1992) which is a widely studied topic. Research on behavioral intention has dominated the literature since the late 1960s. Researchers have studied behavioral intention across various domains like the adoption of mobile banking (Shaw 2014), location sharing applications (Beldad and Kusumadew 2015), mobile shopping applications (Natarajan et al. 2017), cognitive age in technology acceptance (Hong et al. 2013) and telebanking (Alalwan et al. 2016). Behavioral intention was researched using well-established models like Theory of Reasoned Action (TRA), Theory of Planned Behavior (TPB), Technology Acceptance Model (TAM), Unified Theory of Acceptance and Use of Technology (UTAUT) and many other models derived from these foundational models. All these models have behavioral intention as a latent construct. Behavioral intention is a multidisciplinary topic and it has been explored extensively in the field of marketing as well as technology and many others. Myrick (2020) carried out a study on consumption intention where behavioral intention of Americans towards fast food consumption got much importance, whereas Kim and Choe (2019) examined the local food consumption intention of foreigners. Lu et al. (2019) examined the determinants of purchase intention of imported organic wine. Olya et al. (2019) used TPB to analyze continued intention of customers towards recommending and using green hotel. The medical field is also giving importance to behavioral intention and adding

on to the existing body of knowledge (Chu and Huang 2018, Savage et al. 2017, Van Lettow et al. 2015). Existing literature on behavioral intention is vast and spans over various fields of applications. The present study is directed to study behavioral intention with regards to UPI adoption.

1.5 MODEL ADOPTED FOR THE STUDY

The study adopts the Theory of Reasoned Action and Theory of Planned Behavior as the central ideology of the research. The model adopted and examined in the study is the Unified Theory of Acceptance and Use of Technology 3 (UTAUT3). This model was proposed by Farooq et al. (2017) where the model was verified in the context of acceptance of lecture capture system by management students of offshore campuses in Malaysia. UTAUT3 has been further extended in this study with two more latent constructs – trust and word of mouth content. The latent variables examined in this study are namely performance expectancy (PE), effort expectancy (EE), social influence (SI), facilitating conditions (FC), hedonic motivation (HM), habit (H), personal innovativeness (PI), trust (T), word of mouth content (WOMC), behavioral intention (BI) and actual usage (AU). The definitions of the latent constructs, as stated in the literature, have been noted in the next section.

1.5.1 Definition of the Latent Variables

- *Performance Expectancy (PE)*

  Performance expectancy can be defined as the extent to which an individual believes that adopting technology will help him or her to attain profit in job performance (Shin 2009, Venkatesh et al. 2003).

- *Effort Expectancy (EE)*

  Effort Expectancy can be defined as the degree of ease associated with the use of a system (Venkatesh et al. 2003). It is not only the extent of positively valuing a newly introduced technology that foretells an individual's intention to adopt and use a new technology but also the ease and effortlessness associated with the use of the system (Davis et al.1989).

- *Social Influence (SI)*

Social Influence refers to the degree to which an individual is influenced by his 'important others' to use the new system (Venkatesh et al. 2003).

- *Facilitating Conditions (FC)*

The extent to which an individual believes that an organizational and technical infrastructure exist to support the use of a system can be termed as facilitating condition (Venkatesh et al. 2003).

- *Hedonic Motivation (HM)*

Venkatesh et al. (2012) defined hedonic motivation as the pleasure or fun acquired from using a technology.

- *Habit (H)*

Habit can be defined as the extent to which people tend to perform behaviors automatically because of learning (Limayem et al. 2007).

- *Personal Innovativeness (PI)*

The tendency of an individual to experiment with latest technology can be termed as personal innovativeness (Crespo and del 2008). Personal innovativeness can also be defined as the inclination or risk taking propensity of a user to adopt the most advanced and latest technology or gadgets (Agarwal and Prasad 1998).

- *Trust (T)*

Gefen et al. (2003), in the context of mobile banking, defined trust as the accumulation of users' beliefs of reliability, generosity and ability which boosts user's inclination to rely on mobile banking to perform financial transactions.

- *Word Of Mouth Content (WOMC)*

Christiansen and Tax (2000) defined word of mouth as any communication between customers which is informal and is about characteristics of a product. Word of mouth means passing information from one person to another person via verbal communication. Word of mouth content is a dimension of word of mouth

which articulates what is being specifically spoken about the product during the communication (Goyette et al. 2010).

- *Behavioral Intention (BI)*

Behavioral Intention, an antecedent of behavior, can be defined as the readiness of a user to perform a particular behavior (Ajzen 1991).

- *Actual Usage (AU)*

The term actual usage can be defined as the extent of use of certain technology which includes usage time, usage frequency and usage variety (Huang and Kao 2015).

The present research investigation deals with the identification of the influential drivers of behavioral intention to adopt UPI and the above mentioned latent constructs have been explored throughout the research to accomplish the research objectives. In addition to the definitions of the latent constructs stated above, the operational definitions of these constructs have also been detailed in the second chapter of the thesis. To proceed further, the need for conducting this research work has been elaborated in the upcoming section.

1.6 NEED FOR THE STUDY

Cash is ubiquitous and is the king of payments. Cash requires no form of technical know-how to transact with. This makes cash popular in both rural and urban areas. But digital payment saves time, maintains transparency, enables contactless payment and endows with many other pragmatic advantages. Yet digital payment in India has not gained the anticipated traction. This research study aims to explore evidence on assessing the reason behind the slow adoption by identifying drivers of behavioral intention. Investigation of the influential antecedents of behavioral intention of people towards UPI adoption would lead to an understanding on how to influence people to adopt UPI as a payment mechanism to perform contactless transaction. Post demonetization, digital payment became a prerequisite and the ongoing pandemic situation added to the thrust making contactless payment obvious. As a result, use of

mobile wallets and UPI platform has enhanced. Research on usage of UPI is at a nascent stage. Studying the factors influencing acceptance and usage of UPI will embrace the literature with facts about UPI and extent of its usage by common people across India.

1.7 PROBLEM STATEMENT

India is relatively a new market for contactless payment. Moreover, UPI is a newly launched payment interface. People are still not very comfortable using UPI as a payment mechanism. Unified Payments Interface was launched by NPCI in 2016 - few months before demonetisation happened in India and empirical studies on adoption of UPI are non-existent. Researchers have focused more on mobile banking and other technology adoption studies. There is no dearth of research on investigating drivers of mobile banking usage and internet banking usage. But the concept of UPI varies from mobile banking, internet banking and mobile wallets. UPI is a payment model that enables users to send money or receive money from one bank account to another. UPI allows person to person (P2P) as well as person to merchant (P2M) payments via a virtual identification using a smartphone. It acts as a platform where transaction happens directly from bank to bank. Unlike UPI, mobile wallets perform the job of an intermediary in between bank accounts. Mobile banking, on the other side, refers to a bank's application wherein bank facilitates to perform various banking function without visiting the bank premises. Inspite of literature archive being infatuated with studies on adoption of mobile banking, yet adoption of UPI has not been explored yet. Since UPI varies from mobile banking, internet banking and mobile wallets, hence it is necessary to explore how people perceive UPI and what are the factors that influence adoption of UPI.

Researchers have directed to effectuate more work on trust in the field of e-payment and m-banking adoption. Additionally, literature supports the fact that it is important to examine the actual power of word of mouth in realistic environment. Hence this study adopted UTAUT3 as the theoretical lens and further extended it with two more constructs namely trust and word of mouth content to investigate the influential drivers of UPI adoption.

It is important to follow some rules to perform a successful research. A systematic research should have a well defined problem, an approach to the identified problem, formulation of a research design, identification of the information needed to execute the research, followed by data collection and analysis of the data. Since the research problem has been identified, the study continues with the further steps of formulating objectives of the study and framing research questions in the next section.

1.8 RESEARCH QUESTIONS

A well defined question that points direction to a research and around which the entire research is centered is called a research question. The research questions set for this study are noted below:

1. What are the various factors that influence behavioral intention of people towards adoption of UPI?
2. What is the role of trust on people's behavioral intention towards adoption of UPI?
3. Does word of mouth content influence people's behavioral intention to use UPI?
4. Does behavioral intention mediate the relationship between performance expectancy, trust and actual usage?

1.9 RESEARCH OBJECTIVES

Research objectives are the outcomes intended to accomplish by conducting the research. Based on the gaps identified and research questions set, the research has the following objectives:

1. To identify the influential drivers of behavioral intention of people towards adoption of UPI.
2. To assess the influence of trust on people's behavioral intention to use UPI
3. To examine the impact of word of mouth content on behavioral intention of people towards UPI usage
4. To analyze whether behavioral intention mediates the relationship of performance expectancy and trust with actual usage

1.10 SIGNIFICANCE OF THE STUDY

This research work is a contribution to the existing body of knowledge about people's perception towards technology adoption and focused on their intention towards usage of Unified Payments Interface as a payment mechanism. The study bridges the gap pertaining to identification of influential antecedents of behavioral intention to adopt UPI. There is a dearth of research about UPI and its usage in the literature archive, hence factors influencing people's intention to adopt UPI needs to be explored and is attempted in this study. This research work is first to empirically explore influential drivers of intention towards UPI adoption. The model proposed in the study, comprising of significant factors of behavioral intention towards UPI adoption, can also act as a guideline to marketers to get further investigations done. The findings of the study would help policymakers to frame and execute policies based on requirement to expand the consumer base. It would be an eye opener for the payment service providers to market their applications based on the demand of consumers. The Government of India and NPCI, who launched UPI with a dream to make India digitized and cashless, will also find the results of the research work beneficial to understand exactly what common people aspires for and what is acting as a barrier for them to go cashless.

1.11 SCOPE OF THE STUDY

The scope of a research work portrays the coverage or the extent to which the study has explored during the research investigation and illustrates what the study focuses on. The present study focuses on identifying the influential antecedents of behavioral intentions towards UPI usage amongst Indians. The central realm of this research investigation is concerned with UPI usage and it is challenging to collect data from all UPI users of India. Hence the research was conducted in five Tier I metro cities of India and the target population of the study was users who adopted UPI for making digital payments. The data collected during the investigation comprises of respondents from almost all age groups and people from mixed professional backgrounds. Though data was collected from Tier I metro cities only, yet the results of the study can be generalised as Tier I metro cities encompass mixed crowd from all

economic backgrounds and has been considered to be a well representative sample of the entire country.

1.12 ORGANISATION OF THESIS

This thesis is structured in five chapters.

Chapter one begins with a brief introductory note to the research study, followed by an overview of the research and some illustrations of the context of the study. Since the study has been conducted in the sector of contactless payment adoption in India, a general overview of the Indian digital market has been illustrated. Furthermore, the chapter highlights the model adopted to accomplish the research work, followed by a concise definition of the latent constructs as per the literature. The chapter also emphasized the need for the study, research questions set to execute the research, followed by the research objectives. The significance of the study in context of current payment trends, policymakers and customers has also been highlighted in this chapter. The chapter also discusses the scope of the study, followed by an elaborate explanation of the structure of the thesis and the way it has been organized.

Chapter two starts with an introduction to the contents of the chapter, followed by a detailed discussion on Unified Payments Interface, its features and its architecture. The chapter then focuses on an exhaustive review of the central topic of this research, i.e., 'behavioral intention' using a scientific and systematic literature review technique known as bibliometrics. The chapter continues with the theoretical background of the study, followed by the research gaps identified during literature review. Further, the latent constructs of the study have been elaborated along with the inclusion of proposed hypotheses. Based on the formulated hypotheses, the chapter portrayed the proposed conceptual model, operational definition of the latent constructs and sums up with a summary of the entire section.

Chapter three, titled 'research methodology,' is the part of the thesis that paves the path for a proper and systematic research investigation. The chapter begins with an introductory note and proceeds further with the research process. The research process

comprises philosophy, approach, methodological choice, strategy, time horizon, and techniques and procedures. Each section is elaborated to justify the reason behind adopting the corresponding research methodology. The chapter concludes by highlighting the ethical considerations of the study, followed by a summary of the chapter.

Chapter four commences with an opening note on statistical analysis of the collected data and its interpretations. The chapter proceeds with the first step of statistical analysis of data which is data editing and screening, followed by a brief on sample demographics. Observation of some additional information about people's perception about UPI has also been mentioned in the chapter. The chapter further confers about the descriptive statistics of the latent constructs, followed by the evaluation of the measurement and structural model. Various tests conducted to assess the measurement and structural model have been explained in detail in the chapter. The chapter wraps up with a summary to conclude.

Chapter five is the last chapter of the thesis, which focuses on the discussion and conclusion part of the research investigation. Starting with a brief introduction, the chapter highlights the findings of the study and justifies the results with literature support in detail construct by construct. The chapter then notes the theoretical and practical implications of the research, followed by the novelty of the work. As this study is no exception from the usual and has limitations too, the chapter asserts the limitations of the research and also discusses future directions for research, followed by a formal concluding section to brief on the overall findings of this research work.

CHAPTER 2

REVIEW OF LITERATURE

2.1 INTRODUCTION

"If I have seen further than others, it is by standing upon the shoulders of giants."

- Sir Issac Newton.

A review of literature is a part of academic writing illustrating knowledge and understanding of the academic literature on a precise topic. It is a detailed and critical evaluation of the material, making it a review and not a report. A literature review includes a thorough read out of books, surveys, scholarly articles, and any other sources pertinent to a specific issue, theory or area of research. It endows a critical evaluation and summary of those works concerning the research problem being investigated. Sir Issac Newton rightly mentioned about standing on the shoulders of giants to find something beyond. To explore the unexplored, it is necessary to know what has been already studied and what else needs to be. A substantial literature review creates a strong research base for further investigation and permits researchers to perceive what others have reported and think about what others have not considered. This chapter presents an extensive review of the literature conducted with a motive to understand the scenario of the entire research environment. The chapter discusses in detail about Unified Payments Interface – the newly introduced payment infrastructure, whose adoption behavior is explored in this research work. Further the chapter emphasizes a detailed literature review on behavioral intention - the genre of the study. To understand the research statistics on behavioral intention, a scientific approach for systematic literature review called bibliometrics has been applied which has been highlighted in this chapter. A research work must stand on a strong theoretical background. Hence standing on the shoulder of the giant, a proper explanation of the theoretical background of the study has been noted in this chapter. The chapter also highlights the research gaps identified during the extensive literature review and explains all the identified gaps in detail. Based on the gaps identified in the literature archive, the variables to be examined in the study were chosen. The chapter continues with an elaborate explanation of all the latent constructs of the study, followed by the hypotheses proposed. The chapter proceeds with the proposed conceptual framework of the study, followed by the operational definition of the variables. The chapter concludes with a summary of the entire chapter.

2.2 UNIFIED PAYMENTS INTERFACE – AN OVERVIEW

2.2.1 A Brief on Unified Payments Interface

National Payments Corporation of India (NPCI), an umbrella organization for all retail payment systems in India, set up with the supervision and support of the Reserve Bank of India (RBI) and Indian Banks Association (IBA), launched UPI so as to give people a sense of ease and glance of cashless India. UPI was formally inaugurated on the 11th day of April, 2016 and was launched for public use on the 25th day of August, 2016. Unified Payments Interface, prevalently known as UPI, is India's home-grown instant real-time payment system and is a part of digital innovation, which Indians embraced very well. It is a smartphone-based money transfer interface that can be integrated into any banking application. UPI aids architecture and a set of standard Application Programming Interface (API) specifications to facilitate digital payments using mobile phone (NPCI 2016). It merges various banking features in a single window. With an objective to put up a digitally connected country, UPI as a single interface facilitates seamless interoperability between various payment systems across payment providers. Every user bears a virtual payment address that remains linked to bank accounts. The virtual payment address is the UPI ID which consists of the phone number of the beneficiary. As per the choice of the user, the virtual payment address can also be set with email id followed by the name of the domain bank. This VPA becomes the unique payment identity of the user eliminating the need to share the bank account details while performing a transaction. While transferring money using UPI, if the payee does not possess a virtual payment id and is not a UPI user, the transaction can be done with bank account number and IFSC of the payee. UPI aids one-click payment and makes the payment process simple, quick and contactless. It enables transferring money from one bank account to another bank account or one person to another person, paying by scanning the QR code making the whole payment procedure hassle-free. There are various ways to transfer the money. It is not mandatory for the remitter to know the bank account number and IFSC if the beneficiaries already possess a UPI id. Moreover, the payment can be conducted using multiple identifiers like UPI ID or virtual payment address (VPA), Aadhar card number or bank account number and IFSC (Gochhwal 2017). UPI is well defined, standardized across banks and more

user-friendly than older modes of digital transactions like NEFT or IMPS (Statista Research Department, 2021). The features that UPI provides to customers, banks and merchants to give benefits to the payment ecosystem participants are discussed in the upcoming sections.

2.2.2 Features of Unified Payments Interface

Unified Payments Interface is one of the advanced technological innovations in the history of Indian payment ecosystem. UPI facilitates contactless remote payment and is endowed with various other features which are noted below:

i. Instant money transfer 24x7 via any mobile device.
ii. Access to multiple bank accounts using a single application.
iii. Single click 2 factor authentication - confirming strong security and smooth access to a payment via a single click.
iv. Virtual Payment Address (VPA) eliminating the need of providing card number, IFSC, account numbers etc.
v. Provides the option of splitting bills.
vi. Enables registering complaints directly via the mobile application.

UPI has been further upgraded and introduced as UPI 2.0 on the 16th day of August, 2018 (Gupta 2018). UPI 2.0 provides some additional features which include linking overdraft account to UPI, invoice in inbox, one time mandate and signed intent (NPCI 2018). A brief explanation of the upgraded features of UPI is noted below.

i. Overdraft account: UPI 2.0 hands out as an additional digital channel to access overdraft account. Even when enough money is not there in the account, a transaction or withdrawal can be done. UPI facilitates linking of overdraft account along with current and savings accounts to provide users with a seamless payment experience.
ii. Invoice in inbox: This feature is specially meant for customers to check the invoice sent by merchant prior to making payment. It helps customers to view the credentials and verify it whether it came from the right merchant or not. Post verification of the invoice and amount mentioned, customers can perform the payment operation seamlessly.

iii. One time mandate: It is a feature that could be used in a scenario where transaction is to be carried out later by providing commitment at present. It enables pre-authorization of a transaction and pay at a later date. It is useful for both merchants and individual users.

iv. Signed intent: This new feature of UPI 2.0 is designed for customers to check the legitimacy of merchants while scanning QR code. It notifies the user with information to determine whether the merchant is a verified UPI merchant or not - providing additional security to the intent and QR. In such cases, transactions get processed faster. Additionally, it negates the probability of QR tampering.

The per transaction cap has also been upgraded to 2 lakh rupees. In addition to that UPI has made the interface available in local languages, thus eliminating the language barrier for people who are not comfortable with English. UPI is similar to other Core Banking Solutions like National Electronic Funds transfer (NEFT) and Real Time Gross Settlement (RTGS). The only thing that differentiates UPI from NEFT and RTGS is that UPI is well defined and is also standardized across banks. UPI permits both financial as well as non-financial transactions. Financial transactions include Push and Pull option which means sending as well as requesting for money whereas non financial transaction comprises of checking balance in the account, setting and changing MPIN, setting up the virtual address etc. (Gochhwal, 2017).

2.2.3 UPI Architecture

The UPI architecture was designed in such a way that it allows USSD, smartphone, Internet banking and other channel integration into a unified interface or a common layer hosted by NPCI. This common layer coordinates transactions and ensures settlement across bank accounts using existing systems like Immediate Payment Service (IMPS) and Aadhaar Enabled Payment System (AEPS). Usage of the existing systems guarantees reliability of payment transactions across various channels, making use of all the investments done so far. Entities that offer UPI services connect to the NPCI's unified interface through standard APIs to permit transactions from a virtual payment address. Hence the need to share bank account credentials can be evaded. In this scenario, payment validation and authorization are always done via

personal phone. Since this layer puts forward a unified interface, any-to-any (Aadhaar number, mobile IMEI, account number, virtual addresses) interoperable payments can be carried out using standard set of APIs. The application programming interfaces are uncovered as stateless service over HTTPS using extensible markup language **(**XML) input and output. Banks, financial institutions and other entities availing UPI services should guarantee idempotent behavior for all APIs. These APIs are asynchronous which illustrates that once the request is sent; a response is sent back separately employing the corresponding response API. UPI participants get exposed to a set of standard APIs which perform both financial and non-financial transactions. There also resides a set of Meta-APIs that ensures the entire procedure's functioning in an automated fashion. These Meta-APIs permit the payment service providers to authenticate accounts during customer on-boarding, confirm addresses for sending and collecting money and at the same time provide phishing protection using whitelisting APIs. The figure below shows the entire UPI architecture explained by NPCI.

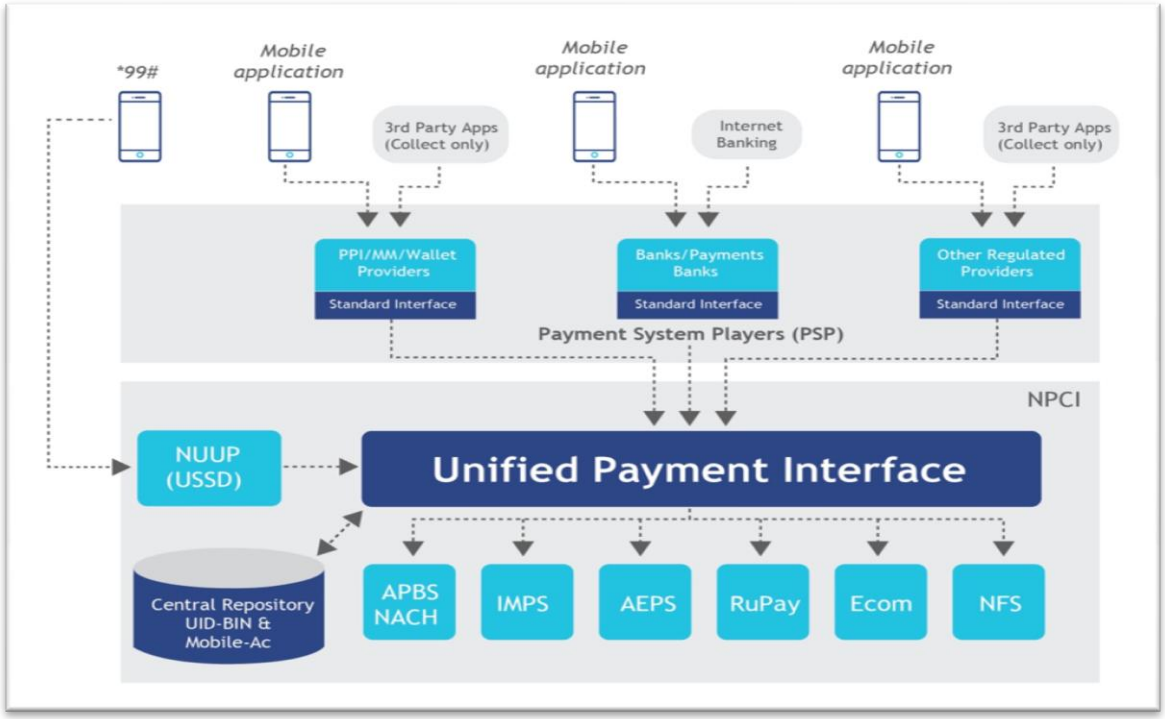

Figure 2.1: Architecture of UPI
Source: NPCI

Over the last few years, UPI has been one of the most thrilling inventions in the landscape of India's digital payments. The Government of India has put emphasis on

digital payment usage through applications that uses UPI as an interface (Parbat et al. 2021). Towards the vision of replacing cash, UPI is still in its infancy. But its high potentiality and rapid progress have influenced the Reserve Bank of India to render full support in future. Thus UPI is on the way to creating a benchmark in the digital payment ecosystem.

2.3 BEHAVIORAL INTENTION

This section focuses on understanding the concept of behavioral intention using a scientific method called bibliometrics. The literature review on behavioral intention was conducted to have a thorough knowledge about the concept. The section has been organized starting with the history of the origin of studies related to behavioral intention, overview of behavioral intention, followed by the factors influencing behavioral intention.

2.3.1 Application of Bibliometrics to explore Behavioral Intention

The study adopted bibliometrics to carry out the literature review. Bibliometrics is a scientific method of performing literature review (Walsh and Renaud 2017). Bibliometrics, also known as scientometrics (Muhuri et al. 2018), enables researchers to classify the existing body of knowledge identifying the foundational papers and systematically monitor the published documents. Bibliometrics performs statistical analysis of the literature using certain set of techniques, helps in identifying publication patterns (Arnott and Pervan 2012) and briefs about the development in that particular field (Walsh and Renaud 2017). Traditional literature review makes researchers lost in the vast area of literature. Application of bibliometrics makes the process systematic and plan oriented, and gives a comprehensive knowledge of the domain. Various bibliometric analysis techniques used in this study are namely co-occurrence analysis, author co-citation analysis, reference Co-Citation Analysis (CCA) and document Bibliographic Coupling Analysis (BCA).

The study did not adopt the traditional approach of literature review to understand the concept of behavioral intention. To understand the concept of ‘behavioral intention’, a search on a literary database was conducted. One of the largest and topnotch abstract and

citation databases of peer-reviewed collection of journals is Elsevier's Scopus, where the search was conducted.

The following keyword protocol was used to perform the literature search on February 11th, 2019.

TITLE-ABS-KEY (behavioral AND intention) AND (LIMIT-TO (DOCTYPE , "ar")) AND (LIMIT-TO (SUBJAREA , "SOCI") OR LIMIT-TO (SUBJAREA , "PSYC") OR LIMIT-TO (SUBJAREA , "BUSI") OR LIMIT-TO (SUBJAREA , "COMP")) AND (LIMIT-TO (SRCTYPE , "j"))

The search was done in the Scopus database with the basic keyword "Behavioral Intention". The result first showed a total number of 18776 documents which reduced to 10386 after limiting the search with the document type, subject area, and source type. "Articles" was selected in document type, source type was limited to "Journals" whereas subject areas considered were "social sciences," "business management and accounting," "psychology" and "computer science." In the chosen fields, behavioral intention has been studied extensively. Based on that, subject areas were limited. Since reading and analyzing 10386 articles is quite difficult, the following inclusion and exclusion techniques or filtration of documents has been adopted using Scopus metric analysis. Application of Scopus metric analysis assists in deciding on the most impactful journal of the selected topic. The following methodology explains the way documents were extracted.

a. **Cite Score:** Citescore is a metric which helps to track performance of a journal. It provides a clear, comprehensive and current insight about the journal and is a way of measuring the citation impact of journals. Cite score calculates the average number of citations received in a calendar year over the period of the preceding three years (Research intelligence 2018). For example, to calculate the citescore for 2018, the number of citations received in 2018 to the document published in 2015, 2016 and 2017 will be the numerator whereas the denominator will be the number of documents indexed on Scopus and was published in 2015, 2016 and 2017. The reason behind giving importance to cite score is that it gives the researchers an idea about the journal to be selected for publishing articles. It provides a clear picture of the research landscape.

Citescore is one of the indicators out of eight complementary indicators of Citescore matrix. The rest seven indicators are namely Citescore Tracker, Citescore Percentile, Citescore Quartiles, Citescore Rank, Citation Count, Document Count, Percentage Cited. There reside two specific reasons which make Citescore a robust approach. The first being the inclusion of a three-year window span and the second being the inclusion of all document types in both numerator and denominator in the calculation of Citescore (Hans and Rachel 2016).

b. **SNIP:** SNIP stands for Source Normalized Impact per Paper. SNIP was first introduced by Professor Henk Moed in 2010 (Moed 2010) and was later incorporated in Scopus database. It is a normalized approach which calculates the contextual citation impact. SNIP is computed as the ratio of the number of citations per paper in a journal by the number of potential citations in the subject field (Moed 2010). Thus it can perform a direct comparison of sources in different subject fields. A field classification system where the boundaries of fields are clearly defined is not required in SNIP. This makes SNIP a strong indicator. SNIP compensates for discrepancies in Garfield's citation potential (Garfield 1979) and aims to account for differences in area of interest across research fields (Colledge et al. 2010).

Using citescore and source normalized impact per paper (SNIP), "Computers in Human Behavior" was identified as the most prestigious journal in this arena. The figures 2.2 and 2.3 below shows the details of the performance of the journal based on Citescore and SNIP respectively.

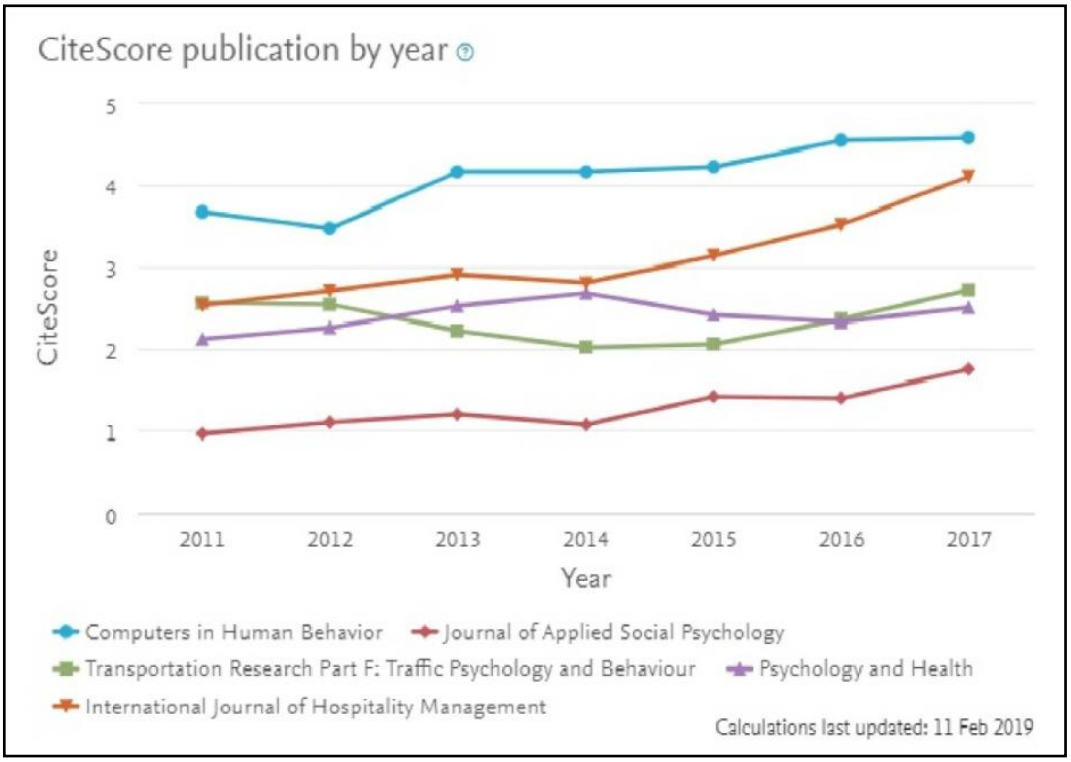

Figure 2.2: Citescore publications by year
Source: SCOPUS Database

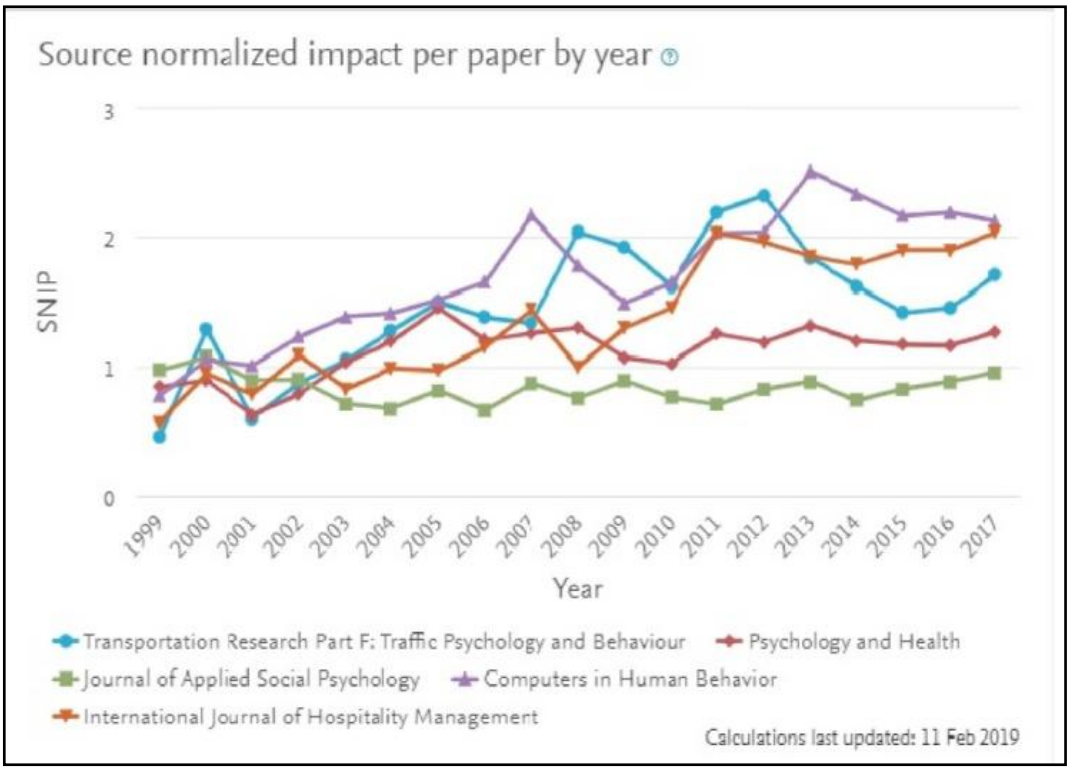

Figure 2.3: SNIP per paper by year
Source: SCOPUS Database

Figure 2.2 demonstrates that the journal 'Computers in human behavior' has the best performance followed by 'International journal of hospitality management' whereas judging in terms of SNIP, the journals that tops the list are namely 'Computers in human behavior' and 'Transportation Research Part F: Traffic Psychology and Behavior'. As the present study concerns about technology adoption, hence to commence with the review of literature, articles published in 'Computers in human behavior' was chosen to be emphasized first.

The present study also provides an insight into the publication trend emphasizing the number of articles published over the years by various countries in diverse subject areas on the topic of behavioral intention. Figure 2.4, figure 2.5 and figure 2.6 shows the number of documents published in this area from 1960 to 2019, the number of papers published by various counties and the number of documents related to behavioral intention across multiple subject areas respectively.

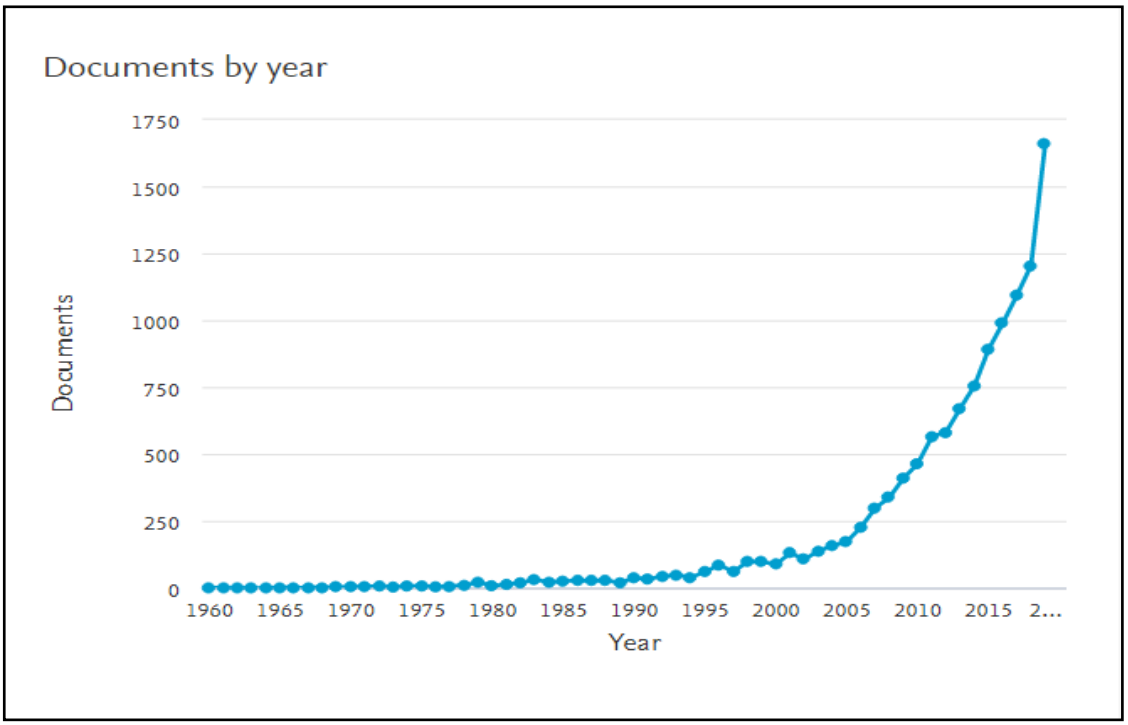

Figure 2.4: Documents by year
Source: SCOPUS Database

Though studies related to behavioral intention started in 1960, figure 2.4 illustrates that it gained momentum from 1995, and the trend still follows. For organizations and business entities to sustain in this ever transforming market, it is a necessity to understand human

behavior. Hence studies concerning behavioral intention are gaining importance and the present study aims to contribute to the literature some insights on the behavioral intention of Indian consumers to adopt UPI. Figure 2.5 demonstrates the trend of studies conducted on behavioral intention in various countries.

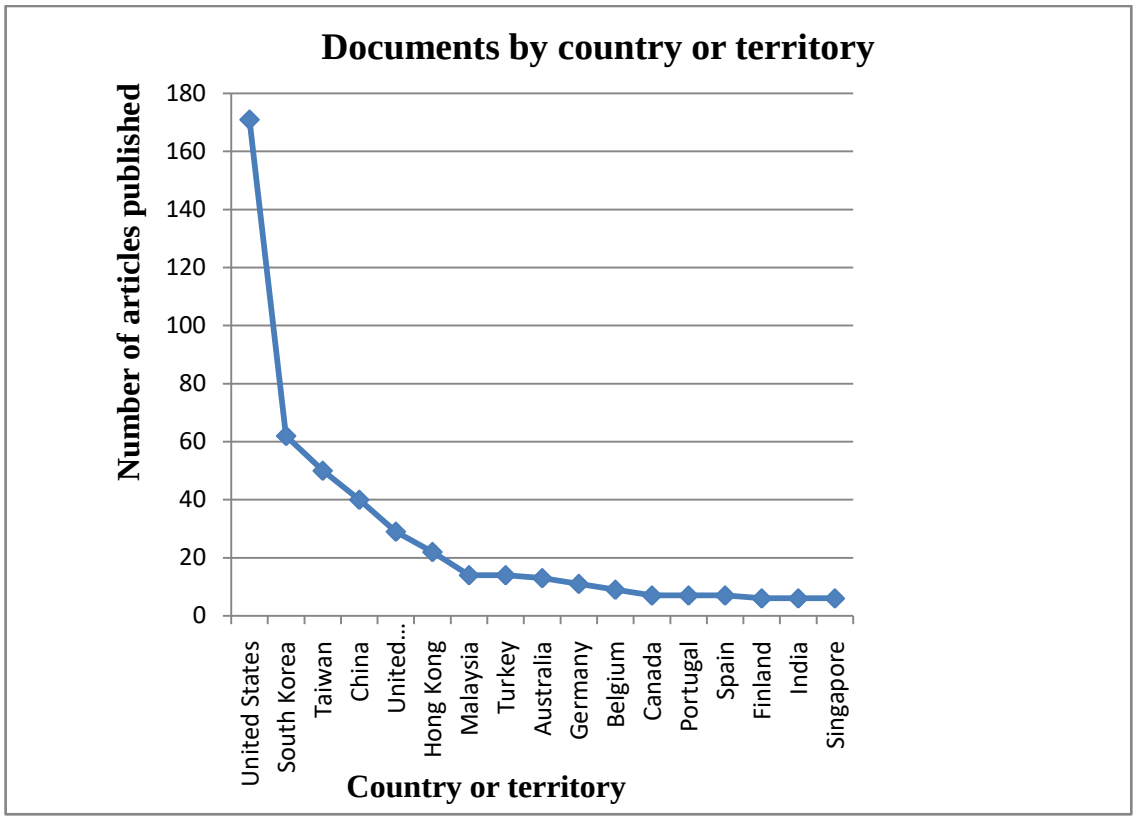

Figure 2.5: Documents by country or territory
Source: SCOPUS Database

Focusing on the geographical contribution, figure 2.5 shows that the United States has the highest number of publications in this domain followed by South Korea and Taiwan. India stands at the later end of the graph demonstrating that behavioral studies in Indian context is much less compared to other developed and developing countries.

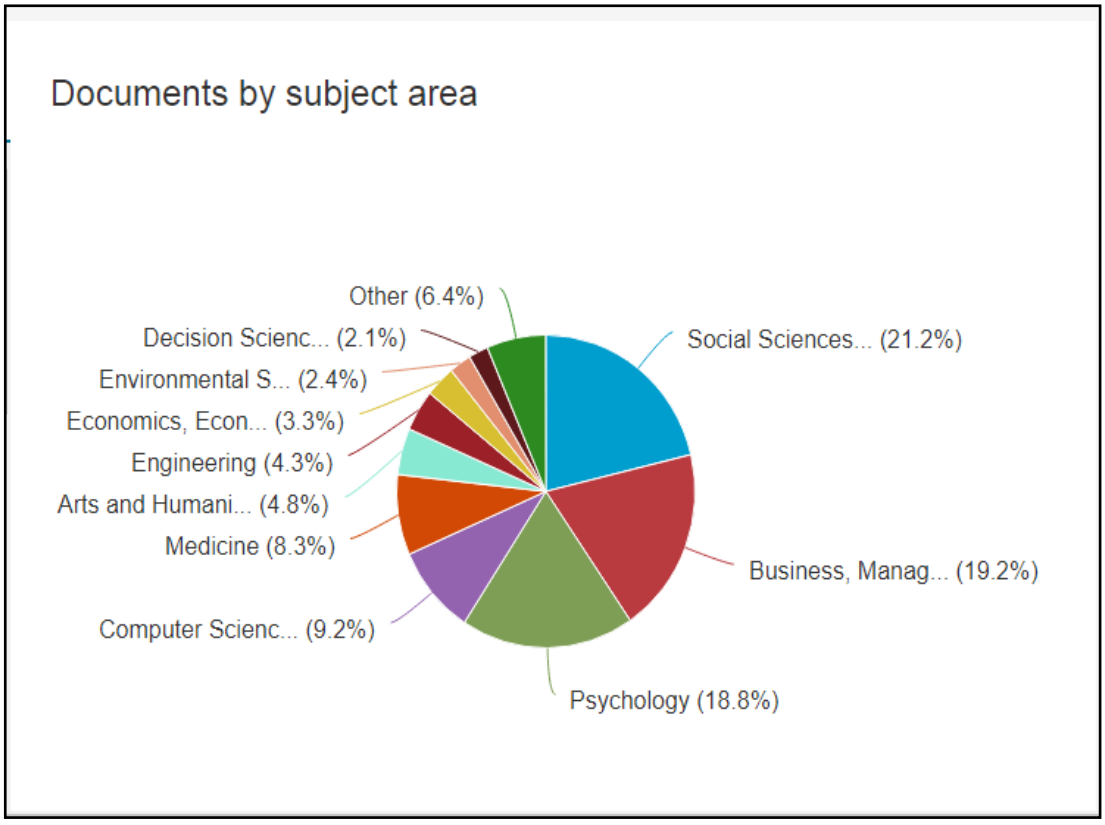

Figure 2.6: Documents by subject area
Source: SCOPUS Database

Studies on behavioral intention are no more concentrated towards social science or marketing domain and have dispersed wide. It is a multi-disciplinary topic as implied by figure 2.6. Scopus database depicts that studies on behavioral intention are more from social science background, followed by business management and psychology. The figure illustrates that 21.2% of the studies are from social science, 19.2% from business management, 18.8% from the domain of psychology, 9.2% from computer science background, 8.3% from the medical field and less than 5% in other domains like arts and humanities, economics, engineering etc.

A software called VOSviewer, version 1.6.9 has been used for analysis in this study. VOSviewer is generally used for the creation of bibliographic network and visualizing the same (van Eck and Waltman 2009, Muhuri et al. 2018). It is an open access bibliometric analysis tool developed by N. Van Eck and L. Waltman in 2009. To proceed with the exploration of the construct 'behavioral intention', co-citation analysis (CCA) and

document Bibliometric Coupling Analysis (BCA) was conducted. A brief explanation of both CCA and document BCA has been discussed further.

a. **Co-citation analysis (CCA):** Co-citation is a subject similarity indicator (Small 1973, Cawkell 1976, Osareh 1996). In the 1970s, co-citation analysis was regarded as de facto and till date it exists and is being preferred. It is a citation-based approach to scientific literature review or science mapping (Boyack and Klavans 2010). It is the frequency of two documents getting cited together in another document. For example, Document A has cited author I, II, III, IV and V whereas Document B has cited author II, III, VI and VII. So, author II and III have been co-cited in both document A and B. So their co-citation index is 2. Author III and IV have been cited together only in document A but not in B. So the co-citation index of reference III and IV is 1. CCA is more useful to identify the theoretical and foundational papers which have been used by scholars to design or invent new theories and models (Walsh and Reanuad 2017). It helps to understand the base of the topic from which it has originated. Theoretical foundational papers are easy to identify using CCA. Similarly, authors who were the initiators and have contributed more to this field were identified. Figure 2.7 and figure 2.8 highlights the top contributing authors of the field and figure 2.9 highlights the citations of the articles which are the foundational papers of the field through CCA mapping. As demonstrated in figure 2.8, the top four contributing authors of this field are namely Icek Ajzen, Viswanath Venkatesh, Fred D. Davis and Richard Bagozzi. Various other authors contributed to the literature in the context of behavioral studies and the same reflects in figure 2.7.

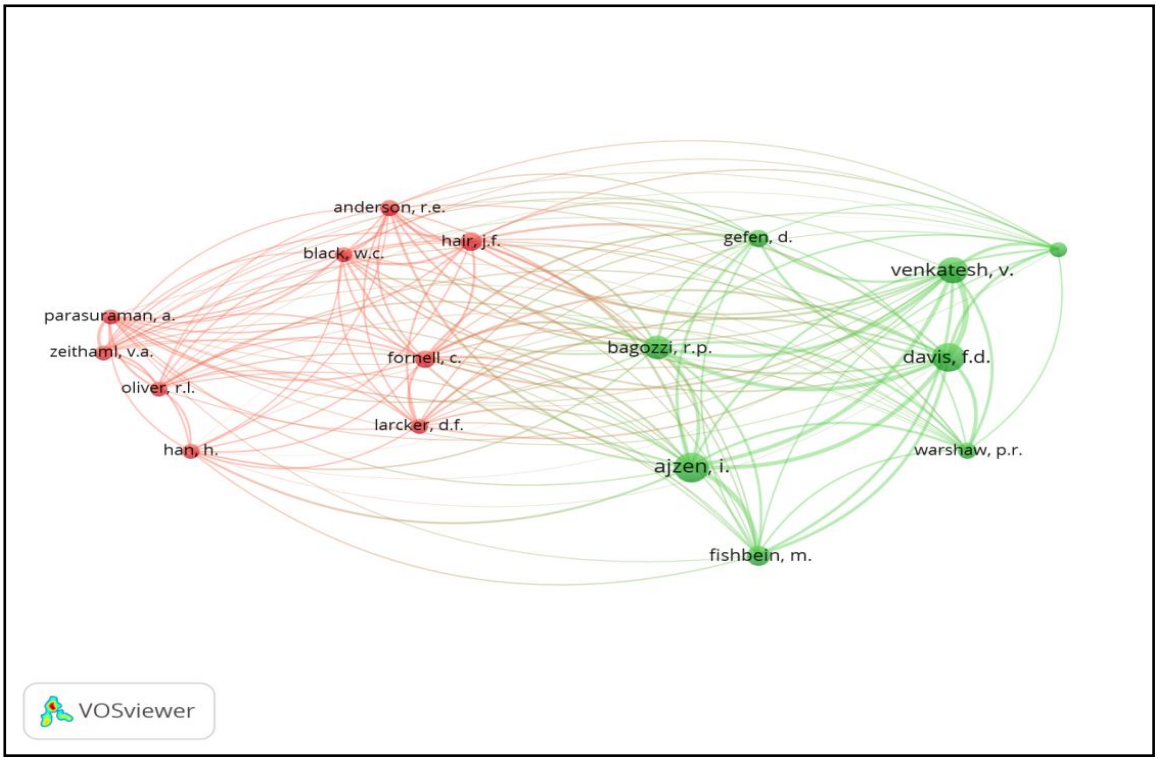

Figure 2.7: CCA mapping of top 17 contributing authors (network visualization)
Source: VOSviewer

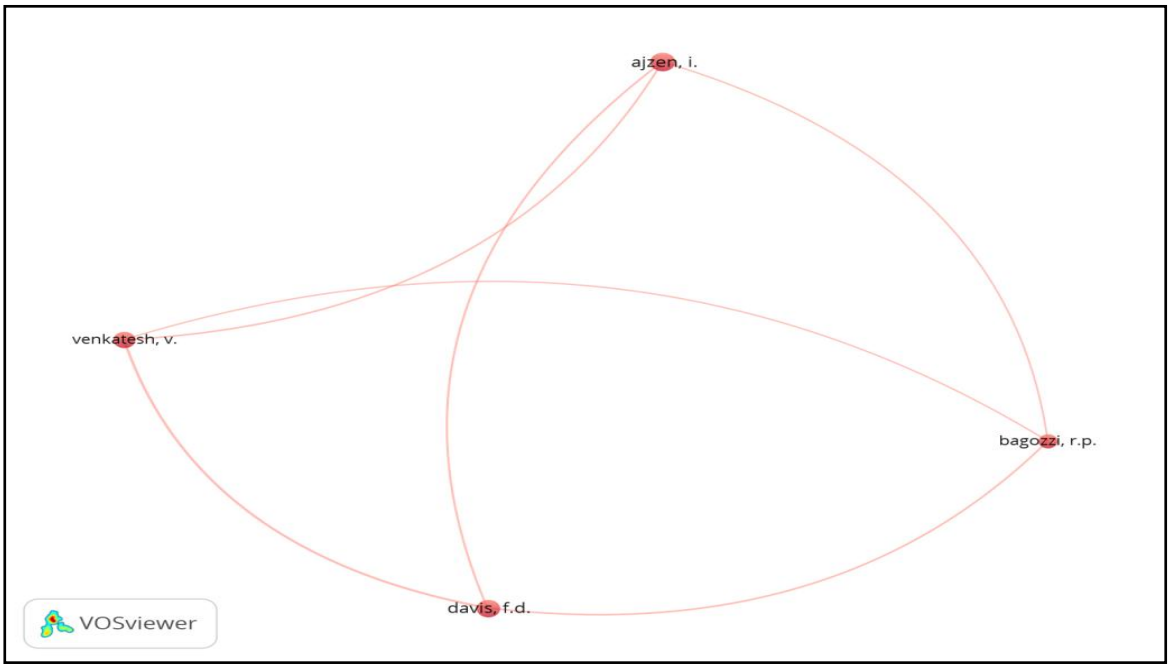

Figure 2.8: CCA mapping of top 4 contributing authors (network visualization)
Source: VOSviewer

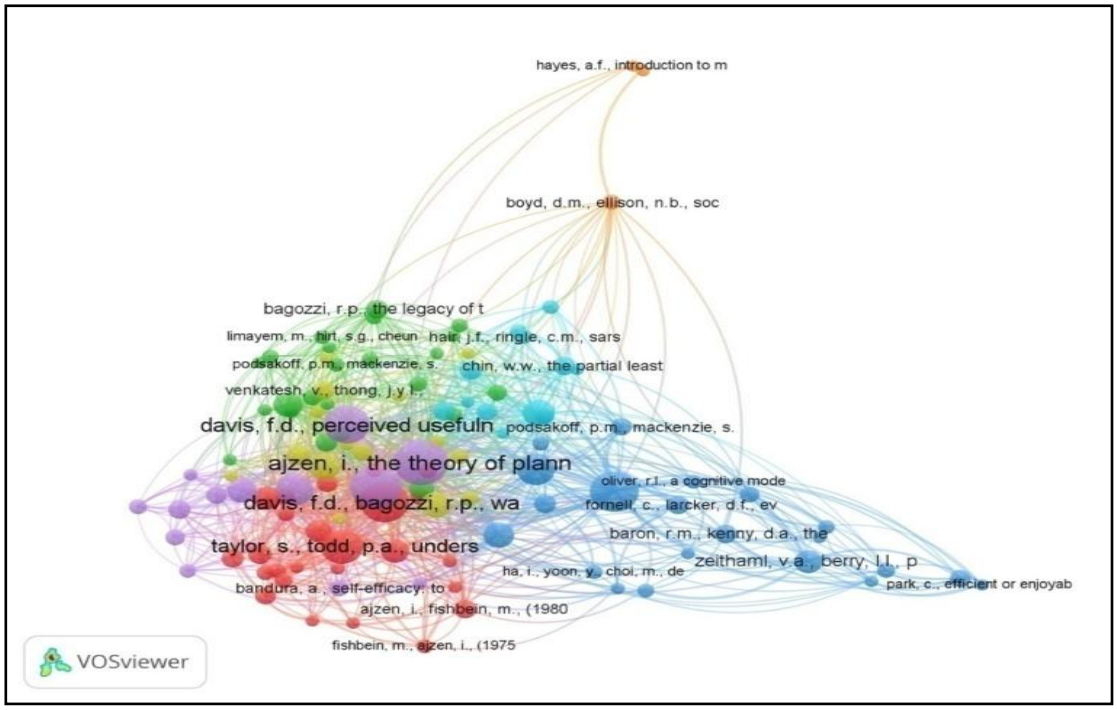

Figure 2.9: The foundations of the field through CCA mapping (network visualization)
Source: VOSviewer

Figure 2.9 shows the network visualization mapping using reference CCA technique as obtained from VOSviewer. Out of 22887 cited references, 114 items meet the threshold. The threshold was kept at 5 as the minimum number of citation of cited references. In network visualization, generally items are represented by their labels and a node connected by a link. The size of the node and the label signifies the weight which the item carries. Higher the weight of the item, bigger will be the size of the label and the node (van Eck and Waltman 2009, van Eck and Waltman 2019). The distance between two nodes signifies the level of relatedness between the items. Lesser the distance, more related the items. A link is a line that connects and shows the relationship between two items. Each link possesses a strength which is positively proportional to its value. Higher the value, stronger is the link (van Eck and Waltman 2019).

CCA helps us to understand the theoretical foundation or the seminal text, which have been progressively assisting the scholars to build on theories and practical applications. From all the articles denoted in figure 2.9, the summary of the top 10 highly cited seminal texts have been presented in a tabular format.

Table 2.1: Review of top 10 highly cited papers

Author (Year)	Context	Methodology	Review	Remarks
Venkatesh et al. (2003)	Implementation of information technology (IT) in organizations	Empirical research on longitudinal data	Eight prominent user acceptance models were reviewed in this paper and a unified model was proposed named UTAUT (Unified Theory of Acceptance and Use of Technology) which was empirically validated. The model helps the managers to determine the drivers of acceptance of technology.	It is a retrospective study of eight models which has resulted in a single model. The unified model possesses two dependent variables and four independent variables moderated by gender, age, experience and voluntariness. The dependent variables are behavioral intention and actual usage of information technology whereas the independent variables are performance expectancy, effort expectancy, social influence and facilitating conditions. The study confirmed that performance expectancy, effort expectancy and social influence were the direct determinants of intention and facilitating conditions and behavioral intention were the direct determinants of actual usage.

Ajzen (1991)	Social and behavioral science	Data from various domains	The theory of planned behaviour (TPB) is an extension of the theory of reasoned action (TRA). TPB says that it is not only important to know what effects behavior but also the factors which initiate the intention to perform a behavior. The theory also emphasizes the concept of three different beliefs namely behavioral beliefs, normative beliefs and control beliefs. The study revealed that an individual's attitude towards an object is solely dependent on the notion that the individual holds about that object.	Multiple factors affect behavioral intention. Attitude towards the behavior, subjective norm and perceived behavioral control (PBC) lead to intention, which further leads to the performance of the behavior. It is the inclusion of PBC that differentiates TPB from TRA. PBC plays a significant role in mediating the effect of past behavior and future behavior. Also, more potent would be the intention to perform a behavior if a favorable attitude, subjective norm, and a higher perceived behavioral control exist.

Davis et al. (1989)	Acceptance and rejection of computer-based technology	Longitudinal study of 107 users (MBA students)	Using TRA and Technology Acceptance Model (TAM), the author has examined the acceptance and rejection of computer-based technology. The results revealed that perceived usefulness (PU) strongly influences an individual's intentions. Perceived ease of use (PEOU) has a smaller yet significant effect on intention. Subjective norm was the only factor that did not affect intention. Attitude has a partial mediating effect on the relationship between belief and intention.	The paper had four specific things to answer. i. The degree of prediction of usage by intention ii. Explanatory power of TRA and TAM to clarify the intentions to use a computer system iii. Examining the mediating effect of attitude on beliefs and intentions iv. To check whether any other theoretical formulation can over-perform TRA and TAM or not. The author concluded that intention is a good predictor of actual system usage. Individually TRA and TAM reflected mixed support, but the confluence of the two has shown better performance.

Taylor and Todd (1995)	Usage of Information Technology (IT)	Longitudinal data of 786 potential computer users (over 12 weeks)	The research work is a comparative study of three different models: TAM, TPB and the Decomposed Theory of Planned Behavior. The main objective was to identify the model that helps the most to understand IT usage. It was recommended that the decomposed TPB gave a better insight into BI by applying some implementation strategies. An observation in this study was that despite adding subjective norm and perceived behavioral control, the prediction of IT usage of TAM had not shown any increment.	The paper illustrates how TAM is different from the traditional version of TPB and the decomposed version of TPB. Both TPB and decomposed TPB were seen to have better explanatory power than TAM to explain BI. The percentage of variance in BI in TAM, TPB and decomposed TPB was found to be 52%, 57% and 60%, respectively. It summarizes that if usage prediction is the primary concern, then TAM can be used for a study. On the other hand, if a researcher focuses on understanding use behavior and BI, then TPB will give a better insight.

Davis (1989)	Relationship between perceived usefulness, perceived ease of use and system usage	Two studies: First of 112 users in a Laboratory, second of 40 MBA students of Boston University	This paper aims to develop and validate new scales for PEOU and PU. The new scales have strong psychometric properties and have a valid relationship with self-reported system usage. The recommendations noted that PEOU could be considered a causal antecedent to PU rather than a direct determinant of system usage.	The author aspired to seek better measures for explaining and predicting system usage. It was deducted in this study that the relationship between perceived usefulness and system usage is much stronger than that of the relationship between PEOU and system usage.
Venkatesh (2000)	Determinants of perceived ease of use (PEOU)	Three longitudinal field studies were conducted over three months	The paper proposed a theoretical framework identifying the determinants of system-specific PEOU. Control, intrinsic motivation and emotion are the anchors	PEOU is a crucial driver of technology acceptance, adoption of technology and use behavior. The anchors of PEOU were found to be significant, and so was the adjustment model of determinants. It was deduced that with experience of using a system, the anxiety

		with a sample size of 246	for the evolution of perceived ease of use. Control consists of internal and external control named computer self-efficacy and facilitating condition, respectively. Intrinsic motivation was conceptualized as computer playfulness, whereas emotion was conceptualized as computer anxiety.	generally fades, and thus adjustment plays a significant role in determining system-specific perceived ease of use.
Compeau and Higgins (1995)	Computer self-efficacy	Cross-sectional data of 1020 responses were analyzed using PLS	Self-efficacy has three dimensions which are magnitude, strength and generalizability. The five preexisting measures of self-efficacy had some limitations. Thus an effort was made to develop self-efficacy measures	Social cognitive theory and information system (IS) literature were referred for the theoretical foundation of scale development. IS literature concluded that if an individual is aware that the use of technology will provide a positive outcome, it will encourage individuals to use computer technology. On the other hand, social cognitive theory contradicted the statement and

			to comprehend individual computing behavior. The evaluation of the measures was done by scrutinizing the performance in a nomological network. A nine-item scale was established for the measurement of self-efficacy. The results implied the reasons behind using technology despite the existence of factors like anxiety, outcome expectations and effect.	deduced that beliefs about positive results might not motivate an individual to use computer technology unless an individual is confident about his/her abilities. So there exists equal importance for both self-efficacy and outcome expectations.

Davis et al. (1992)	Empirical analysis of enjoyments Vs. usefulness	A field study and a laboratory study of 200 and 40 MBA students respectively	Two different studies have perceived the impact of enjoyment and usefulness on usage intention. In both studies, usefulness was five times more influential than enjoyment. A positive interaction between these two constructs was also seen.	An interesting query about the use of computers in the workplace would be the factor that motivates users to use a computer. The results depicted that usefulness encourages users in the workplace to use computers rather than enjoyment. Enjoyment is a secondary factor.
Venkatesh and Bala (2008)	Evolution of an integrated model: TAM3	Longitudinal field studies at four different organizations were conducted	The author of this paper proposed an integrated model identifying the determinants of PEOU and PU and validated it empirically. Some interventions were discussed and classified into two groups: pre-implementation and post-implementation interventions.	The proposed model, TAM3, postulates some theoretical contributions: -There is no cross-over effect between the determinants of PEOU and PU. Hence no possibility of any inconclusive findings. -With an increase in experience, the effect of PEOU on BI will reduce, whereas the effect of PEOU on PU will rise. -A clear relationship was depicted between the

			The pre-implementation stage incorporates initiation, organizational adoption and adaptation, whereas the post-implementation phase includes user acceptance, routinization and infusion.	suggested interventions and the determinants of PU and PEOU.
Venkatesh and Morris (2000)	Effect of gender difference in acceptance of technology and behavioral intention	Longitudinal study for 5 month period among 342 workers across three measurement points: post-training, after 1 month of experience and after three	This paper gives special attention to two factors, gender and social influence, which had not gained enough importance in the IS literature. Both play an essential role in user acceptance and decision-making pertaining to influence in behavior. The three main objectives of this study include i) determining gender	The paper answers whether there is any difference between women and men concerning technology adoption. The answer says: -Technology usage decision amongst men was found to be more influenced by usefulness. -Women were found to be more influenced by the ease of use and social influence. It was observed that ease of use was never an area of concern for men; thus, technology was always perceived from productivity-related

		months of experience.	difference in the influence of PU and PEOU, ii) integrating social influence into TAM, keeping gender as a moderator iii) perceiving gender difference over the long term. The paper gave an insight into the factors causing a difference in technology adoption by men and women.	factors. On the other hand, women observe technology adoption from the process (ease of access) point of view.

Table 2.1 addresses the foundational elements of the article, the observations made, methodology obtained to carry out the research, the sample used and general remarks of the study.

b. Document BCA: Document Bibliometric Coupling Analysis (BCA) refers to the number of shared references (Walsh and Reanuad 2017). It means that when the same literature gets cited in various documents, it signifies that the documents have a similar research theme, resulting in a higher coupling index. For example, Document A has cited Author I, II, IV and V. Document B has cited Author II, V, VI and VII. At the same time, document C has cited Authors I, II, III, V and VII. Thus the bibliographic coupling of documents A and B is two as they have two references in common, whereas BCA for documents B and C is three and BCA for documents A and C is also 3. This technique helps researchers know the studies that have been conducted in the recent past and also assists to know the trends or important issues that have been addressed on a particular topic. In addition to that, document BCA can be used to identify the gaps and the context in which the topic has been addressed (Walsh and Reanuad 2017).

Out of all the articles extracted from the chosen journal, the documents that received 200 or more citations have been first chosen and reviewed. A detailed review of the top 10 highly cited articles has been listed in a tabular format. Table 2.2 comprises the top 10 highly cited articles of the journal, the samples considered for the research and the methodology adopted, the model used to conduct the research, the latent constructs investigated, followed by a brief remark on the findings of the study. The detailed review of those articles helped get an idea of the widely studied construct and its relevance to the field of behavioral studies concerning technology adoption. Figure 2.10 shows the network visualization outlay of the highly cited documents on behavioral intention denoted with nodes and links of multiple colours. Similar to the interpretations made for the network visualization graph of CCA analysis, the network visualization graph of BCA also interprets the nodes and links in the same manner. The size of the node and the label signifies the weight that the item carries. Higher the weight of the item, bigger will be the size of the label and the node (van Eck and Waltman 2009, van Eck and Waltman 2019). The distance between two nodes signifies the level of relatedness between the items. Lesser the distance, more related the items.

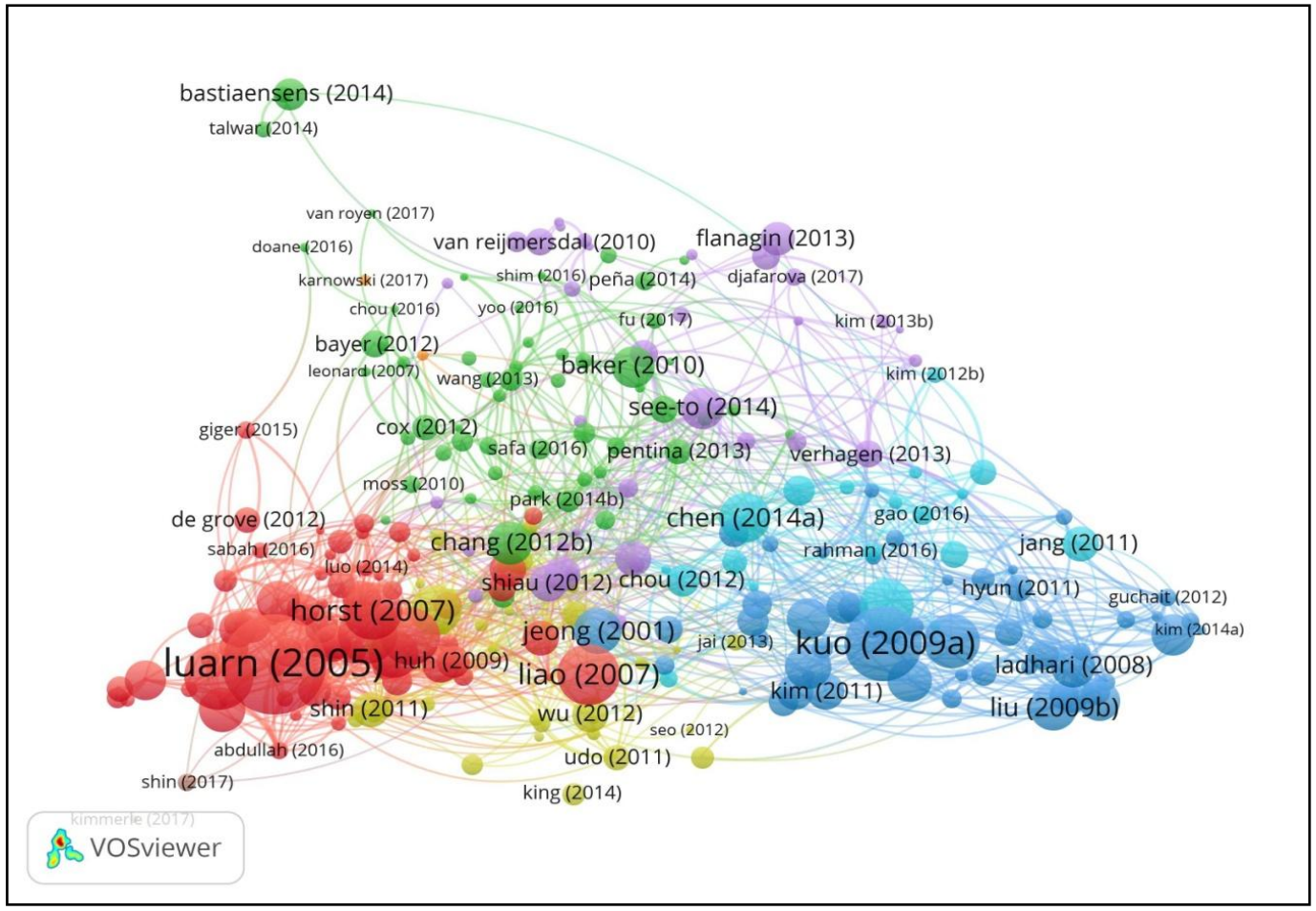

Figure 2.10: Mapping of highly cited papers on behavioral intention using BCA technique (Network visualization)
Source: VOSviewer

Table 2.2: Review of highly cited papers selected using document BCA technique of bibliometric analysis

Author	Data/ Methodology	Model used / Constructs	Remarks (Findings)
Luarn and Lin (2005)	A cross-sectional study on 180 users of Taiwan	Model Used: TAM. Constructs: Perceived usefulness (PU), perceived ease of use (PEOU), perceived credibility, perceived self-efficacy, perceived financial cost and behavioral intention.	The paper attempted to understand the factors determining the acceptance and use of mobile banking. Perceived credibility (trust-based construct) was found to relate to behavioral intention directly. Perceived self-efficacy and perceived financial cost were significant antecedents of behavioral intention.
Kuo et al. (2009)	A cross-sectional study on college and graduate students of 15 major universities in Taiwan.	Constructs: service quality, perceived value, customer satisfaction and post purchase intention.	The paper emphasizes revealing a relationship between service quality, perceived value, customer satisfaction and post-purchase intention and establishing an instrument for measuring the service quality of mobile value-added services. Four service quality dimensions were identified: customer service and system reliability, navigation and visual design, content quality and connection speed. The findings are: i) service quality positively influences perceived value and customer satisfaction ii) positive influence of perceived value

			on customer satisfaction and post-purchase intention iii) customer satisfaction has a positive impact on post-purchase intention iv) service quality has an indirect positive impact on post-purchase intention through customer satisfaction or perceived value.
Ong and Lai (2006)	A cross-sectional study on 156 responses of employees of six international companies of Taiwan	Constructs: computer self-efficacy, PU, PEOU and behavioral intention to use.	This paper emphasizes the acceptance of e-learning amongst IT employees of six international companies. It also sheds light on the role of gender in accepting or adopting e-learning. Men were found to outperform women in computer self-efficacy, PU, PEOU and behavioral intention. Women were more inclined to ease of use and computer self-efficacy. A significant finding was the importance of helpful content that attracted men more towards the usage of e-learning.
Liao et al. (2007)	A cross sectional study on 469 students of Cyber University System (CUS), a successful e-learning system	Model used: An integrated model using Expectation Disconfirmation Models (EDM) and Theory of Planned Behavior (TPB). Constructs: Perceived usefulness, PEOU,	The main factor that motivates a consumer to continue using online services depends mainly on customer satisfaction and, to some extent, on subjective norm and perceived behavioral control. The integrated model has 29% better explanatory power than that of other EDM-based models. The study

	in Taiwan.	disconfirmation, satisfaction, subjective norm, perceived behavioral control and continuance intention.	depicted that PEOU is a significant yet weak determinant of customer satisfaction. The study suggests that advertisement, propaganda and periodic review can encourage continuous usage of online services.
Horst et al. (2007)	Convenience sampling of 238 respondents from various government offices of cities in The Netherlands	Trust in government organization, trust in e-government, worry about e-government, personal experience, e-services, risk perception e-services, PU e-government, PBC e-services, PU e-services, subjective norm e-services and intention to adopt government e-services.	The study articulates the role and importance of trust and risk perception in the intention to adopt government e-services. Results depicted that the primary determinant of behavioral intention to adopt government e-services is perceived usefulness. Trust was found to be the primary determinant of PU. In contrast, factors that could significantly predict perceived usefulness comprise subjective norm, perceived behavioral control, personal experience and risk perception. Perceived usefulness and level of trust were found relatively higher amongst Dutch citizens about government e-services.
Lu et al. (2009)	250 responses from a mix of high school students, undergraduate students and	Model used: TPB, TAM and the flow theory. Constructs: PU, PEOU, Perceived enjoyment, concentration, attitude towards using IM, subjective norm,	The author attempted to explore the acceptance and user behavior of instant messaging (IM) usage amongst Chinese people and verified the importance of intrinsic and extrinsic motivation. The results revealed that PU has a positive relationship with behavioral attitude and BI. PEOU had a

	working professionals in a high school and a national university in central China.	intention to use IM and actual IM usage.	significant impact on PU but no direct relationship with behavioral attitude and BI. Perceived enjoyment strongly affected behavioral attitude. Chinese IM users have bestowed an equal level of importance to perceived enjoyment and perceived usefulness.
Kuo and Yen (2009)	A cross-sectional study of 269 Taiwanese undergraduate and graduate students from five different universities.	Model Used: TAM. Constructs: personal innovativeness, PU, PEOU, perceived cost, attitude and behavioral intention.	This paper attempted to understand behavioral intention toward 3G mobile value-added services. It looks into the effect of two additional variables: personal innovativeness and perceived cost. The study found that the enhancement of personal innovativeness will be followed by an enhancement in PEOU of 3G value-added services. PEOU had a positive relationship with PU, and perceived cost, though the strongest was its effect on consumer attitude. Attitude was the most crucial determinant of BI. Thus service providers must focus more on changing customers' attitudes rather than providing technical information. A significant finding revealed that the usage of 3G value-added services is relatively low as users are not ready to pay more for the value-added services.
Shin (2009)	296 responses	Model Used: UTAUT.	The study emphasizes the acceptance of mobile wallets. The

	collected from users having an idea of mobile payment. Final data was collected online through a web based survey questionnaire.	Constructs: PU, PEOU, social influence, perceived security, trust, self-efficacy, intention and use behavior.	effects of security, trust, social influence, and self-efficacy were also studied. PU and PEOU were identified as key antecedents of attitude, whereas perceived security and trust as the main predictors of customer intention. User attitude was also found to be affected by trust and perceived security. Additionally, both trust and perceived security get enhanced by social influence. The study enhanced the literature by including both subjective and objective security and the difference between the two.
Yang et al. (2012)	Data was collected from 483 potential adopters and 156 current users of a mobile payment service in China.	Constructs: social influence, personal innovativeness, perceived risk, perceived fee, compatibility, relative advantage and behavioral intention to continue using.	The determinants of the pre-adoption and post-adoption stages of mobile payment services have been studied. It investigates whether the importance of behavioral beliefs, social influence and personal traits remain the same in both the adoption stages. The result implies that behavioral beliefs, social influences, and personal traits directly influence adoption intention. However, perceived fee did not have any significant impact on BI in the post-adoption stage. For current users, advantage and perceived risk significantly influence BI whereas, for potential users, effects of compatibility and

			perceived fee were found highly significant. Personal trait affects BI both directly and indirectly in both stages.
Amoako-Gyampa (2007)	571 responses of people using ERP from different regions of the United States.	Constructs: prior usage, ease of use, argument for change, PU, intrinsic involvement, situational involvement and behavioral intention.	The study emphasizes the influence of perceived usefulness, user involvement, argument for change, prior usage and PEOU on a user's behavioral intention to the usage of enterprise resource planning (ERP). The findings revealed that both PU and PEOU had a significant impact on behavioral intention to use ERP.
Chang and Zhu (2012)	283 Chinese people who use SNSs were surveyed using a web based questionnaire.	Model Used: Expectation–confirmation model. Constructs: confirmation, perceived bridging social capital, perceived bonding social capital flow experience, satisfaction and SNS continuance intention.	The role of perceived social capital and flow experience in the continued usage of social networking sites (SNSs) was studied. The results inferred that perceived bridging social capital significantly impacts both customer satisfaction and continuance intention. In contrast, perceived bonding social capital has no impact on any of these. The results also depicted that the path from flow experience to satisfaction is significant, but the path from flow experience to continuance intention is insignificant.
See-to and Ho (2014)	A theoretical framework with	Constructs: message source of eWOM, eWOM in SNS,	The study provided a robust theoretical ground to conduct empirical studies on the effect of electronic word of mouth

	suggested propositions.	disposition to trust, institutional-based trust, trusting belief, value co-creation and purchase intention	(eWOM) on the purchase intention of social networking sites (SNSs). The interaction of consumers' trust, value co-creation and eWOM were examined through a systematic review. The theoretical analysis suggested that eWOM has a direct impact on purchase intention. The indirect impact of eWOM on purchase intention is moderated by consumers' trust and value co-creation. The impact of eWOM is also moderated by the effect of the message source.
Koo and Ju (2010)	356 respondents of three major cities of South Korea who has online shopping experience.	Constructs: environmental stimuli, organism responses, atmospherics, emotions, approach/ avoidance behavior, graphics colors, links, menu, pleasure and arousal, intention.	The study explores various aspects of online consumer characteristics. It focuses on the impact of atmospheric cues (such as graphics, colours, links, and menus) on customer emotion, leading to intention. In atmospherics, graphics, colours, and links positively impact emotion (pleasure and arousal), whereas menu has a negative impact on the same. Pleasure and arousal have a positive impact on intention. Perceptual curiosity was seen to play a moderating role.
Chung et al. (2010)	989 responses from online community users through a	Constructs: internet self-efficacy, perceived quality of online community sites,	The study examined the age difference in participation in online communities. It also emphasized determining factors of future intentions to participate. A contradictory finding was

	web based questionnaire via an online panel provided by the Media Research Lab at the University of Texas at Austin.	perceived technology affordance, perceived privacy protection, PEOU, PU and behavioral intention.	the unimportant path between PEOU and PU. Nevertheless, PU was seen to affect BI positively. Both perceived quality and perceived technology affordance positively correlate with PEOU and PU. Perceived privacy pretention also has a significant impact on BI. Age was seen to negatively affect Internet self-efficacy, perceived quality of online community sites, PU and BI. But there was no significant difference in perceived privacy pretention because of age difference which means both young and aged users equally care about privacy.
Baker and White (2010)	160 secondary school students (adolescents) responded to the questionnaire collected in two waves in an interval of 1 week.	Model Used: TPB. Constructs: attitude, subjective norm, perceived behavioral control, intention, group norm, self-esteem and reported behavior.	Model Used: TPB. The study attempted to understand the usage of social networking sites (SNSs) by adolescents. Two additional variables: group norm and self-esteem influences were also studied. Following are the findings of the study: -Group norm is a significant predictor of intention. -Self-esteem is not a significant predictor of intention.

Bibliometrics helped to begin the literature review in a systematic and scientific manner. All papers which can be considered as theoretical pillars of the field were identified using CCA and the most cited papers using document BCA. Thereafter, foundational papers, highly cited papers and articles of the most contributing authors were studied meticulously. This paved the path of carrying out the literature review in a defined direction which lead the way to introduction of various theories, models, new latent constructs etc. In addition to the above mentioned articles discussed in detail, the present research work also reviewed various other recent and highly cited articles from other high impact factor journals. Various psychological theories were adopted and analyzed by researches to propose advanced models. Literature possesses an elaborate explanation of the theories and models adopted by researchers to study behavioral intention. A brief on behavioral intention as a concept is elucidated below.

2.3.2 An Overview on Behavioral Intention

The term behavioral intention comprises of two different terms with broader meanings. Those are "behavior' and "intention." Behavior is an outcome of an individual's actions towards something. Intention can be described as the state of mind, where an individual plans to act on a specific thing. It involves forethoughts and planning to perform an activity. Thus behavioral intention is a conscious plan of an individual either to perform or not to perform a certain behavior. It is a function of the fact that the performance of any action or a particular behavior will result in an outcome. According to Ajzen (1991), when an individual gets involved in a particular behavior, behavioral intention is formed. Krueger and Carsrud (1993) noted that the single best predictor of human behavior is intention. Ajzen (1991) in Theory of Planned Behavior (TPB), has defined intention as an individual's endeavor to perform a behavior and that behaviour can be towards anything. Researchers have explored behavioral intention in various contexts across diverse disciplines like food industry, hospitality, tourism, technology adoption, food consupmtion, adoption of financial instrument, education sector, e-commerce, medical sector, social media usage etc. The topic is no more restricted to marketing research and has gained attention of researchers from various domains.

Buylova et al. (2019) researched about significant predictors of immediate evacuation intention during earthquake. Evacuation intention, a form of human behaviour, explains

behavioral intention in extreme events. A study on consumption intention has been carried out where behavioral intention of Americans towards fast food consumption was given importance (Myrick 2020) whereas Kim and Choe (2019) examined the local food consumption intention of foreigners. Lu et al. (2019) examined the determinants of purchase intention of imported organic wine, Olya et al. (2019) used TPB to analyze continued intention of customers towards recommending and using greenhotel. To elaborate further, in studies related to entrepreneurial intention, researchers have adopted TPB and replaced behavioral intention with entreprenual intention (Wilson et al. 2007). This is because entreprenual intention is also a planned behaviour to initiate a new enterprise and all planned or intentional activities have a strong relationship with behavioral intention (Krueger 2017). Entreprenual intention has recently got greater importance and has been studied in various contexts (Dheer and Lenartowicz 2019, Ward et al. 2019). The field of medical science is also giving equal importance to studies concerning behavioral intention and adding on to the existing body of knowledge (Chu and Huang 2018, Savage et al. 2017, van Lettow et al. 2015). Researchers have studied the intention of women to consume folic acid during pregnancy (Jalambadani et al. 2019). So, behavioral intention has been studied in diverse contexts in various fields making it a multidisciplinary topic. Though the factors influencing behavioral intention keep varying depending on the context, but the preliminary factors remain the same.

2.3.3 Factors Affecting Behavioral Intention

There are various factors that affect behavioral intention. Theory of Reasoned Action (TRA) suggests that subjective norm and attitude towards behavior influences behavioral intention (Fishbein and Ajzen 1977). As per the Theory of Planned Behavior (TPB), behavioral intention gets influenced by subjective norm, attitude towards the behavior and perceived behavioral control (Ajzen 1985). The Technology Acceptance Model (TAM) notes that perceived usefulness and perceived ease of use are the two primary factors that affect behavioral intention. Unified Theory of Acceptance and Use of Technology (UTAUT) affirms that performance expectancy, effort expectancy, social influence and facilitating conditions affect behavioral intention (Venkatesh et al. 2003). Further Venkatesh et al. (2012) proposed UTAUT2 by adding some additional constructs to UTAUT that influences behavioral intention. Those latent constructs are habit, hedonic

motivation and price value. Further Farooq et al. (2017), in the model UTAUT3, reported that factors which influenced behavioral intention of Malaysian students to use lecture capture system are performance expectancy, effort expectancy, social influence, facilitating conditions, habit, hedonic motivation, price value and personal innovativeness. The literature on factors affecting behavioral intention in multidisciplinary sectors is vast. After an extensive comprehension about multiple theories, basics of behavioral studies, dimensions of technology adoption studies and various factors influencing behavioral intention, the present study decided on the model to be adopted for the study along with proper justification. Hence the upcoming section focuses on the theoretical background of the study.

2.4 THEORETICAL BACKGROUND OF THE STUDY

"Every good scientific theory is a prohibition: it forbids certain things to happen. The more a theory forbids, the better it is." - Popper (1972).

Philosophy concerns about the ideology that acts as guiding principle of human behavior. Every theory has a philosophical hole and thus, a single theory cannot account for all sort of behavior. Theory of Reasoned Action (TRA) and Theory of Planned Behavior (TPB) have been the backbone of various models concerning behavioral and technology adoption studies. Though these two theories were developed for sociological and psychological studies, these have been widely adopted by researchers for investigating individual's IT use behavior (Kuo et al. 2015). TRA - proposed by Martin Fishbein and Icek Ajzen in 1967, has been one of the most applied and systematic theories in the field of attitude and behavioral research. The theory postulated that an individual's behavior is driven by the intention to execute it wherein this intention gets determined by one's attitude and subjective norm towards the behavior. The behavior of an individual depends on the pre existing attitude and behavioral intention and in order to predict that behavior, TRA is used. However, TRA ignored an individual's perceived control over behavior. Hence TPB was proposed by Icek Ajzen in 1985 to overcome this flaw. Ajzen (1985) added a new construct 'perceived behavioral control' to TRA which was an influential driver of intention and behavior. Perceived behavioral control is the perception of a user about the level of

ease or difficulty of performing the behavior of interest (Ajzen 1991). The theory proposed that both behavior and intention of an individual are the outcome of subjective norms, attitude and perceived behavioral control. Armitage and Conner (2001) declared TPB as one of the best predictive persuasion theories. However, TPB has its drawbacks too. It ignores the impact of various cognitive factors which might influence behavioral intention.

The Technology Acceptance Model proposed by Davis et al. (1989) is an information system theory which says that there exist various factors that affect the decision of an individual to accept and use a new technology. TAM, derived from TRA, emphasizes more on user's internal perception (Septiani et al. 2017). Though TAM is a widely used model for studying acceptance of technology but it was seen that it does not elaborate on the variance of an individual's intention (Bradley 2012). TAM has been used in various studies and is known for its parsimony. The parsimony of TAM is its strength and limitation too (Venkatesh 2000). Though the model is compact and simple, it is not suitable for studying user acceptance of new systems (Mathieson 1991). As UPI is a newly introduced technology, hence TAM was not chosen as the model to be adopted for studying user acceptance of UPI.

Unified Theory of Acceptance and Use of Technology (UTAUT), which was designed after a critical and empirical analysis of eight different user acceptance models, became the most explained model for behavioral studies concerning technology adoption. It explained 70% variance in intention (Venkatesh et al. 2003). UTAUT possesses four direct determinants of behavioral intention namely performance expectancy, effort expectancy, social influence and facilitating conditions. It was observed that though UTAUT was proposed to study the use and acceptance of technology by employees in organizational context, researchers had performed either application or rather partial replication of the model in other contexts also. To design a model appropriate for studies on consumer context, UTAUT2 was proposed by extending UTAUT with three additional constructs namely hedonic motivation, price value and habit (Venkatesh et al., 2012). UTAUT2 is thus an appropriate model for analyzing consumer use of technology. But, UTAUT2 was also extended by researchers to investigate the impact of other factors on consumer's use of technology (Shaw and Sergueeva 2019, Goularte and Zilber 2020, Kumar and Bervell 2019, Moghavvemi et al. 2017, Alalwan et al.

2017). Farooq et al. (2017) extended UTAUT2 by adding 'personal innovativeness' to the model and renamed it as UTAUT3, which was examined in education sector in the context of acceptance of lecture capture system. Agarwal and Prasad (1998) stated that personal innovativeness enables users to adopt newly introduced technology comparatively earlier. In addition to that, innovative people are considered as the flag bearers of new technology (Rogers 1995). Thus the construct 'personal innovativeness' might also have an impact on behavioral intention towards adoption of UPI. As UTAUT3 has all variables which may have an impact on acceptance of UPI and is also not examined yet in terms of adoption of contactless payment, it has been chosen as the model to be adopted for the study. The construct 'price value' was not used in the study as a probable driver of behavioral intention to use UPI. This is because, usage of UPI does not require any extra cost – eliminating the need to explore the impact of price value on intention to adopt UPI.

After identifying some critical research gaps from the extant literature, the impact of two other constructs namely 'trust' and 'word of mouth content' on behavioral intention to adopt UPI was also investigated in this study. The research gaps identified from an extensive literature review has been elucidated in the next sub section.

2.5 RESEARCH GAPS

An unexplored topic or domain identified during extensive literature review that highlights the scope for further research is a research gap. Identifying an appropriate research gap is important because it initiates further research or clarification on a topic that has been less explored or lacks adequate information in the literature archive. The present study identified the following research gaps from the literature archive and explored the uncovered notions.

Research Gap 1: UTAUT3- a model proposed by Farooq et al. (2017) was examined in smart learning sector involving students of selected offshore campuses of foreign universities of Malaysia who were using lecture capture system. This model was not verified in the context of adoption of contactless payment. The present study attempted to examine UTAUT3 regarding adopting an exemplary Indian digital innovation – Unified Payments Interface.

Research Gap 2: Technology adoption studies are not uncommon and have been explored by various researchers in diverse contexts. The models which researchers widely adopted to explore behavioral intention towards technology adoption are TAM, UTAUT and UTAUT2. Alajmi (2018) identified a dearth of research regarding the analysis of factors that are not included in UTAUT2 but may influence user acceptance and actual usage. The latent constructs mentioned in UTAUT2 are performance expectancy, effort expectancy, social influence, facilitating conditions, hedonic motivation, habit and price value. Moreover, further research using alternative theoretical mechanisms have been called for by Bagozzi (2007) and Venkatesh et al. (2007) to foster expansion and progress in this mature stream of work. Additionally, Alvesson and Kärreman (2007) and Johns (2006) emphasized that adding new constructs to existing theories is a crucial step to advance a theory. The present study thus attempted to investigate influence of some additional factors, other than the factors mentioned in UTAUT3, on behavioral intention and usage.

Research Gap 3: The payment ecosystem is transforming gradually from cash to contactless payment and users need to trust entities that handle the payment infrastructure. Adoption of UPI as a payment mechanism would unquestionably require trust amongst users. Bhuasiri et al. (2016) noted a fertile opportunity to study trust in the field of e-payment. Usage of mobile wallets and transferring money from one bank account to another through UPI platform is a sensitive issue as it involves a user's concern about privacy and security. So, trust is a necessary construct to be studied in the context of adoption of UPI. Shaw (2014) also called for more research analyzing the influence of trust on technology adoption. Further, Baptista and Oliveira (2015) highlighted the need to incorporate trust as a construct to study behavioral intention. In addition to that, Chhonker et al. (2019), in a review article of technology adoption studies, stated that exploring the impact of trust is gradually growing attention amongst academicians, but the frequency of studies in this genre is less. Thus the present study endeavored to examine the influence of trust on behavioral intention of individuals to adopt UPI.

Research Gap 4: Kim et al. (2018) mentioned that influence of word of mouth is unique and compelling on human behavior; hence, researchers can explore the

influence of word of mouth as social media is gaining popularity at a rapid pace. Podnar and Javernik (2012) suggested that it is vital to examine the actual power of word of mouth in a realistic environment. They added that the nature of electronic word of mouth could be generalized with the traditional word of mouth (face to face) and what equally matters is the characteristics of the source. Mehrad and Mohammadi (2017) pursued research on the impact of word of mouth on adoption of mobile banking in Iran and concluded that word of mouth has a high impact on adoption of mobile banking. A literature review on mobile banking adoption, carried out with articles published between 2005 and 2014, noted a total of eighty-four constructs, which various researchers have used as antecedents of mobile banking adoption (Shaikh and Karjaluoto 2015). Word of mouth was not noted there as an antecedent of mobile banking. It implies that research on the effect of word of mouth on behavioral intention and actual usage of mobile banking is not adequate. In addition to that word of mouth has not been included as a factor affecting behavioral intention in any technology acceptance models, not even in the further extensions of technology acceptance models like Extended TAM, UTAUT, UTAUT2 or UTAUT3. Furthermore, Herold et al. (2016) recommended that the inclusion of word of mouth content can lead to a better understanding of the effectiveness of word of mouth. The influence of word of mouth on behavioral intention was verified by Mehrad and Mohammadi (2017) but the influence that word of mouth content creates on intention has not been explored yet. Thus the present study chose to analyze the impact of word of mouth with special emphasis on word of mouth content on behavioral intention to adopt UPI.

Research Gap 5: Karhade and Kathuria (2020) gave a revolutionary insight to researchers to focus more on GREAT (Growing, Rural, Eastern, Aspirational, Transitional) domains as it constitutes a significant part of the world's economic output. One such growing and transitional payment mechanism is UPI, that Indian banks have chosen to integrate into their applications and is the domain of this study. Moreover, India is a growing economy and a land of diverse cultures and languages where people perceive things differently. Results obtained from technology adoption studies in other countries might not be generalized and applicable in the Indian context. In addition to that, Patil et al. (2020) also suggested conducting research on adoption of digital payment in the Indian context. They further added that researchers should

emphasize studying ‘actual usage’ as a dependent variable in terms of technology adoption. This is because researchers primarily focus on factors influencing intention of individuals and ignore examining the impact of intention on actual usage. Patil et al. (2020) highlighted that only two studies have been conducted in Indian context concerning adoption of digital payment where both behavioral intention and actual usage were studied in the same model. The present study thus attempted to study adoption of UPI as a payment mechanism by Indians – with two dependent variables namely behavioral intention and actual usage to fill the research gap and contribute to the existing body of knowledge.

2.6 LATENT CONSTRUCTS AND HYPOTHESES DEVELOPMENT

The study adopted UTAUT3 as the theoretical lens of the study and examined the influence of all those independent variables except price value on behavioral intention to adopt UPI. An elaboration of all the exogenous and endogenous variables of the study is presented below followed by the proposition of hypotheses.

2.6.1 Performance Expectancy

The keys to acceptance of a new technology are convenience, versatility and benefit (Weiss 2011). When a newly introduced technology becomes convenient for users, it gets easily accepted and used by individuals in large numbers. The extent to which an individual believes that adopting technology will help the user to attain profit in job performance is called performance expectancy (Davis et al. 1992, Shin 2009, Venkatesh et al. 2003). To elaborate further, it is the extent to which a certain technology offers benefits to users to perform a specific activity (Venkatesh et al. 2012). Sultana (2020) defined performance expectancy as the expectation of a user towards goal attainment through technology usage. Five different factors from different models pertain to performance expectancy. Those constructs include perceived usefulness from Technology Acceptance Model, extrinsic motivation from Motivational Model, job-fit from Model of PC Utilization, relative advantage from Innovation Diffusion Theory and outcome expectations from Social Cognitive Theory (Venkatesh et al. 2003). As a whole, performance expectancy sums up to factors which

relate to enhancement of the performance level of a job, motivation due to the enhanced performance, tailor made opportunities, better advancement than the previously existed technologies and outcomes as per expectations. When a user plans to adopt a newly introduced technology, it is important to know that to what extent the technology is going to be helpful, productive and serve the purpose. This will lead to the desire of using the technology.

There are numerous studies where a significant relationship between performance expectancy and behavioral intention was noted (Bhuasiri et al. 2016, Chiu and Wang 2008, McLeod et al. 2008). Venkatesh et al. (2003) affirmed that performance expectancy is associated with utilitarian values and is one of the strongest predictors of behavioral intention to use technology. Performance expectancy had a significant positive relationship with behavioral intention in various dimensions like m-commerce adoption (Lai and Lai 2014), mobile service adoption in China (Lu and Su 2009) and adoption of blockchain technology (Sheel and Nath 2020). Although prior studies have investigated the impact of performance expectancy on behavioral intention, yet its impact on adoption of UPI still remains unexplored.

A significant association between performance expectancy and behavioral intention has been established by many researchers. Extant literature also reports a significant relationship between performance expectancy and attitude (Patil et al. 2020). Aslam et al. (2017) found significant association between performance expectancy with consumer attitude regarding adoption of mobile payment services in Pakistan. Many other researchers like Bailey et al. (2017) and Schierz et al. (2010) studied the relationship between performance expectancy and consumer attitude. But literature posses very limited investigation on the influence of performance expectancy and actual usage. There exist multiple reasons behind neglecting the examination of these two constructs. Actual usage is a dynamic construct and can be measured as a reflective as well as a formative construct. In maximum cases, actual usage was not measured in Likert scale and hence researchers neglected the construct and limited their studies till investigation of intention of consumers. Patil et al. (2020) attempted for the first time to examine the impact of performance expectancy and actual usage where it was stated that performance expectancy is the strongest predictor of actual usage. Since this is a newly proposed relationship in the literature archive, following that lead, the present

study attempted to examine the influence of performance expectancy on actual usage of UPI. Hence it has been hypothesized that

H1a: Performance Expectancy has a significant positive impact on behavioral intention

H1b: Performance Expectancy has a significant positive relationship with actual usage of UPI

2.6.2 Effort Expectancy

Effort Expectancy can be defined as the degree of ease associated with the use of a system (Venkatesh et al. 2003). The concept of effort expectancy originated from three different constructs adopted from three models: perceived ease of use from TAM, complexity from MPCU (Model of Personal Computer Utilization) and ease of use from IDT (Innovation Diffusion Theory). It is not only the extent of positively valuing a newly introduced technology that foretells an individual's intention to adopt and use a new technology but also the ease and effortlessness associated with the use of the system (Davis et al.1989). It is essential to concentrate on the ease of access of a newly introduced technology so as to be widely accepted and adopted. When an innovative technology becomes difficult for users to adopt, it is considered to be complex. Such complexities result to negative effect on the rate of acceptance of any newly introduced technology (Venkatesh et al. 2003, Rogers 2010). But according to Davis (1989), users generally agree to the tradeoff between the effort needed to apply a new technology and the benefits of using the technology. Venkatesh et al. (2003) drew attention to the fact that effort expectancy maintains a significant relationship with intention in the beginning but gradually becomes non significant over sustained usage. This is because a user needs to put effort in the early stages of performing a new behavior which progressively turns out easy.

Effort expectancy plays an important role in determining whether a person has desire of using a technology (Dwivedi et al. 2017). Literature supports the fact that effort expectancy has a positive effect on usage of technology by the user (Moore and Benbasat 1991, Venkatesh et al. 2003, Venkatesh et al. 2012). In a study on acceptance of mobile internet service, effort expectancy was seen to have a significant impact on behavioral intention (Wang and Wang 2010). Similarly, Farooq et al. (2017) also noted

a significant relationship between effort expectancy and behavioral intention in terms of adoption of lecture capture system by B-school students of Malaysia. But Bhuasiri et al. (2016) reported a non significant relationship of effort expectancy with behavioral intention with regards to acceptance of e-government services. With regards to UPI adoption, a user should feel that he/she can use UPI easily for performing financial transactions without rendering extra effort. Hence an attempt has been made in this research work to examine the influence of effort expectancy on behavioral intention to adopt UPI with the hypothesis which states that:

H2: Effort Expectancy has a positive impact on behavioral intention

2.6.3 Social Influence

The factor 'social influence' was not considered when TAM was designed to study the acceptance of technology. It was later found that there is an impact of the connection and community of an individual which may influence an individual's intention to use a certain technology. Thus social influence was added as a construct in UTAUT (Venkatesh et al. 2003). López-Nicolás et al. (2008) also affirmed that individuals possess a tendency to get influenced by family, friends and other social networks. Since Venkatesh et al. (2012) confirmed social influence as a predictor of behavioral intention, hence social influence is also proposed to be a significant antecedent of intention of individuals to use UPI.

Social Influence can be defined as the degree to which an individual realizes the fact that important others expect them to use the new system (Venkatesh et al. 2003). The construct social influence comprises of three different variables namely subjective norm, social factor and image (Vannoy and Palvia 2010, Huang and Kao 2015). Subjective norm is about the social pressure regarding performing or not performing a particular behavior. Social factor emphasizes more on internalization of society's subjective culture and interpersonal agreements being made with others in some social situation (Triandis 1979). Image, on the other hand, is only about maintaining a social status by using innovative and new technologies (Moore and Benbasat 1991). It is the need to conform that makes social influence a driving factor for adoption of innovative technology (Young 2009).

Literature reveals that social influence determines behavioral intention of an individual (Venkatesh and Davis 2000, Farooq et al. 2017). In the context of innovative technologies related to mobile phones, social influence was found to be a determining factor (Shin 2007). The relationship between social influence and behavioral intention has been found important in various other domains like virtual communities participation (Dholakia et al. 2004), online game playing (Hsu and Lu 2004), blog usage intention (Hsu and Lin 2008), e-mail and Short Message Service or SMS (López-Nicolás et al. 2008), e-government services (Bhuasiri et al. 2016) and location sharing applications (Widjaja 2012). The present research work thus hypothesized that

H3: Social Influence has a significant positive impact on behavioral intention

2.6.4 Facilitating Conditions

A user, when decides to do any sort of digital payment using innovative technologies, technical support becomes a necessity. The construct 'facilitating condition' begin its journey as an exogenous variable in UTAUT being embodied by three different constructs: perceived behavioral control from Theory of Planned Behavior, facilitating conditions from Model of Personal Computer Utilization (MPCU) and compatibility from the Innovation Diffusion Theory. Thompson et al. (1991), in MPCU characterized facilitating conditions as some objective surrounding factors which makes a certain act simple to accomplish and Venkatesh et al. (2003) described facilitating condition as the extent to which an individual believes that an organizational and technical infrastructure exist to support the use of a system. The construct mainly focuses on removing any sort of technical barrier that might restrict usage of a new technology or system.

Facilitating condition is considered to be a significant predictor of behavioral intention (Venkatesh et al. 2012, Farooq et al. 2017). Chu et al. (2004) and Wang and Shih (2009) found a direct relationship between facilitating condition and behavioral intention in the context of electronic tendering system and information kiosk respectively. Various other studies reported facilitating condition as a direct determinant of actual usage (Al-Gahtani et al. 2007, Alalwan et al. 2018, Bhatiasevi 2016, Venkatesh et al. 2003, Wang and Shih 2009). Venkatesh et al. (2003) while proposing UTAUT, stated that facilitating conditions might not influence behavioral

intention in situations where performance expectancy and effort expectancy resides as predictors of intention. Hence in UTAUT, the relationship between facilitating conditions and intention was not proposed. Later when UTAUT2 was proposed by Venkatesh et al. (2012) in consumer context, the author proposed a relationship between facilitating conditions and behavioral intention as well as facilitating conditions and actual usage. Venkatesh et al. (2012) justified the association of facilitating conditions and behavioral intention by stating that facilitating conditions are not freely available to consumers as in the case of the employee context. Hence in consumer context, facilitating conditions might influence intention.

Contrarily, in the context of e-tax filling in Taiwan, facilitating condition was identified as not an important predictor of behavioral intention (Fu et al. 2006). In a study based on mobile payment adoption in Portugal, a non significant relationship was seen between facilitating condition and behavioral intention (Oliveira et al. 2016). Similarly, a non significant relationship was noted between facilitating condition and actual usage in the context of adoption of internet banking (Martins et al. 2014). Hence, from an extensive review of literature it was identified that the association between facilitating conditions, behavioral intention and actual usage varies contextually. This calls for an examination on the relationship of facilitating condition with behavioral intention and facilitating condition with actual usage in the context of UPI usage. Thus it is hypothesized that

H4a: Facilitating Condition has a significant positive impact on behavioral intention

H4b: Facilitating Condition has a positive impact on actual usage

2.6.5 Hedonic Motivation

Most of the researchers who have worked on technology adoption has portrayed emotion as a negative construct emphasizing more on anxiety (Loewenstein et al. 2001, Venkatesh 2000), fear (Fischhoff et al. 1978) and worries (Sjöberg 1998). Extant literature has neglected positive emotions like happiness, interest, joy, contentment and enthusiasm (Taherdoost 2018) which can also be termed as intrinsic utilities (Venkatesh et al. 2012). Hedonic motivation is the motivation to do something so as to get internal satisfaction. It measures the fun, enjoyment and entertainment attached with the use of a technology (Chong 2013). Intrinsic motivation helps to understand an individual's

behavioral intention in a better way (Bhuasiri et al. 2016, Lee et al. 2005). When an individual realizes that using a certain technology bestows happiness, fun, comfort, satisfaction and pleasure, the user tends to continue using that technology and does not attempt to stop using the same (Baabdullah et al. 2019, Koenig-Lewis et al. 2010). There exists a direct relationship between hedonic motivation and customer intention to use technology (Venkatesh et al. 2012).

Several studies claimed that hedonic motivation influences an individual's behavior to use technology (Lu et al. 2009, Zhou and Lu 2011, Huang and Kao 2015). Hedonic motivation, often conceptualized as perceived enjoyment, reflected significant impact on intention towards technology adoption (van der Heijden 2004, Thong et al. 2006). Macedo (2017) conducted a research on ICT adoption among older adults where it was noted that hedonic motivation has a significant positive impact on intention. Similarly Farooq et al. (2017) in the context of adoption of lecture capture system, and Sheel and Nath (2020) with regards to blockchain adoption reported a significant relationship between hedonic motivation and behavioral intention. Hence it has been hypothesized that

H5: Hedonic Motivation significantly influences behavioral intention to use UPI

2.6.6 Habit

There is a saying that "old habits die hard." Once a person gets habituated to something, it becomes challenging to come out of it. Reliance on habit eventually guides one’s behavior. If a user gets habituated to something good, that is a positive aspect, whereas if it relates to a bad habit, it points to a negative state of affair. Thus habit is an important construct for determining user's behavior towards technology adoption. Habit has been conceptualized by authors in various ways. Kim and Malhotra (2005) perceived habit as a prior behavior whereas Limayem et al. (2007) operationalized habit as the degree to which an individual considers the behavior to be automatic because of past learning. Literature possesses ample research on habit and majority of the researchers operationalized habit as past behavior (Bagozzi 1981, Bagozzi and Warshaw 1990, Beck and Ajzen 1991, Quine and Rubin 1997, Trafimow 2000). But Ajzen (1991) strongly condemned to the affair of equating past behavior to habit. The author argued that habit can be studied as an explanatory variable to TPB

only if habit is operationalized as independent of past behavior. Later Limayem and Hirt (2003) described habit in the context of usage of information systems as the degree to which usage of a particular system becomes automatic in response to certain circumstances. Habit is not the same as behavior. Verplanken and Aarts (1999) affirmed that habit is an exceptional kind of mindset that enhances the perceptual keenness for habit-related cues which averts an individual from being distracted and from adopting any other less competent courses of action. Habit is an accumulation of three different criteria like past behavior, reflex and individual experience (Limayem et al. 2007).

There are numerous studies where habit was reported as a significant predictor of intention (Eriksson et al. 2008, Farooq et al. 2017, Kolodinsky et al. 2004, Macedo 2017, Tam et al. 2020). The present research work also endeavored to examine the influence of habit on behavioral intention to adopt UPI. Hence it is hypothesized that

H6: Habit has a positive impact on behavioral intention

2.6.7 Personal Innovativeness

Personal innovativeness, a construct derived from the Innovation Diffusion Theory, is an enduring trait which almost every individual possess. Some people thrive to innovate, whereas others prefer to adapt. Crespo and del (2008) defined personal innovativeness as the tendency of an individual to experiment with latest technology. Personal innovativeness can also be defined as the inclination or risk taking propensity of a user to adopt the most advanced and latest technology or gadgets (Agarwal and Prasad 1998). In the domain of IT, personal innovativeness has been conceptualized as an individual's attitude or tendency to experiment and adopt any newly introduced information technology (Schillewaert et al. 2005). Innovativeness is basically a personality factor which foresees user's innovative tendency to adopt various technological innovations (Dai and Palvi 2009). Zhang et al. (2012) described innovativeness as the level of a user's desire to adopt new ideas compared to that of others. Higher the level of innovativeness, higher is the probability of the user to adopt the latest technology (Zhang et al. 2012). Innovativeness has been established as impetus for embracing any new product or service (Im et al. 2003). The four most explanatory factors leading to higher innovativeness includes need for stimulus,

seeking for uniqueness, independence toward others' use experiences and need for exceptionality (Gao et al. 2012, Roehrich 2004). Agarwal and Prasad (1998) highlighted that research on personal innovativeness is necessary so as to emphasize on the characteristics of an individual.

Septiani et al. (2017) conducted a research in context of adoption of online transportation service in Indonesian where it was seen that innovativeness does not affect behavioral intention. This is because people of Indonesia has a less innovative mindset and are more into consumptive behavior (Septiani et al. 2017). Contrarily, Farooq et al. (2017) and Jackson et al. (2013) found personal innovativeness as a significant predictor of behavioral intention referring to smart learning and technology acceptance respectively. Thakur and Srivastava (2014) and Tan et al. (2014) also reported a positive and significant association between personal innovativeness and behavioral intention. Hence the present work also attempts to investigate the relationship between personal innovativeness and behavioral intention with regards to UPI adoption proposing a hypothesis that

H7: Personal Innovativeness has a positive impact on behavioral intention

2.6.8 Trust

Defining trust has always been challenging to researchers and they have treated trust as both a unitary and multi dimensional construct (McKnight et al. 2002). Cheung and Lee (2006) mentioned about three different theoretical perspectives to investigate trust: the views of sociologists, the views of personality theorists and the views of social psychologists. Sociologists looked upon trust as an institutional phenomenon and focused more on the role of institutions and incentives in reducing uncertainty related with the transactions (Cheung and Lee 2006, Yousafzai et al. 2009). Personality theorists operationalized trust as a faith, expectancy or a sentiment that is intensely rooted in the personality of an individual (Yousafzai et al. 2009). Social psychologists, examining trust at interpersonal and group levels, portrayed trust as anticipation about the deeds of the trusting party in transaction between individuals (Cheung and Lee 2006, Yousafzai et al. 2009).

Trust is a basic and sensitive instinct. It needs time for common people to trust on any product, service or technology. It is a subjective belief that the party will not fail to

perform their obligations as promised. Gefen et al. (2003) defined trust in the context of mobile banking as accumulation of users' beliefs of reliability, generosity and ability which boosts user's inclination to rely on mobile banking to perform financial transactions. In the context of m-commerce adoption, trust has been described as the belief of a user that m-commerce is safe and free from privacy threats (Liébana et al. 2017). Trust usually comprises of three beliefs: ability, integrity and benevolence (Cheung and Lee 2006, Zahedi and Song 2008, Zhou 2012). Ability emphasizes on the capacity and knowledge of the service provider required to complete the task. Integrity relates to the fact that the service provider will not mislead the users and will be firm to their word. Benevolence on the other hand means that the service provider will not only emphasize on their own benefit but will also take into account users' interest (Zhou 2012). The present study operationalized trust keeping in mind all these three beliefs and adopting the view of the social psychologists.

Slade et al. (2015) and Zhou (2013) mentioned that trust plays an important role in online financial transactions. Sekhon et al. (2014) added that in this increasingly competitive financial services industry, only a sense of trust can fabricate a solid and long-term rapport with customers. Extant literature emphasized that the influence of trust, as a unitary construct, on behavioral intention has gained remarkable hold with regards to acceptance of mobile payment (Chandra et al. 2010, Lu et al. 2011; Shaw 2014, Shin 2010, Slade et al. 2015). Prior research in the sector of e-commerce indicates that the association between trust and purchase intention is directly proportional. High trust in online retailer websites leads to high online purchase intention, while low trust diminishes consumers' willingness to purchase online (Gefen 2000, Pavlou and Gefen 2004, Yoon 2002). In the world of commerce, trust is an important and complex factor (Septiani et al. 2017, Min et al. 2017, Liébana et al. 2017). Kim et al. (2009) also observed that trust is significantly associated with consumers' intention to adopt m-banking. Furthermore, previous research has indicated that the need of trust is more in an online setting as compared to the face-to-face setting (Gefen and Straub 2004, Grabner-Kra¨uter and Faullant 2008, Harridge-March 2006). Although, researchers have examined trust in diverse contexts such as industrial buyer-seller relationships (Doney and Cannon 1997), use of market research (Moorman et al. 1993), remote mobile payment in the United Kingdom (Slade et al. 2015),

organizational identification (Rani et al. 2018), yet impact of trust on intention to adopt UPI has not been explored yet. When it comes to payment using UPI, a user has to save some financial details while performing the payment mechanism - establishing a significant role that trust might have. One must have the feeling of trust to indulge oneself in using UPI. If customers have adequate trust in an organization or their products, this may prevail over the level of risk they might perceive (Harridge-March 2006). This is particularly true in case of online services because a typical online transaction necessitates the customers to provide some personal information. Providing such kind of information may be a matter of concern for some customers and they will conduct transaction only if they perceive a high level of trust in it.

In addition to the association between trust and behavioral intention, it is evident from the literature that trust significantly influences actual usage too. Koloseni and Mandari (2017), in the context of mobile money services adoption in Tanzania, reported that the relationship between trust and actual usage is positively significant. Likewise, Malaquias and Hwang (2019) conducted a research investigation where a comparison was done between consumers of Brazil and the USA regarding mobile banking usage. It was reported that a significant association subsists between trust and actual usage.

Realizing the increasing implication of trust in the context of digital payment and the handful of research indicating how trust in this changed and innovative payment ecosystem could improve an individual's perception and intention, this research proposes that:

H8a: Trust has a positive impact on behavioral intention to adopt UPI

H8a: Trust has a significant positive influence on actual usage of UPI

2.6.9 Word of Mouth Content

Word of mouth (WOM) means passing information from one person to another person via verbal communication. It is the mode of sharing ideas, experiences and beliefs. WOM can also be defined as any communication between customers which are informal and is about characteristics of a product (Westbrook 1987, Christiansen and Tax 2000). WOM influences people's way of thinking, their views and thought processes and impacts consumer's intention (Ward and Reingen 1990, Bone 1992, Bone 1995). Aslam et al. (2011) asserted that word of mouth is neither street teaming, where

people distribute freebies or flyers to random passersby, nor is shill marketing or reaching marketing, where organizations hire actors to create staged conversation with consumers without letting consumers know that they're staged. It is not even any sort of fake online marketing where companies post fake opinions online in review sites. Aslam et al. (2011) conceptualized word of mouth as a part of our social fabric where people share unbiased opinions. It is an honest, real and powerful way to communicate. WOM plays an important role in shaping consumers' behaviors (Brown and Reingen 1987). Being a part of social communication, WOM can create a huge impact in human mind. It is a fundamental medium of distribution that influences others and if utilized correctly, can market any product or technology (Ahmad et al. 2014). It has been recognized as a dominant factor affecting behavior of a user (East et al. 2007, Fu et al. 2015). Goyette et al. (2010) stated that researchers consider WOM as the most effective means of keeping and attracting more customers. Some people possess tendency to get inclined to the innovativeness of any newly introduced technology (Lu et al. 2011). Users who adopt new technologies at the initial phase are termed as early adopters. Word of mouth communication of those early adopters helps in incrementing the number of users of any newly introduced technology (Lu et al. 2011). Smartphone users often get to know about new features via word of mouth (Shaw 2014). Word of mouth is a kind of direct, personal behavior which is independent of the company. This makes WOM information more real, reliable and credible. Extant literature identified that the influence of WOM on behavior is greater than the impact of promotion or advertising. Hogan et al. (2004) emphasized that the effect of word of mouth is triple the effectiveness of advertising.

WOM has been classified into two major groups. Shaw (2014) classified word of mouth as personal word of mouth and virtual word of mouth. On the other hand, Ahamad (2019) asserted that word of mouth can be grouped as traditional word of mouth and social word of mouth depending on the source of word of mouth. If an individual gets to know about a new technology from their family, friends and colleagues, that can be named as personal word of mouth (Parry et al. 2012, Shaw 2014). If the user receives the information from social media or articles, that can be regarded as virtual word of mouth (Shaw 2014). Ahamad (2019) urgued that when the information spreads during a face to face conversation, that is traditional word of

mouth whereas social word of mouth involves diffusion of information via electronic media and internet. Keeping in mind that word of mouth bears the concept of spreading verbal information, Xia and Bechwati (2008) termed the written form of word of mouth or online WOM communication as word of mouse. Xia and Bechwati (2008) and Dwyer (2007) added that with the advent of internet and growth of e-commerce, word of mouse has gained attention of both academicians and researchers. In addition to the various types of word of mouth, literature gave an evidence of various dimensions of word of mouth - word of mouth valence, word of mouth intensity and word of mouth content (Goyette et al. 2010). Word of mouth intensity is about how frequently the recommender has suggested other users whereas word of mouth valence articulates about the recommendation being positive or negative. Word of mouth content emphasizes on what is being spoken by the recommender.

The present study focuses only on the impact of word of mouth content on intention. This is because companies and organizations do not have any control on word of mouth content, hence they cannot command on the information given by the recommender. If it gets verified that word of mouth content influences intention of users, this might encourage organizations to focus more on the quality of their product and service other than boasting about the same. The parent organization will understand what is being spoken about their product and thus an organization will have an idea where to improve so as to be in good books of users. The research work did not examine whether the adopters will recommend UPI to others. Rather it investigates, when the respondent got to know about UPI, from personal/ traditional/ social/ virtual WOM, the content spoken about UPI by the recommender influenced them to use UPI or not. Moreover Herold et al. (2016) highlighted that a separate examination on word of mouth content on intention would enhance the literature with a better understanding on the effectiveness of word of mouth. Hence this research work for the first time studied the impact word of mouth content in the intention to adopt Unified Payments Interface as a payment mechanism by Indians. The hypothesis proposed states that

H9: Word of mouth content has a significant impact on behavioral intention

2.6.10 Behavioral Intention

Behavioral Intention can be defined as the readiness of a user to perform a particular behavior (Ajzen 1991). Behavioral Intention is an antecedent of behavior (Madden et al. 1992) and is a function of the fact that performance of any action will result into an outcome. With regards to adoption of technology, it is the strength of an individual's keenness to use a technology. Behavioral intention can also be describes as a conscious plan of an individual either to perform or not to perform a certain behavior.

Behavioral Intention is the ultimate predictor of actual usage (Turner et al. 2010). Studies where actual usage or use measures are self-reported, behavioral intention is likely to be correlated to actual usage (Turner et al. 2010, Agudo et al. 2014). Behavioral intention is a valid predictor of actual usage (Turner et al. 2010, Agudo et al. 2014). Ajzen (1991) and Patil et al. (2020) mentioned that stronger the intention, higher will be the chance of performing the behavior. If an individual has the intention to use a technology, this ultimately leads to actual usage in most cases, provided there does not exist ant intention-behavior gap due to the influence of some external factors. Numerous research studies have explored behavioral intention and emphasized the significant relationship between behavioral intention and actual usage in diverse contexts (Alalwan et al. 2018, Martins et al. 2014, Shih and Fang 2004, Wang and Shih 2009, Patil et al. 2020, Venkatesh et al. 2012). The present research work considers that behavioral intention is a decisive construct between the driver constructs and actual usage and accordingly formulated the hypothesis that

H10: Behavioral Intention has a significant impact on actual usage

2.6.11 Actual Usage

The term actual usage can be defined as the extent of use of certain technology which includes usage time, usage frequency and usage variety (Huang and Kao 2015). There are two measures to determine actual usage: objective measures and subjective measures (Straub et al. 1995, Agudo-Peregrina et al. 2014). When the data is extracted from system logs which includes total time spent, login frequency and usage information, that measure is regarded as objective measure. On the other hand subjective measures are generally data collected from self reported values regarding the

intensity and frequency of system usage (Turner et al. 2010). The present paper adopts the subjective measure of actual usage. Relatively few studies have included actual usage as a dependent variable. A greater part of the existing studies (Alaeddin et al. 2018, Kumar et al. 2018, Wulandari 2017) have only studied behavioral intention towards adoption of technology as an outcome variable even when the construct was already proposed by Davis (1989) in TAM. A significant reason behind not studying actual usage by researchers could be the non-existence of a consistent measurement scale (Patil et al. 2020). Venkatesh et al. (2012) measured actual usage using a formative scale where actual usage was measured in terms of usage time, usage frequency and usage variety. Contrarily, Davis (1989), Sivathanu (2018) and Zhou et al. (2010) presented the construct actual usage as a reflective construct and used a measurement scale that consists of items of user adoption like account management, money transfer and other financial transactions. This research work investigated actual usage as one of the dependent variables and considered actual usage as a reflective construct. Research related to adoption of technology is not rare. But UPI being a newly introduced technology, the actual usage of UPI is yet to be researched. Thus the present study attempted to identify the significant predictors of actual usage of UPI.

2.7 CONCEPTUAL FRAMEWORK

On the basis of the formulated hypotheses, a conceptual model has been proposed for the study. A conceptual framework of a research investigation, symbolized in a visual format, exemplifies what is anticipated to be found through the research. It delineates the relevant variables for the research work and maps out the possible relationship amongst the constructs. The proposed conceptual model of the research work has been demonstrated in figure 2.11.

The variables on the left side of the figure are the exogenous variables which are proposed to be predictor variables of the endogenous variable, behavioral intention. There subsists another latent construct in the model - actual usage, which is the ultimate endogenous variable. Based on an extensive review of literature it has been proposed that four variables might influence actual usage, which will be verified during data analysis.

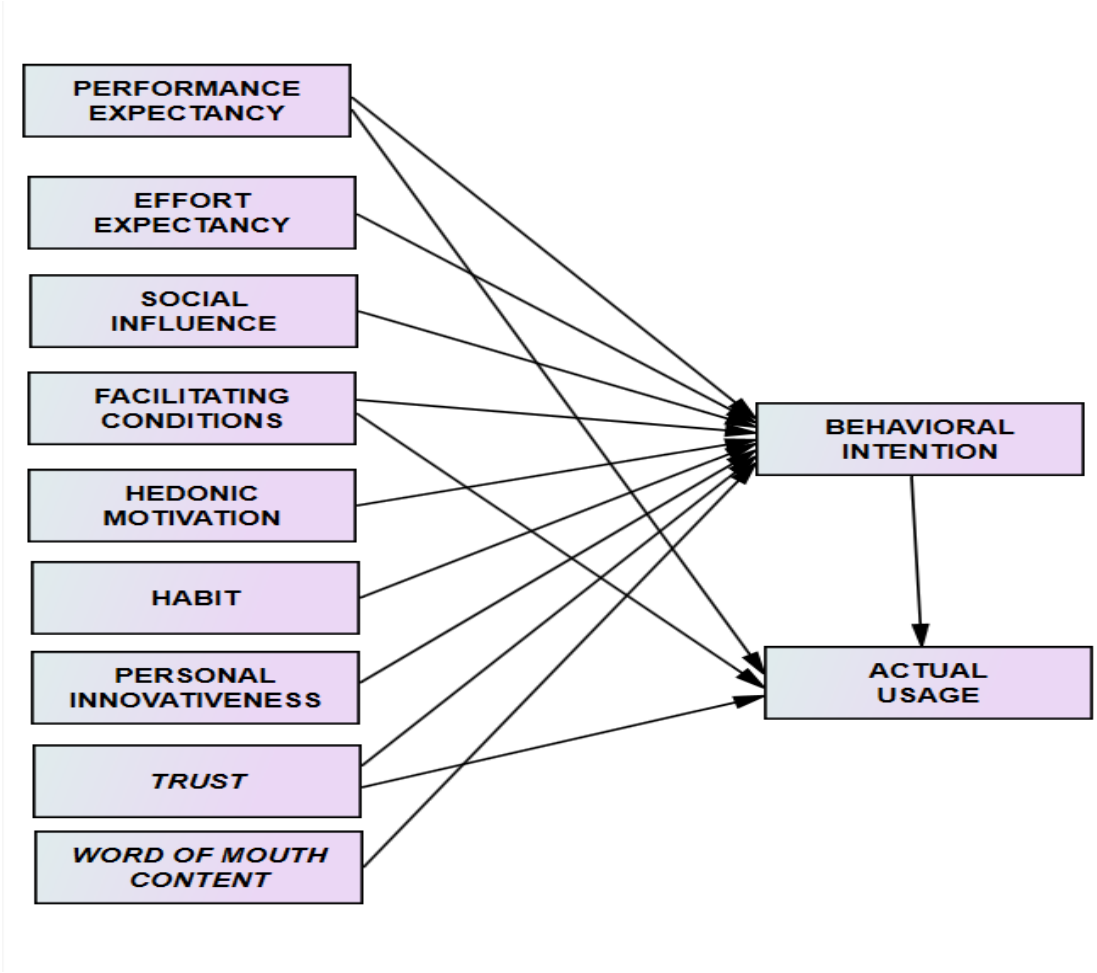

Figure 2.11: Conceptual model
Source: Author's proposal

2.8 OPERATIONAL DEFINITION OF THE VARIABLES

An operational definition denotes concrete, replicable measures designed to characterize a construct. It is an execution of performance to introduce a concept in author's own words as per the context of the study. An operational definition plays a vital role in this field of research because in the domain of social sciences, researchers perceive concepts in diverse ways and hence the meaning sometimes deviates from the central idea depending on the scope of the study. So to have a clear understanding of what the researcher is talking about and what they intend to refer, operational definition is necessary. Hence the variables used in this research work have been operationalized based on the context of the study and noted below in a tabular format in table no 2.3.

Table 2.3: Operational definition of the variables

Construct	***Operational Definition***
Performance Expectancy	The extent to which an individual believes that using UPI will be productive and beneficial to perform a safe contactless financial transaction
Effort Expectancy	The degree of effortlessness and ease associated with the use of UPI as a payment option
Social Influence	The degree to which an individual feels that important others desire and expect them to use UPI
Facilitating Conditions	An individual's expectation of a favourable condition to have the proper organizational and technical infrastructure to support UPI usage
Hedonic Motivation	The pleasure, fun and internal satisfaction an individual attains after using UPI
Habit	The extent to which an individual tends to use UPI automatically in certain circumstances because of practice
Personal Innovativeness	The inclination or risk-taking propensity of a user to adopt UPI as it is one of the most advanced and technically latest payment infrastructures
Trust	The willingness of an individual to use UPI with an expectation from payment service providers to be firm to their word, perform transparency, keep user's interest in mind and confirm ethical behavior
Word of Mouth Content	The subject matter or content being spoken about UPI by recommenders during a verbal or written communication, independent of any sort of commercial or industrial influence
Behavioral Intention	The extent of readiness of an individual to use UPI for financial transactions - now and in future
Actual Usage	The extent of use of UPI and its services by the users for intended purposes

Source: Author's explanation

2.9 CHAPTER SUMMARY

The chapter comprised of a systematic review of literature undertaken for the current research work. The latent constructs adopted in the study are explored and operationalized suitably taking into consideration the research objectives and domain of the research. During the course of action, certain gaps were identified which directed towards framing the path of the research work. The chapter also provided a detailed review of the concepts used in the study and the theoretical background of the study. The review of literature assisted to explore the relationships between the latent variables and propose hypotheses to be empirically analyzed and verified. To proceed with the research work successfully, certain rules and methodologies need to be followed which has been discussed in the next chapter.

CHAPTER 3

RESEARCH METHODOLOGY

3.1 INTRODUCTION

Methodical planning is mandatory to make a journey worthwhile. When we plan to travel and explore new places, we rely solely on maps to plan and decide where to start and how to make the entire journey smooth and hassle-free. Similarly, when a researcher intends to pursue research, it is crucial to plan how to execute the study, where to start, and what steps to follow to accomplish the research objectives. Research in social science does not possess a handbook that can be read, followed and understood how to conduct the investigation. Hence, it is advisable to custom plan the entire research process. The present study chose to follow the 'Research Onion' proposed by Saunders et al. (2009) to accomplish the research work systematically. The research process adopted for the study has been summarized in the following sections. The chapter starts with a brief on research process where the Saunder's research onion has been discussed and elaborated throughout the chapter. Within the sections elaborating on different layers of the research onion, the adopted modus operandi for the particular research work has been highlighted with proper justification. The chapter mentions about the ethical considerations made throughout the research work and concludes with a summary of the entire chapter.

3.2 RESEARCH PROCESS

The study adopted the 'research onion' proposed by Saunders et al. (2009) as a reference framework to accomplish the research work. The research onion briefs the sequence to be followed to perform a research investigation. It is important to peel the onion from the outer layer and elaborate on the importance of the process. The outer most layer of the research onion deals with research philosophy. Moving inwards, it maintains the order with research approach, methodological choice, research strategy, followed by the time horizon of the study and ending with research techniques and procedures. The figure below shows the research onion and notes the adopted process in each layer corresponding to the study.

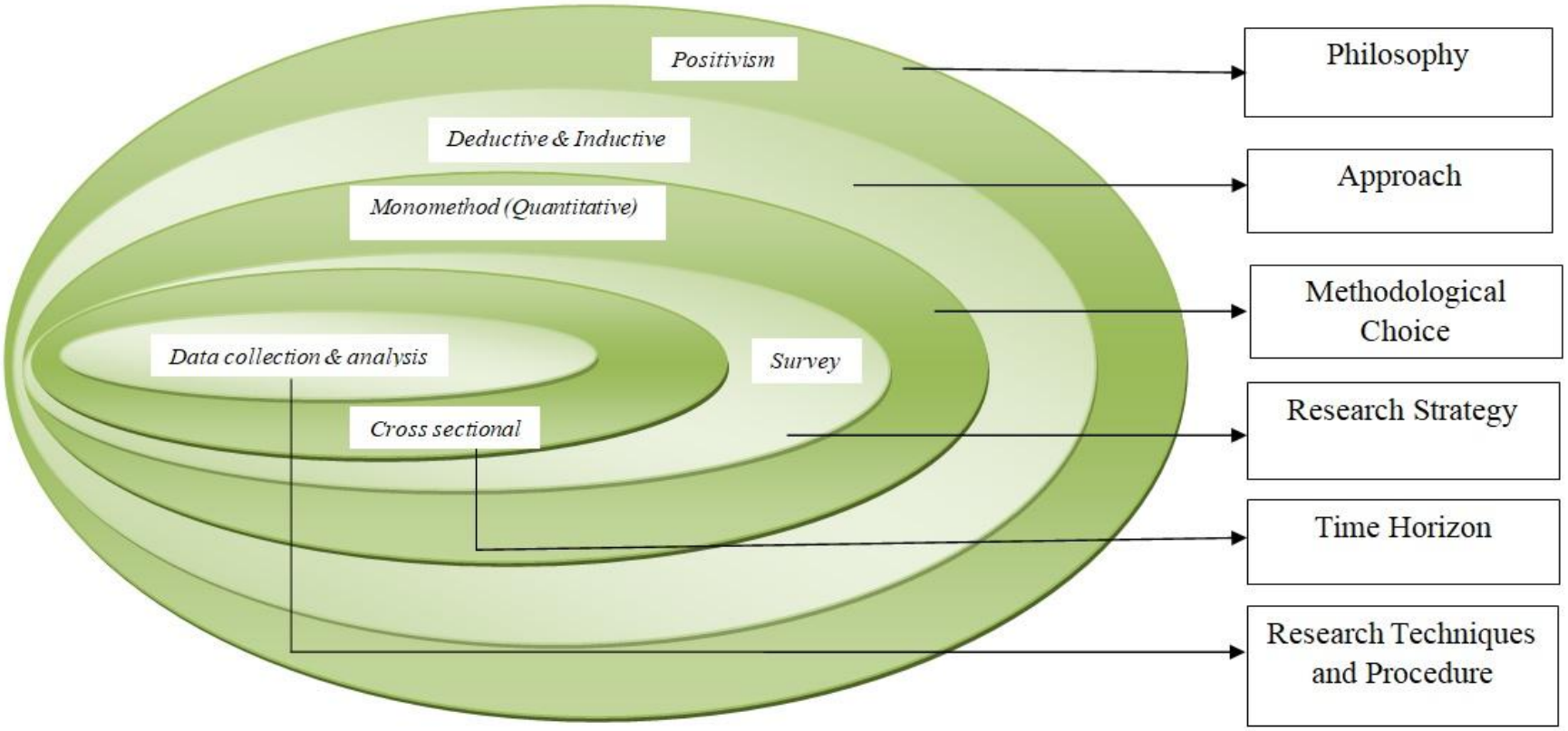

Figure 3.1: Saunder's research onion

Source: Adopted research process corresponding to Saunders et al. (2009)

3.2.1 Research Philosophy/ Paradigm

Social science is a mixture of various disciplines like economics, sociology and psychology. Similarly, business and management drew its theoretical base from multiple disciplines like social science, humanities, applied sciences and many other domains and thus absorbed numerous associated philosophies. In the field of business and management research, there is no particular research philosophy. It is all about contributing something unique to the existing body of knowledge.

Research philosophy can be elaborated as the assumptions that guide the researchers to actualize the research work. It illustrates the philosophical orientation of the researcher or a set of ideology that directs the researcher towards what to study, how to study and how the results obtained in the study should be interpreted and presented. Saunders et al. (2009) preferred the term 'philosophy' over 'paradigm', whereas Danaee (2012), Kivunja and Kuyini (2017) and Mc Gregor and Murnane (2010) preferred to use the term 'paradigm' and defined it as a philosophical way of thinking. A paradigm, to these researchers, is a set of suppositions, practices and views that encapsulate a researcher's viewpoint towards reality. The foundation of research is first choosing the research paradigm correctly. There are three dimensions of research paradigm: ontology, epistemology and axiology (Saunders et al. 2019). Ontology demonstrates the nature of being or reality. Epistemology exhibits assumptions about legitimate knowledge and axiology reveals the role of ethics and values throughout the research process. Depending on these three dimensions, the categories of research philosophy have been classified. Saunders et al. (2019) classified research paradigms into five categories: Positivist Paradigm (Positivism), Interpretivist Paradigm (Interpretivism), Critical Paradigm, Post-modernism and Pragmatic Paradigm.

Types of Research Paradigm: Positivist Paradigm speaks about scientific enquiry and stands on the foundation of rationalistic and empiricist research philosophy (Shah and Al-Bargi 2013). It is a philosophy of research that characterizes observation as means of understanding human behavior or perceives that an individual can study human beings scientifically. Interpretivist Paradigm or Interpretivism aims to understand and explore phenomenon inductively and considers that a situation has to be understood from the point of view of the individuals involved in the process or situation

(Fazliogullari 2012, Okesina 2020). Critical Paradigm is a philosophy where researchers aim to expose presupposed beliefs and norms by stimulating constructive criticism and encouraging consciousness amongst researchers (Kivunja and Kuyini 2017, Okesina 2020). Researchers who adopt critical paradigm acknowledge bias and aim to curtail that bias. Post-modernism philosophy researchers are reflexive, think that truth is determined by dominant ideologies and emphasizes on digging out suppressed meanings. Pragmatic paradigm bears an ideology that a theory can be considered valid only if it facilitates successful action. Saunders et al. (2019) explained pragmatic philosophy as value-driven research.

Research paradigm adopted for the study: The principal philosophy adopted in this study is positivist philosophy or positivism. This is because the objective of this research is to identify factors that influence behavioral intention of individuals to adopt a newly introduced innovative technology and the investigation does not aim to build up any reinforced phenomenon. Positivists state that current events can be investigated empirically through sensory insights and interpreted logically. Hence they disregard pre-assumed opinions and beliefs. Positivism is the adopted paradigm because this study is carried out with a neutral and independent mindset about what is being researched. Methodology is the plan of action depending on which the methods and processes to be obtained are determined. The methodology adopted for the study is structured, deductive, and employs quantitative analysis. The investigation believes in a single reality and endeavors to empirically verify or falsify proposed hypotheses, as propped by positivist philosophy.

3.2.2 Research Approach

Bryman and Bell (2015) categorized research approach into three types: deductive approach, inductive approach and abductive approach.

The deductive approach aims to validate the existing theory or knowledge, whereas the inductive approach seeks to create new knowledge or theory (Makombe 2017). The abductive approach is a kind of approach where the logic of creativity and discovery gains more importance than the logic of justification. A new discovery is the main motive behind adopting abductive approach.

The present study is grounded on deductive approach as it aims to test an existing theory in a different context. Deductive approach involves verification or falsification of a particular theory and this study also seeks to examine some hypotheses proposed based on an existing theory. The study adopts a model used in other technology adoption studies and further attempts to explore that precisely in the context of adoption of UPI, fulfilling the criterion of deductive reasoning from general to specific. As generalization is a critical aspect of this research, a large enough sample has been considered for the study to generalize the results obtained to the entire population. The study further implements inductive approach to observe specific behavior in terms of adoption of UPI, perception of an individual towards UPI and identification of new factors that might influence behavioral intention to adopt UPI. It is crucial to understand how people interpret society and societal changes. Hence to develop that understanding, the study adopted inductive approach.

3.2.3 Research Method

Research method is different from research methodology. Researchers often get perplexed by these two terminologies. Research methodology is the entire research plan to solve the identified research problem efficiently. In contrast, the research method deals with how data collection is planned and analyzed and the sort of generalization or illustrations derived from the data. There exist three conventional research methods: qualitative, quantitative and mixed methods (Makombe 2017).

Qualitative approach focuses on in-depth interviews, semi-structured interviews and observations – which are relatively considered as unstructured methods (Saunders et al. 2009). This approach mainly relies on data in the form of pictures, words and interviews and is more centered on research with a smaller sample size. Quantitative approach, contrarily prefers a structured approach and deals with numerical observations. Quantitative approach leans more towards data collection using instruments like questionnaires and relies on measurements, tests and statistical analysis. It deals with larger sample size and principally progresses from the positivist paradigm (Makombe 2017). The fundamental aim is to verify hypotheses leading to an outcome that either confirms a theory or modifies a theory based on findings (Okesina 2020). Mixed methods approach is an extension of both the above-

mentioned methods. It incorporates the process of data collection from both qualitative and quantitative approaches and is thus a combination of both these approaches. When a researchers decides that solving a research problem would require both numerical and textual data, then mixed method approach is applied (Williams 2007).

This study adopted quantitative approach as the research method. A study that adopts quantitative approach initiates with a solid theoretical background, frames research questions based on identified research problems, proposes hypotheses based on a particular phenomenon, collects data from a well representative sample and then performs statistical analysis of the collected data to either support or reject the proposed hypotheses based on numerical justifications. Some features that distinguish a quantitative approach from other approaches are testing a theory and generalizing the findings toward a conclusion. The present research study focuses on examining a pre-established theory in a different context. Creswell (2014) opined that studies that adopt quantitative approach incorporate a generous amount of literature survey to prosper the research with critical research questions and hypotheses. It is crucial to specify the reason behind choosing variables and state how the variables are interrelated, highlighting the theoretical rationale of the research. The present study followed the directions given by eminent academicians and researchers and thus initiated the investigation with an extensive literature review of select literature on behavioral intention and technology adoption. Standing on the shoulder of a strong theory, appropriate latent constructs were chosen for this study and attempts were made to frame relationships between nine independent and two dependent variables based on which some hypotheses were proposed as well. Based on the literature review, a conceptual model has been proposed to investigate and portray the proposed relationships numerically. Furthermore, suitable questionnaire was framed to carry out a pilot study with a smaller sample size. The results of the pilot study helped to finalize the research instrument based on reliability and validity test. The research work proceeded with final data collection using the finalized questionnaire. Further, data analysis was conducted to examine the proposed hypotheses using statistical methods and conclusions of the study were presented.

3.2.4 Research Strategy

Peeling away the three outer layers of Saunder's research onion leads to the fourth layer – research strategy. Saunders et al. (2009) described research strategy as the road map to the research objectives and the process for answering the research questions, whereas Melnikovas (2018) defined research strategy as a way to offer solutions to the raised research problem and help to accomplish the research objectives. The choice of a research strategy depends on diverse factors like researchers' philosophical stance, research time, pre-set research objectives and questions, etc. Depending on the field of research, a researcher can adopt research strategies like survey method, case study, grounded theory or ethnography. A case study concentrates on specific cases where the structure could be an organization, group, explicit problem, context, or issue (Okesina 2020). Yin (2014) argued that a case study is a research method rather than a research strategy, whereas Creswell (2014) referred to it as a qualitative research approach. However, a case study can be quantitative and qualitative based on the research design (Okesina 2020). Another strategy allied with the inductive approach is grounded theory strategy, which emphasizes exploring events, activities and processes and theorizes from in-depth interviews, and is mainly concerned with theory generation from systematically collected data and analysis of the same. With the help of interviews and observations, ethnographic studies focus on social groups that share familiar culture/environment, intending to understand the natural occurrences better. It captures participants' subjective experiences to perceive through their eyes. On the other hand, the survey strategy is highly structured, associated with data collection using questionnaires and is related to deductive approach (Burton 2007, Saunders et al. 2009).

A survey strategy grants information in quantitative form concerning attitude, trends and opinions of a representative sample by questioning respondents (Creswell 2014, Malhotra and Dash 2010) and is of various forms like cross-sectional, panel, repeated cross-sectional and mixed designs. A survey strategy has numerous advantages which is worth its application in quantitative research. Survey strategy has gained popularity in management and business literature (Saunders et al. 2009) because of its ability to bestow adequate information regarding the opinion and attitudes of respondents. Additionally, survey strategy proves effective in cases where the number of latent

constructs studied is more as it facilitates additional data collection with no substantial enhancement in time and cost (Engel and Schutt 2012). Surveys can be directed to a larger population rapidly and permit generalization of results if the selected sample represents the population well (Chambliss and Schutt 2012). Taking into consideration all the above stated notions and the nature of the study, survey strategy seems appropriate and hence is adopted for the present study. Furthermore, depending on the mode of collecting data, surveys can be executed through self-administered questionnaires, interviews, structured record reviews and structured observations (Fink 2002). The present study adopted survey method and used a self-administered structured questionnaire for data collection. The research instrument used in this research has been elaborated in section 3.2.6.2 titled as 'research instrument development'.

3.2.5 Time Horizon

The time over which the entire research work is conducted is called the time horizon (Saunders et al. 2009). The time horizon can be either cross-sectional or longitudinal. The motive of the research and the time available to the researcher to perform the work decides the time horizon of research work. In a cross-sectional study, the researcher collects data at a single point of time, whereas in a longitudinal study, the data collection takes place over different time periods (Saunders et al. 2009). Collecting data at time intervals assists in examining the continuity of responses and reporting changes that occurs over a period of time.

The present study is a cross-sectional study where data collection was carried out from September 2019 to February 2020.

3.2.6 Research Techniques and Procedure

The sixth and the innermost layer of Saunder's research onion is research techniques and procedures where a researcher exercises the real practicality regarding making the right choice of research techniques and procedures corresponding to the research objectives. It relates to deciding on type of data to be collected and the method of data collection. The researcher has to finalize the sampling method to get a well

representative sample of the population. The data analysis techniques are to be decided and the research instrument required for collecting data needs to be prepared appropriately. While summing up all the above-mentioned notions, it is essential to properly align the techniques and procedure with all other layers of the research onion to pursue an appropriate and ideal research.

3.2.6.1 Population and sample

The population of this study comprises of individuals who use Unified Payment Interface to perform payment operations. There is no such database where UPI users are registered and hence it is implausible to find any reliable list of UPI users in India. The study thus considers the number of smartphone users in India to calculate the required sample size for the study. However, it is challenging to collect data from the entire population. Hence, it is necessary to select samples that will properly represent the population to generalize the results. A suitable sampling technique was adopted to choose a well representative sample.

A sample design is a distinct plan for obtaining sample from a given population. It refers to the procedure or method adopted by a researcher in selecting items for the sample (Kothari 2004). In the preset study, the target population of the study includes people who use UPI for making payment in Tier I metro cities. The reason for targeting Tier I cities is multifold - dense population, diverse demographics in terms of income generation, educational qualification, readiness to technology acceptance, attitude and presence of people from all economic backgrounds. The development of technology is rigorous in metro cities and it comprises super-rich, rich and middle-class populations. A report by The New India Express also stated that the level of acceptance of UPI is extraordinary in Tier I cities of India. Further the graph below in Figure 3.2 illustrates that acceptance of UPI in tier I cities is more than double compared to tier II and tier III cities (Mathur 2019).

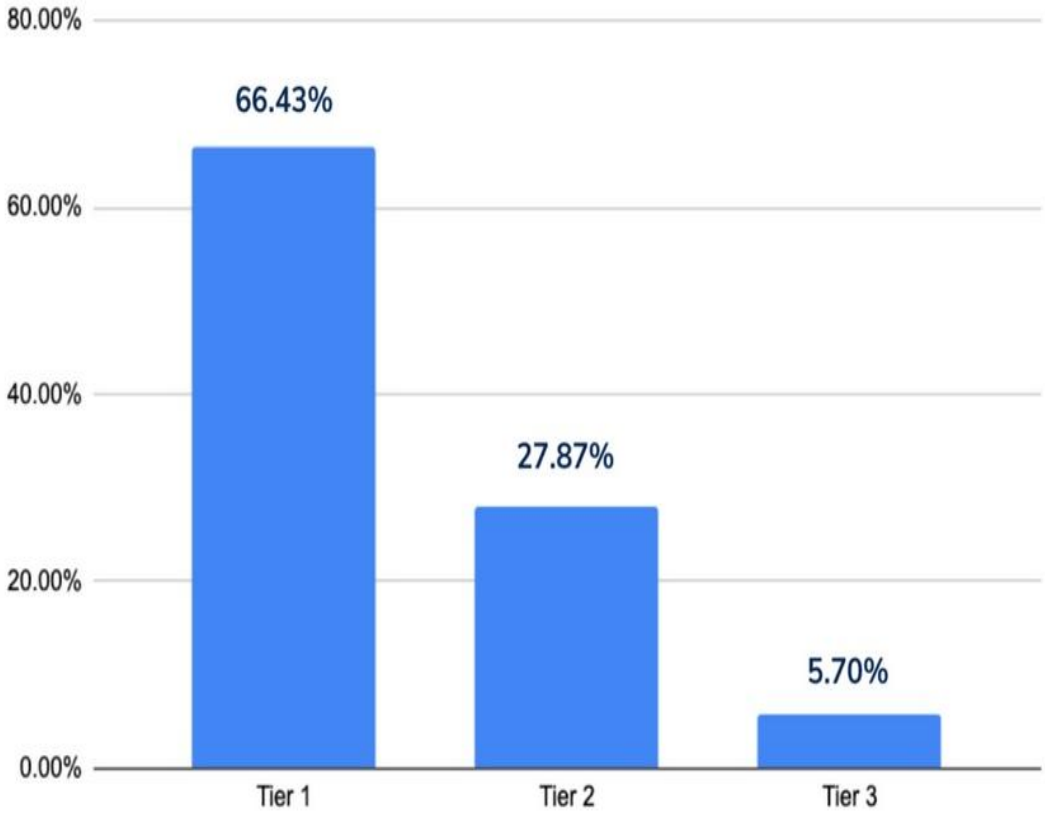

Figure 3.2: Tier wise contribution
Source: Mathur (2019)

Since the adoption of UPI is more in Tier I cities, conducting the research with samples from tier I cities is justified. In this study, the sampling was done in two phases. Five metro cities were selected from the list of eight tier I metro cities. In the second phase, UPI users were chosen to respond to the questionnaire from the selected tier I cities. Simple random sampling: a type of probability sampling, was adopted to select five metro cities – Bangalore, Pune, New Delhi, Chennai and Kolkata for collecting the data. The five cities represent 76% of the population of all tier I cities. The second phase involves the selection of UPI users from the selected cities. Purposive sampling: a non-probability sampling technique was used to select consumers from the selected cities. Thus, the study adopted mixed sampling design. When sampling design comprises both probability and non-probability sampling, it is referred to as mixed sampling (Etikan and Bala 2017, Cooper and Schindler 2006). The figure below illustrates the adopted sampling techniques for the study.

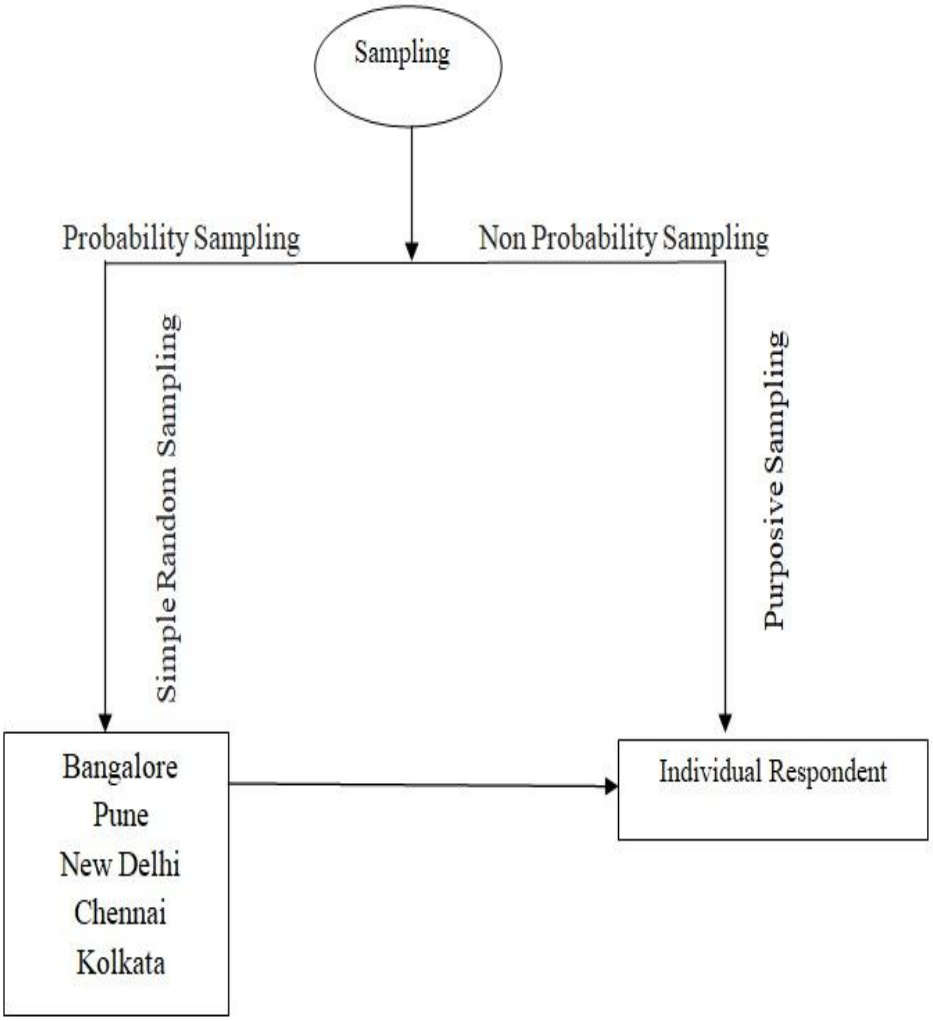

Figure 3.3: Sampling Techniques
Source: Author's representation

The total population size for this study is 44982326 which comprise of population of the selected Tier I metro cities. Table 3.1 shows the list of the selected Tier I cities and the total population of the cities. Further, to estimate the required sample size for the study, Slovin's formula was adopted. Slovin's formula has been designed to sample the population with a certain degree of accuracy (Israel 1992, Tejada et al. 2012, Singh and Masuku 2014, Chakraborty and Bhat 2018). Regarding the level of

accuracy, 90% confidence level has been suggested by Kothari (2004). Still, to maintain more precision, the present study adopts Slovin's formula considering a 95% confidence level with a tolerance of 5%.

The Slovin's formula used for estimation of sample size is as follows:

$$n = \frac{N}{(1+Ne^2)} \qquad \text{(Yamane 1973)}$$

Where,
n = Number of samples or sample size
N= Total population
e = Error tolerance
Putting the values in the above mentioned formula, we have
N= 44982326, e= .05 and therefore,
n = [44982326/(1+44982326*0.05^2)] = 399.99

Considering the population of selected metro cities as the population size (N), the required sample size comes out to be 399.99, which can be considered equivalent to 400. The study applies Structural Equation Modeling (SEM) for estimating multiple inter-related dependence relationships in a single analysis. It is vital to have a proper, rather a large enough sample size for SEM analysis. It is recommended to have ten responses per item for SEM (Raykov and Marcoulides 2006). The proposed model of the study consists of 41 items. Thus a minimum of 410 responses is required to perform the analyses successfully.
Considering the design effect on sample size calculation where the sample size gets multiplied by a factor of 2 (Kish 1965), the obtained sample size of 400 was doubled to achieve an adequate sample size of 800 samples, which would be sufficient to carry out the study. The total number of responses reported in the study amounts to 1133, which is a fair larger sample size fulfilling the criteria. A proportionate number of responses were collected from each city based on the population of the selected cities. Table 3.1 shows the proportionate division of samples considered for the study.

Table 3.1: Proportionate Division of Samples

Selected Tier I Metro Cities	Population	Proportionate Sample Size
Bangalore	9,621,551	242
Pune	9,429,408	238
New Delhi	16,787,941	423
Chennai	4,646,732	117
Kolkata	4,496,694	113
Total	44,982,326	1133

Source: Author's estimation

3.2.6.2 Research instrument development

Questionnaires are one of the most affordable and preferred ways to collect data for studies adopting quantitative research. The responses gathered are structured and can easily be encoded for analyzing the data. Moreover, data collection employing questionnaires facilitates the assimilation of a massive number of data (Malhotra and Malhotra 2012). Several empirical studies concerning technology adoption have effectively used the questionnaire method for data collection (Abedi et al. 2020, Pang 2021, Phuong et al. 2020, Aslam et al. 2020, Rahi and Ghani 2019). The research instrument used in this study for collecting primary data is also a self-administered structured questionnaire. It comprises several validated scales chosen after an extensive literature review. The research instrument used multi-item psychometric scales where the latent constructs were measured using multiple items in a reliable and valid manner. To yield better results in confirmatory factor analysis, it is better to have a minimum of three items per construct (Marsh et al. 1998). Though there are few studies in the literature archive where single item constructs have also been studied but it was cautioned by Diamantopoulos et al. (2012) that usage of single item constructs limits the predictive power of the model. However, the present study considered psychometric scales from various authors to measure the latent constructs of the proposed conceptual model and minor modifications were done depending on the context of the study. These minor modifications, done without hindering the essence of the statement, helped in improving the conceptual fit of the proposed

model (Robinson 2018). The scales used for measuring the latent construct of this study were adopted from previously validated scales. They were measured using five point Likert scale (Strongly Agree, Agree, Neutral, Disagree, Strongly Disagree).

The self-administered structured questionnaire consists of two sections. The first section consists of questions related to the constructs of the conceptual framework and the second section consists of demographic variables. A minimum of four items were kept for every construct in the first section, followed by questions related to demographics in the second section. Later after the pilot survey was completed, some of the items with lower factor loadings were removed from the study. The final questionnaire thus consists of 41 questions in the first section, followed by 8 questions in the second section. A brief on the sources used to adopt the items measuring the latent constructs is given below:

Performance Expectancy:

The scale used for measuring performance expectancy was adopted from Venkatesh et al. (2012), Afshan and Sharif (2016) and Farooq et al. (2017). The measurement scale had four items to capture data related to performance expectancy of an individual to adopt UPI.

Effort expectancy:

Effort expectancy also had four items but after deleting an item due to lower factor loading, the construct was measured using a three item scale. The scales were adopted from Venkatesh et al. (2012), Afshan and Sharif (2016) and Farooq et al. (2017). The scales were contextually modified to measure effort expectancy.

Social Influence:

The scale used for measuring social influence was adopted from Zhou et al. (2010) and Afshan and Sharif (2016) and had four items. Later one item was deleted and three items were suitably modified as per the context of the present study.

Facilitating Conditions:

The items used for measuring facilitating conditions were adopted from Zhou et al. (2010) and Afshan and Sharif (2016) and suitably modified contextually. In the beginning, the construct had four items. After pilot survey, one item with lower factor

loading was removed resulting to a three item scale for measurement of the latent construct.

Hedonic Motivation:

A four item scale adopted from Farooq et al. (2017) and Alajmi (2018) and was used to measure hedonic motivation.

Habit:

Habit was measured using four items adopted from Farooq et al. (2017) and Alajmi (2018). As the items were framed on the basis of acceptance of electronic information resources and lecture capture system respectively, the present study modified the items in terms of UPI adoption and re-verified their reliability and validity.

Personal Innovativeness:

A four item scale adopted from Slade et al. (2015) and Farooq et al. (2017) was used to measure personal innovativeness. The items were modified as per the context and were verified.

Trust:

Trust is a newly added construct to the adopted model and was measured using four items. Though the construct bears a dictionary meaning but researchers operationalize constructs as per the domain of the study and measure the latent construct. The items used in the study to measure trust were adopted from Shaw (2014) and Afshan and Sharif (2016) and were modified contextually.

Word of Mouth Content:

The scale used for measuring word of mouth content was adopted from Goyette et al. (2010). A three item scale was used to measure this latent construct in the present study.

Behavioral Intention:

Behavioral intention is the central endogenous variable of the study and was measured using five items adopted from Venkatesh et al. (2012), Shaw (2014) and Farooq et al. (2017). The items adopted were all modified to measure behavioral intention towards adoption of UPI.

Actual usage:

Actual usage was measured using a four item scale adopted from Zhou et al. (2010) and Sivathanu (2018). Venkatesh et al. (2012) recommended to measure actual usage as a formative composite index of variety and frequency. But in that case, it should be a longitudinal study to avoid common method variance. Hence, the present study used a reflective scale to measure actual usage.

The research instrument, distributed to the respondents, stating all the items used for measuring the latent constructs, has been attached in appendix I.

3.2.6.3 Pilot study

A questionnaire, which permits measurement of the latent constructs using certain questions, goes through a critical examination to prove its accuracy and reliability. The questionnaire through which researchers collected data was finalized after conducting a pre-test and a pilot test. A pre-test, which includes a thorough checking of the research instrument, was carried out to identify issues like ambiguous words, usage of technical jargon, or the presence of complex terminologies that might affect the respondents' responses. Additionally, the pre-test helped check the relevance of the response options and verify the appropriateness of all the terminologies used. The face validity of the questionnaire was done by consulting four academicians and two industrialists. The suggestions given by the experts were incorporated. Further, a pilot test was conducted to finalize the questionnaire. A pilot test is a small-scale study conducted with a smaller sample size keeping other criteria similar to the final research. The pilot test for this study was conducted in Bangalore as this metro city is known for being cosmopolitan and a homogenous mix of people from all cultures and economic backgrounds (Patwardhan et al. 2019). A total of 86 responses were collected during the pilot survey, which was further coded and analyzed to examine the reliability and validity. The reliability of the questionnaire was checked by conducting reliability tests as well as checking common method bias using SPSS (Statistical Package for the Social Sciences) and AMOS (Analysis of Moment Structures). Three items with lower factor loadings were removed from the questionnaire. While replicating the final study with a smaller sample size, the statistical validity and reliability of the latent constructs was also verified. To avoid

errors and ensure the accuracy of the findings of this study, the data of the pilot survey was not considered for the final survey.

3.2.6.4 Data analysis techniques

Two main statistical techniques were adopted for data analysis. The preliminary investigation was carried out using SPSS 20. It includes the examination of descriptive statistics and inferential statistics. In descriptive statistics, the demographic analysis of the respondents was first verified, followed by the calculation of mean and standard deviation of the latent constructs. The study further computed reliability, convergent validity, discriminant validity, common method bias and multicollinearity.

The validation of the proposed model and verification of hypotheses have been done using Structural Equation Modeling (SEM). SEM, a second-generation statistical tool, is a multivariate analysis technique consisting of factor analysis and regression. It is widely adopted in psychology, social science and management research (Hair et al. 2010). The distinctive features that differentiate SEM from other multivariate data analysis techniques are listed by Byrne (2001): the relationships get priority as SEM adopts confirmatory approach against exploratory approach, SEM allows scope for correcting measurement errors by granting estimates of error variance parameters, SEM integrates both observed variables and latent variables, SEM permits modeling multivariate relations with both direct and indirect paths among variables.

SEM has two different models: measurement model and structural model. Measurement model, also known as the outer model, helps establish relationship between the latent variable and the observed items. Structural model, also acknowledged as the inner model, shows the relationship between the latent constructs. Assessing the measurement model before testing the structural model is obligatory. Using AMOS, the measurement model was first examined, including tests like *factor unidimensionality, convergent validity, discriminant validity, multicollinearity, and model fitness.* The assessment of the measurement model yielded good results and hence the structural model was further tested. The structural model was evaluated to examine the predictive power of the constructs and check the strength of relationship between the constructs. The direction of relationship between the exogenous and

endogenous variables, the relevance and significance of the path coefficients, assessment of the R square values, and evaluation of the overall explanatory power of the model was also stated from the structural model testing. The results translated a good model fit.

The present study adopts covariance-based structural equation modeling to evaluate the measurement and the structural model using AMOS. AMOS is standalone statistical software used especially for structural equation modeling, confirmatory factor analysis and path analysis. It is a visual based program that facilitates drawing models using simple tools. The study applied covariance-based SEM using AMOS because the present research is a confirmatory research that attempted to verify an existing theory.

3.3 ETHICAL CONSIDERATIONS

Ethics can be defined as the moral principle that governs the behavior of an individual. Ethical behavior concerns what is right, wrong, good or bad and is thus necessary for a researcher. It is crucial to ensure ethical gestures in the process of research and hence it was made sure that prior research, the research proposal received approval from a committee where the researcher agreed to appropriate ethical considerations before conducting the survey involving human participants. A declaration was signed for this study which states that no risk is associated with this research and the response of the respondents would be solely voluntary where anonymity and confidentiality would be maintained. Further, the data collected did not capture the identification of the respondents, was not revealed to any third party and was utilized only for research purposes.

3.4 CHAPTER SUMMARY

The chapter, in short, is a compendium to research methodology. The chapter explained the entire research process through the lens of Saunder's Research onion. The chapter explained in detail the research paradigm, research approach, research strategies adopted, research choice made, the study's time horizon, and research techniques and procedures adopted in this study. Various other aspects of quantitative

research design have also been discussed in this chapter, including information on data collection procedures, population and sample, research instrument development, and data analysis techniques. The chapter also gave a brief on the ethical considerations taken care of during the entire course of study. The research study adopted and followed all the steps mentioned above. The upcoming chapter will focus on the analysis section, followed by a detailed elaboration of the results obtained during the statistical analysis of the collected data.

CHAPTER 4

ANALYSIS AND INTERPRETATIONS

4.1 INTRODUCTION

Data analysis is an approach to studying and analyzing a vast quantity of data. It plays a crucial role in research because it makes studying data simpler and helps the researchers interpret it. A proper interpretation of data assists researchers in driving valuable insights and directs them to explore the unexplored. Thus the chapter deals with a vital research section, beginning with screening and editing the primary data collected from Indian UPI users of Tier I metro cities. Before diving into the pool of results, the chapter presents the demographic profile of the respondents, followed by the graphical representation of the preferred UPI-enabled applications and UPI usage statistics. The chapter continues with highlights on the descriptive statistics of the latent constructs of the study. The third chapter of the thesis outlined the research methodology where the data analysis techniques have been mentioned. Following those data analysis techniques, the present chapter reports the data analysis in a two-step approach. First, the measurement model was examined, comprising tests like reliability analysis, validity tests, common method bias and multicollinearity. The chapter subsequently proceeds with the structural model evaluation by testing the relationship amongst the latent constructs and verifying the proposed hypotheses.
Additionally, a mediating relationship was observed during data analysis which has also been reported in this chapter. Followed by checking the relevance of path coefficients, the chapter encases the coefficient of determination and goodness of fit of the proposed model. The chapter ends with a summary of the data analysis section highlighting the results obtained.

4.2 DATA EDITING AND SCREENING

Data editing is the intermediary step between data collection and data analysis. The responses received during data collection needs to be arranged, cleaned and coded before statistical analysis of the data begins. It is necessary to have a properly coded data set with no missing responses. The data collected during the survey was subjected to the data editing process to detect and delete incomplete and inconsistent responses. For data screening and primary analysis, the study used SPSS 20.0 (Statistical Package for the Social Science). The responses were coded and then

subsequently the data file was transferred in SPSS. The univariate outliers were identified using box plot and those responses were removed from the dataset. A total number of 1180 responses were collected during the survey out of which forty seven responses were deleted, resulting to a final count of 1133 responses for data analysis.

4.3 SAMPLE DEMOGRAPHICS

The study adopted survey method for primary data collection. To know the respondents, it is essential to be acquainted with the socio-demographic profile of the respondents. A demographic profile refers to the information of the respondent in terms of age, gender, employment, education, income etc. Demographic profile is an inevitable element of any survey concerning human population. A clear understanding on the demographic profile of the respondents in marketing research helps to comprehend the shift of perception of individuals across age, gender and economic status. Additionally, the findings of the study can later be used by future researchers to compare their findings if the demographic profile matches. Reporting the demographic profile would also illustrate that the findings can be generalized to a larger audience or is specific to a smaller group. The socio demographic profile of the respondents of this study comprises of the age of the respondents, gender, academic qualification, occupation and income.

4.3.1 Age of the respondents

The following table represents the age – wise distribution of the respondents of the study. The respondents were categorized into four group based on their age.

Table 4.1: Age of the respondents

Demographic Profile	Category	Frequency	Percentage
Age	15 years - 25 years	435	38.4%
	26 years - 35 years	594	52.4%
	36 years - 45 years	99	8.7%
	Above 45 years	5	0.004%

Source: Survey data

The maximum number of respondents belongs to the age group of 26 - 35 years (52.4%) where as 38.4% of the respondents are 15 to 25 years old. A very small number of the respondents belong to the age group of 36 - 45 years (8.7%) and only 5 out of 1133 respondents (0.004%) are 45 years of age and above. The distribution of respondent's age illustrates that majority of the respondents are young and at their mid-age. The respondents are UPI users and the sample does not consist of people who are not technology friendly, hence people above 45 years are very less in the respondent list.

4.3.2 Gender of the respondents

The following table numbered as table 4.2 shows the distribution of the respondents based on their gender.

Table 4.2: Gender distribution of respondents

Demographic Profile	Category	Frequency	Percentage
Gender	Male	605	53.4%
	Female	528	46.6%

Source: Survey data

The gender distribution table demonstrates that 605 out of 1133 (53.4%) respondents are male, whereas 46.6% of the respondents (528 out of 1133) are female. There is no much difference in the frequency of male and female respondents. Hence the sample is not disproportionate in terms of gender.

4.3.3 Academic qualification of the respondents

Table no 4.3 below represents the academic qualification of the participants of this research survey.

Table 4.3: Academic qualification of the respondents

Demographic Profile	Category	Frequency	Percentage
Educational Qualification	Higher Secondary	33	2.9%
	Graduation	506	44.7%
	Post Graduation	539	47.6%
	Ph.D.	55	4.9%

Source: Survey data

The table above illustrates that majority of the respondents are highly qualified as 47.6% of the respondents holds a post graduation degree whereas 44.7% of them have completed their graduation degree. Only 4.9% of the participants are Ph.D. holders and a very negligible number of the participants (2.9%) have just completed their higher secondary studies. The numbers signify that the respondents are educated and thus attempted to adopt a newly introduced technological innovation – UPI for performing financial transactions.

4.3.4 Occupation of the respondents

The table below shows the occupation of the respondents of the study. Four options were kept for the respondents to choose their present occupation.

Table 4.4: Occupation of the respondents

Demographic Profile	Category	Frequency	Percentage
Occupation	Student	300	26.5%
	Salaried	616	54.4%
	Self Employed	157	13.9%
	Not Working	60	5.3%

Source: Survey data

The table above demonstrates that more than half of the respondents (54.4%) are salaried personnel whereas 26.5% of the respondents are students. 157 out of 1133 respondents i.e., 13.9% of the respondents are self employed and 5.3% of the respondents are not employed. Some students, who responded to the questionnaire,

were asked about their source of income as they all possess bank accounts. They asserted that the pocket money they receive from their parents is sent to their bank accounts which they use for their daily expenses. Hence it can be inferred that students are potential customers of UPI and constitutes one-fourth of the samples of this study.

4.3.5 Income of the respondents

The following table shows the income level of the respondents who participated in the survey. The income level has been classified into five groups following the income tax slab. The respondents chose from those five options and confirmed their financial stability that reflects in the table.

Table 4.5: Income of the respondents

Demographic Profile	Category	Frequency	Percentage
Income Level	Nil	285	25.2%
	Upto 2.5 lakhs	133	11.7%
	2.5 lakhs - 5 lakhs	308	27.2%
	5 lakhs - 10 lakhs	231	20.4%
	Above 10 lakhs	176	15.5%

Source: Survey data

The table depicts that skewness does not exist in the profile of the respondents in terms of income generation. 25.2% of the respondents do not earn on their own (please note that pocket money has not been considered as a source of income). 11.7% of the participants generate an income of upto 2.5 lakhs per annum whereas majority of the respondents (27.2%) stated that they have an income level of 2.5 lakhs to 5 lakhs per annum. 231 out of 1133 respondents (20.4%) earns between 5 lakhs to 10 lakhs annually and 15.5% of the respondents had an annual income above 10 lakhs. Though UPI usage will not vary depending on the annual income of the respondent as it does not incur any extra cost, yet an understanding of the income level of the respondents seems inevitable.

4.4 PREFERRED UPI ENABLED APPLICATION

UPI is not an application; it is an interface that payment service providers incorporate into their applications to facilitate easy, contactless and hassle-free payments. The questionnaire had a question asking the respondents to select their most preferred UPI-enabled application to understand the users' perception and their choice. It was observed that Google Pay was the respondents' most preferred application, followed by Phonepe and Paytm. Various other UPI-enabled applications facilitate contactless payment, yet the graphical user interface of Googlepay and Paytm is well defined and hence these are the most preferred payment service providers. BHIM did not gain much popularity amongst users even though it is the payment application launched by NPCI where UPI was incorporated. Figure 4.1 demonstrates the preferred UPI enabled application amongst Indian consumers.

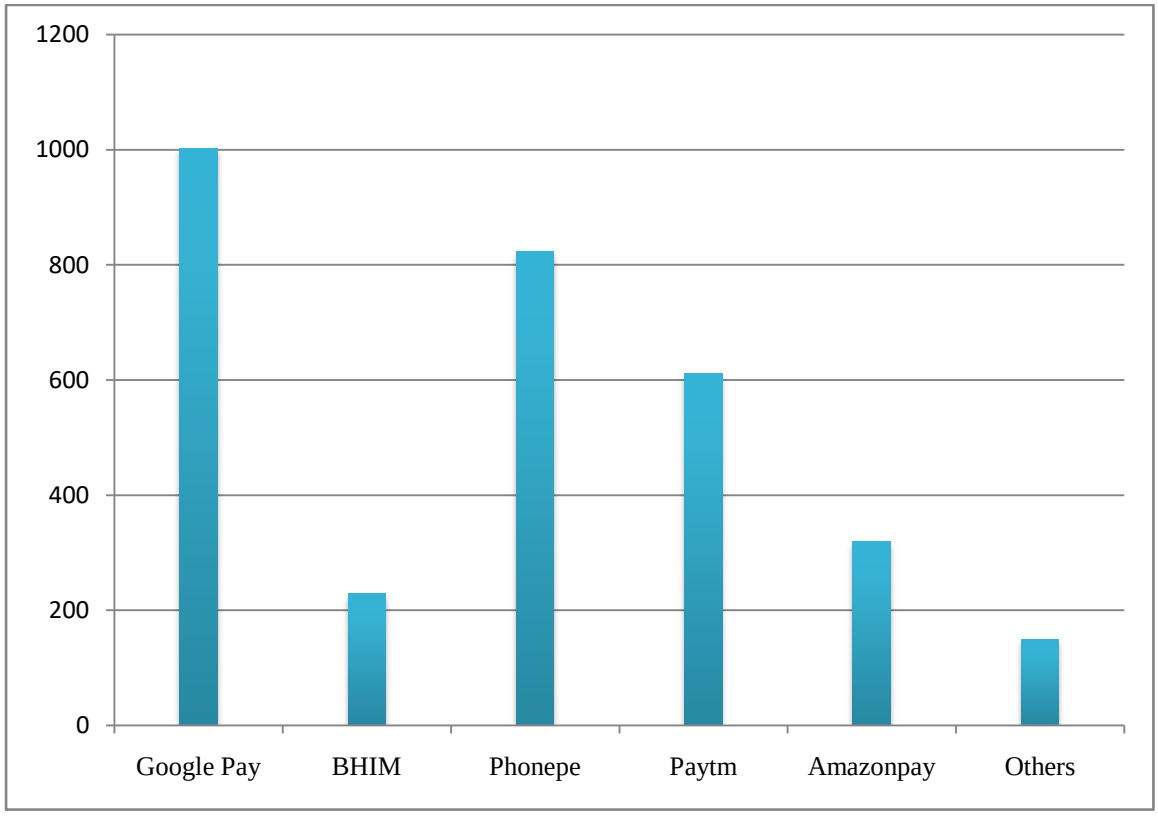

Figure 4.1: Preferred UPI application statistics

Source: Survey data

4.5 SOURCE OF INFORMATION ABOUT UPI

The research survey attempted to examine the impact of word of mouth content on intention of users to adopt UPI. With respect to that construct, an additional question was asked to the respondents to explore the most common source of word of mouth communication. The bar graph below shows where from users got to know about UPI for the first time.

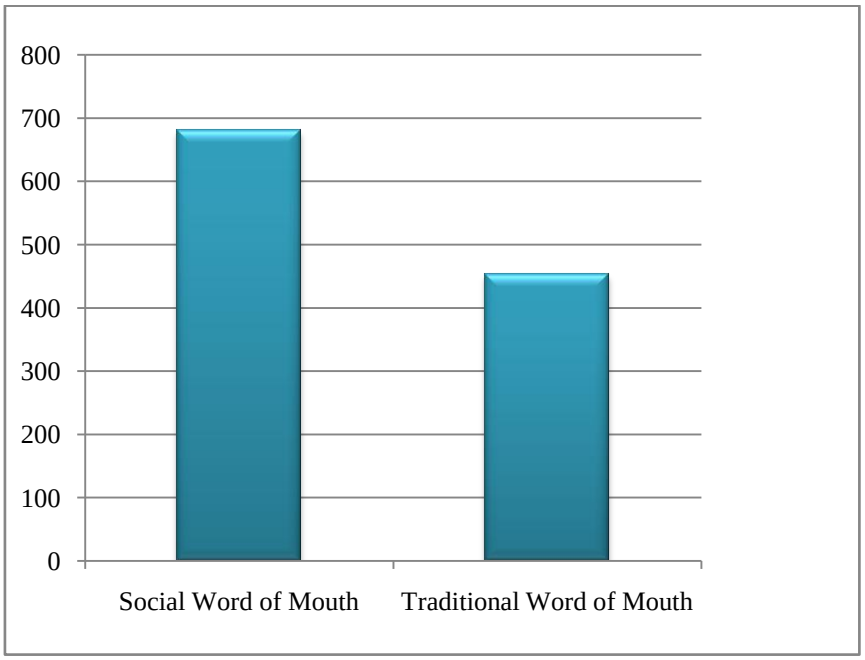

Figure 4.2: Source of information about UPI

Source: Survey data results

Figure 4.2 depicts that for most of the UPI users, the source of information was virtual or social word of mouth which includes information via internet and online reviews rather than traditional word of mouth which includes face to face conversation with family, friends and colleagues. Out of 1133 respondents, 680 of them (60%) stated that they got to know about UPI from social word of mouth communication where as the rest 40% of the respondents knew about UPI from traditional word of mouth communication. Pertaining to awareness and word of mouth communication about UPI usage, social word of mouth has taken precedence over traditional word of mouth. The observation made concerning social word of mouth overpowering traditional word of mouth, supports the findings of Abedi et al. (2020) where it was

stated that traditional word of mouth is comparatively outdated in contrast to social word of mouth.

4.6 UPI USAGE STATISTICS

The respondents were asked to choose and select various purposes for which they use UPI. From the responses of the participants, it was observed that individuals of all age groups are using UPI for making payments for buying groceries, ordering food, online shopping, paying bills and the list goes on. The results of the survey depict that Indian UPI users are mostly using UPI for sending and receiving money and online shopping purpose. Users of the age group 26 to 35 years are making use of UPI more in comparison to that of the other age groups. Though the graph illustrates that people of age 36 years and above are using it less but this is because the respondents of that age group are comparatively less, hence the representation. But concentrating on the green bars, it equally has a representation for all the usage varieties. Hence it can be stated that individuals of diverse age groups have adopted UPI and utilizing it for multiple purposes.

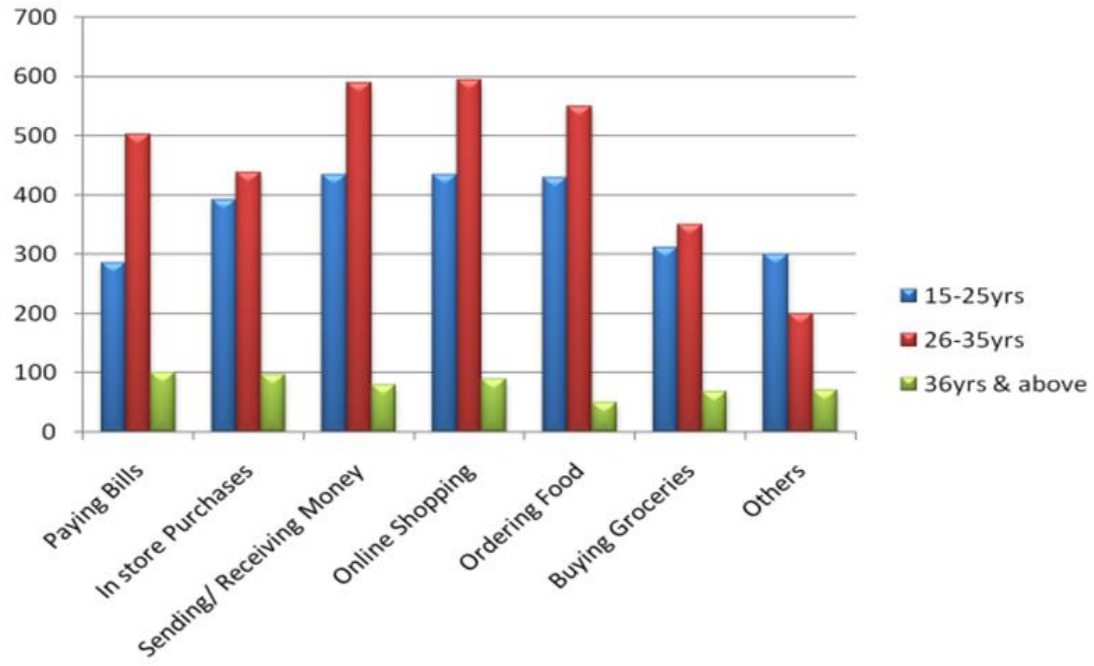

Figure 4.3: UPI usage statistics
Source: Survey data

4.7 DESCRIPTIVE STATISTICS

Descriptive statistics refers to the information on the basic characteristics of the data. Table 4.6 shown below provides information on descriptive statistics (mean, standard deviation, skewness and kurtosis) of each latent variable measured. The central tendency of the data is measured using mean. Mean can also be stated as the 'center of gravity' of the data set which gives an indication of the center value of the data set. The difference between the mean of the variable and an observed value of the variable is called the deviation from the mean. In statistics, variance signifies how far each number of the data set is from the mean value and how well the mean represents the data set. It also illustrates the spread between the numbers of the data. When observed values are nearer to the mean it means variance is small whereas when variance is higher, the data set is assumed to be of a wider range. The standard deviation, which measures the distribution of the statistical data, is the square root of the variance.

Data distribution can be either symmetric or asymmetric. A set of asymmetric data is regarded as skewed data. Skewness is the tendency for deviations from the mean to be larger in one direction than in the other. In symmetric distribution of data, the data points are on the either side of the centre of distribution. Skewness in data set indicates that the responses of the respondents are highly weighted towards one side of the scale. If the value of skewness is within -1 and +1, it indicates that the distribution of the data is normal (Malhotra and Dash 2017).

Kurtosis is the measurement of relative peaked or flatness of data distribution curve. Positive kurtosis indicates that the distribution is more peaked than a normal distribution and negative kurtosis indicates that the distribution is flatter than a normal distribution. Kurtosis of a normally distributed curve, thus is supposed to be zero (Malhotra and Dash 2017). Kurtosis also provides information about the outliers in data distribution. If kurtosis value is below 2.20, the variable is considered to be free from outliers (Sposito et al. 1983). The following table demonstrates value of mean, standard deviation, variance, skewness and kurtosis of each latent variable.

Table 4.6: Descriptive Statistics for constructs of the study

	Mean	Standard Deviation	Variance	Skewness	Kurtosis
Performance Expectancy	4.302	0.512	0.262	-0.430	0.165
Effort Expectancy	3.916	0.656	0.430	-0.195	-0.083
Social Influence	3.536	0.832	0.693	-0.151	-0.386
Facilitating Conditions	3.560	0.733	0.537	-0.153	0.057
Hedonic Motivation	3.830	0.539	0.290	0.009	0.113
Habit	3.400	0.831	0.690	-0.189	-0.131
Personal Innovativeness	4.218	0.488	0.238	0.023	-0.482
Trust	3.832	0.667	0.445	-0.305	0.686
Word Of Mouth Content	2.756	0.827	0.683	0.247	-0.121
Behavioral Intention	4.146	0.559	0.313	-0.325	1.332
Actual Usage	2.492	0.712	0.507	0.190	0.593

Source: Survey data analysis

The results illustrate that the mean of the latent constructs range from 2.49 to 4.30. The standard deviation also did not show much variation and is in the range from 0.488 to 0.832, indicating approximate normality of the distribution of the data set. The constructs social influence, habit and word of mouth content had standard deviations comparatively on the higher side than that of the other constructs, indicating diverse opinion of respondents on the items used to measure those constructs. The skewness and kurtosis values obtained from the dataset also reside within the acceptable values. The skewness values ranges from -0.430 to 0.247 and the kurtosis values of the latent construct ranges from -0.386 to 1.332. The table demonstrates that all the values are within the acceptable range signifying an adequate and approximately normalized data set to carry out further analysis.

4.8 EVALUATION OF MEASUREMENT MODEL

Measurement model, also acknowledged as the outer model needs assessment at the beginning. A conceptual model involves multiple latent variables which need to be

measured using a set of items or indicators. Those variables are called latent variables because they cannot be measured directly and needs specific pre-examined items to measure those constructs. The relationship between those items and the latent construct is represented by the measurement model. The evaluation of the measurement model, using confirmatory factor analysis, demonstrates how well the items measure a specific latent construct. Confirmatory factor analysis portrays the degree to which the observed variables characterize the latent constructs. It also defines the construct apropos of the existing operationalization. Gerbing and Anderson (1988) argued that conventional exploratory investigations, which concerns about item total association and factor analysis, fail to estimate unidimensionality because they are not theory-based examinations. Confirmatory factor analysis overcomes such barriers and measures the unidimensionality and goodness of fit of the measurement model. The assessment of the measurement model begins with verifying reliability analysis and performing validity tests for the latent constructs of the proposed model.

4.8.1 Reliability Analysis

Reliability test performs the job of checking internal consistency of a measuring instrument to confirm its precision and accuracy. A questionnaire consists of various items to measure the latent constructs. To check whether the items used to measure a certain construct is reliable or not, this test is carried out. To perform reliability analysis, it is mandatory to check Cronbach's alpha, composite reliability, KMO (Kaiser-Meyer-Olkin) and factor loadings.

4.8.1.1 Cronbach's alpha

Cronbach's Alpha, the most common test to measure consistency, is the 'first absolute measure' to assess reliability (Nunnally 1978). It estimates scale reliability by calculating the extent to which the items represent the domain of the construct and shows how closely related a set of items are as a group. To check the consistency, it is good to have Cronbach's alpha of 0.70 or above (Hair et al. 2010). But Cronbach's

alpha of 0.6 and above can also be accepted and the variable can be considered to be studied (Lyberg et al. 1997, McLeod et al. 2008, Bhuasiri et al. 2016).

4.8.1.2 Composite reliability

Composite reliability measures overall scale reliability and is also a much preferred test for confirmatory factor analysis. Composite reliability measures the extent to which a set of indicators contribute in measurement of a latent variable (Hair et al. 2013). In simple words it is a measure of internal consistency of scale items. Both Cronbach's alpha and composite reliability can be interpreted similarly and acceptable values range between 0.7 and 0.9. Nunnally and Bernstein (1994) highlighted that composite reliability values of 0.6 to 0.7 are acceptable, but for advanced stages of research it is good to have composite reliability values greater than 0.7.

4.8.1.3 KMO and Bartlett's test

Kaiser-Meyer-Olkin (KMO) test, a measure of sample adequacy, has also been carried out to check the adequacy of all the constructs used in the conceptual model and for the complete model. A sample adequacy test usually describes the proportion of variance among the variables. KMO values usually range from 0 to 1, where a value closer to 1 signifies that the sample is adequate to yield reliable estimates of correlation among the variables. A minimum Kaiser–Meyer–Olkin score of 0.50 is considered necessary to reliably use factor analysis for data analysis (Frohlich and Westbrook 2001). Bartlett's test of sphericity is a test statistics to test the null hypothesis that the variables are uncorrelated and also whether the correlation matrix is an identity matrix. An identity correlation matrix signifies that the variables are not related and hence not ideal for factor analysis. A significant statistical test, with a significance value usually less than 0.05, implies that the correlation matrix is not an identity matrix (Dziuban and Shirkey 1974). The table below shows the KMO measure of sample adequacy and Bartlett's test of sphericity of the proposed model.

Table 4.7: KMO and Bartlett's test

	Values
KMO measure of sample adequacy	0.88
Significance value of Bartlett's test of Sphericity	0.00

Source: Survey data analysis

Table 4.7 illustrates that the measure of sample adequacy for the conceptual model is 0.88 which is considered to be meritorious. Further the significance value of Bartlett's test of Sphericity is 0.00 rejecting the null hypothesis, hence the correlation matrix is not an identity matrix and the data is fit for factor analysis.

4.8.1.4 Factor loading

Factor loadings are correlations between the factors or indicators and the variable. It signifies how related an item is to the construct and shows the variance explained by that variable on a particular factor. It is important to have factor loadings greater than 0.5 to get better results (Truong and McColl 2011). But factor loading of 0.70 is considered indicative of a well defined structure (Hair et al. 2015).

Table 4.8 below shows the results of reliability analysis. It highlights on the factor loadings of the items used to measure the latent variables, Cronbach's alpha and composite reliability values to check internal consistency and Kaiser-Meyer-Olkin (KMO) values to confirm sample adequacy.

Table 4.8: Reliability analysis

Sl No.	Construct	Factor Loading	Cronbach's Alpha	Composite Reliability	KMO
1.	Performance Expectancy	0.823 0.780 0.723 0.696	0.740	0.843	0.747
2.	Effort Expectancy	0.817 0.860 0.839	0.787	0.872	0.701

3.	Social Influence	0.775 0.878 0.828	0.764	0.867	0.664
4.	Facilitating Conditions	0.752 0.773 0.681	0.610	0.780	0.620
5.	Hedonic Motivation	0.683 0.744 0.773 0.726	0.709	0.822	0.750
6.	Habit	0.844 0.782 0.852 0.763	0.807	0.885	0.784
7.	Personal Innovativeness	0.664 0.713 0.756 0.814	0.713	0.827	0.743
8.	Trust	0.869 0.872 0.884 0.836	0.886	0.923	0.802
9.	Word Of Mouth Content	0.680 0.820 0.762	0.621	0.799	0.613
10.	Behavioral Intention	0.837 0.886 0.883 0.902 0.821	0.916	0.938	0.888

		0.734			
		0.769			
11.	Actual Usage	0.774	0.665	0.811	0.71
		0.602			

Source: Survey data analysis

The table shows that all the items have fairly good factor loadings ranging from 0.621 to 0.902. The Cronbach's Alpha value also meets the threshold. Two latent constructs namely facilitating condition and word of mouth content has comparatively lower Cronbach's Alpha value of 0.610 and 0.621 respectively, which is acceptable (Bhuasiri et al. 2016). The remaining nine constructs possess a Cronbach's Alpha value of above 0.7 which signifies good reliability. The composite reliability values of the constructs range from 0.780 to 0.938 implying excellent internal consistency. All the constructs have KMO values above the threshold value of 0.5. The lowest value of KMO was obtained for the construct 'word of mouth content' which was 0.613 and the highest KMO value among the constructs was 0.888 for 'behavioral intention'.

4.8.2 Validity Test

Validity indicates how accurately a method measures what it is anticipated to measure. Validity can be verified by performing tests for various types of validity like content validity or face validity, convergent validity and discriminant validity.

4.8.2.1 Content validity

Content validity or face validity is generally conducted for the research instrument to verify its accuracy and perfection. It is a subjective but systematic evaluation of the extent to which the content of a measurement scale computes a construct (Malhotra et al. 2003). Experts who examine the content validity of the research instrument verify whether the instrument adequately covers the concept and then confirms the face validity of the questionnaire. The face validity of the questionnaire was done by consulting four academicians and two industrialists. The suggestions given by the experts were incorporated. Further a pilot test was conducted to finalize the

questionnaire. As content validity is a subjective evaluation procedure, it does not grant any empirical test. Hence other measures of validity tests were also conducted.

4.8.2.2 Convergent validity

Convergent validity is a parameter which explains the extent to which two variables which are supposed to be related are actually related or not. Hair et al. (2013) defined convergent validity as the degree to which a measure positively correlates with other measures of the same construct. The commonly adopted measure to check convergent validity is Average Variance Extracted (AVE). AVE is a measure of the amount of variance that is captured by a construct in relation to the amount of variance due to measurement error. If the average variance extracted is less than 0.50, then the variance due to measurement error is greater than the variance due to the construct. The following table provides empirical support for the convergent validity of the constructs of the study.

Table 4.9: Average Variance Extracted (AVE) values of latent constructs

Sl.	Construct	AVE
1.	PE	0.573
2.	EE	0.704
3.	SI	0.686
4.	FC	0.542
5.	HM	0.536
6.	H	0.658
7.	PI	0.546
8.	T	0.749
9.	WOMC	0.572
10.	BI	0.751
11.	AU	0.521

Note: PE- Performance Expectancy, EE- Effort Expectancy, SI- Social Influence, FC- Facilitating Conditions, HM- Hedonic motivation, H-Habit, PI- Personal Innovativeness, T- Trust, WOMC- Word of Mouth Content, BI- Behavioral Intention, AU- Actual Usage.

Source: Survey data analysis

As recommended by Hair et al. (2013), the AVE value should be more than 0.5 to have convergent validity. Table 4.9 illustrates that the average variance extracted for all the latent constructs of the proposed model are above 0.50 authenticating convergent validity.

4.8.2.3 Discriminant validity

The concept discriminant validity was introduced by Campbell and Fiske (1959). Discriminant validity can be defined as the extent to which a construct is truly distinct from other constructs (Hair et al. 2015). Discriminant validity can be verified using two different tests.

i. Checking the cross loadings of the indicators
ii. Verifying that the square root of average variance extracted (AVE) is greater than the correlation with other indicators.

Both the tests were carried out and the empirical findings have been demonstrated in the tables below. The first test examines the cross loadings of the indicators and table 4.10 shows the findings of the analysis.

Table 4.10: Cross loadings of the constructs

	Component										
	PE	EE	SI	FC	HM	H	PI	T	WOMC	BI	AU
PE1	**.686**	.167	.147	.024	-.014	.089	.191	.169	-.042	.231	.040
PE2	**.689**	.170	.099	.175	.016	.111	.059	.097	.065	.167	.067
PE3	**.569**	.157	.133	.277	.050	.041	.088	.144	.090	.157	.022
PE4	**.632**	.087	-.003	-.003	-.023	.045	.310	-.015	-.044	.230	-.003
EE1	.176	**.601**	.161	.136	-.006	.320	.180	.132	-.014	.220	.045
EE2	.252	**.688**	.061	.176	.020	.203	.104	.108	.073	.239	.057
EE3	.221	**.741**	.146	.132	.020	.198	.029	.117	.116	.065	.088
SI1	.266	.018	**.619**	.047	.054	.164	.227	.191	-.058	.231	.108
SI2	.134	.129	**.778**	.104	.004	.189	.118	.130	.074	.222	.073
SI3	.053	.196	**.712**	.154	-.014	.269	.066	.047	.236	.112	.072
FC1	.192	.135	.122	**.652**	.055	.140	.012	.132	-.010	.129	.075
FC2	.158	.125	.049	**.686**	.001	.075	.116	.198	-.019	.166	.017
FC3	-.007	.059	.063	**.644**	-.006	.146	.068	.006	.292	.078	.050

HM1	.031	.053	.019	.014	**.682**	.011	-.058	-.006	.024	.034	-.035
HM2	.068	-.064	.013	.076	**.738**	.030	-.022	-.008	-.053	-.067	.006
HM3	-.066	.003	.062	-.028	**.771**	.034	.044	-.018	-.020	-.009	.014
HM4	-.024	.024	-.071	-.020	**.727**	-.005	.058	.044	.023	.009	.069
H1	.045	.153	.087	.154	.006	**.786**	.042	.073	.038	.155	.079
H2	.038	.075	.229	.041	.048	**.694**	.048	.112	.188	.109	.131
H3	.050	.120	.082	.119	.046	**.795**	.096	.150	.129	.102	.060
H4	.130	.158	.116	.066	.007	**.663**	.084	.163	-.002	.225	.044
PI1	.342	-.053	.115	-.029	-.063	-.022	**.548**	.097	-.220	.137	.051
PI2	.083	.025	.045	.085	.041	.076	**.698**	.117	.021	.146	-.011
PI3	.212	.111	.035	.008	.006	.105	**.634**	.211	.074	.181	.055
PI4	.065	.134	.150	.124	.010	.087	**.758**	.110	.029	.145	.110
T1	.106	.023	.079	.070	-.005	.158	.136	**.776**	.062	.281	.077
T2	.110	.052	.059	.072	-.003	.164	.174	**.745**	.090	.315	.036
T3	.120	.128	.076	.114	.009	.138	.151	**.803**	.095	.191	.035
T4	.051	.100	.102	.125	.013	.080	.097	**.784**	.141	.174	.019
WOMC1	-.043	.134	.002	.103	.026	-.032	.085	.202	**.668**	-.086	.020
WOMC2	-.012	-.022	.040	.071	.012	.092	-.060	.095	**.796**	.042	.056

WOMC3	.106	.018	.151	.010	-.082	.261	-.042	.008	**.672**	.132	.087
BI1	.158	.124	.120	.115	.010	.124	.103	.297	.086	**.716**	.066
BI2	.196	.072	.206	.066	-.018	.133	.162	.203	-.009	**.783**	.068
BI3	.153	.052	.083	.144	.002	.136	.206	.205	.025	**.789**	.063
BI4	.169	.127	.110	.109	.001	.107	.160	.180	-.013	**.824**	.066
BI5	.213	.135	.074	.088	-.048	.269	.124	.204	.040	**.686**	.053
AU1	.192	-.131	-.007	.029	-.002	.160	-.092	.021	.034	-.029	**.738**
AU2	.084	-.095	-.047	.094	.021	.088	-.085	.068	.065	.014	**.770**
AU3	-.076	.010	.081	-.027	-.006	.058	.042	.024	.046	.016	**.762**
AU4	-.090	.223	.166	.018	-.005	-.090	.115	.000	-.048	.165	**.595**

Note: PE- Performance Expectancy, EE- Effort Expectancy, SI- Social Influence, FC- Facilitating Conditions, HM- Hedonic motivation, H-Habit, PI- Personal Innovativeness, T- Trust, WOMC- Word of Mouth Content, BI- Behavioral Intention, AU- Actual Usage.

Source: Survey data analysis

In this test of checking cross loadings, the factor loadings of the indicator should be higher than all of its loadings on the other constructs. From the results of statistical analysis of data, it was observed that the items loaded accurately within the constructs and the values were higher than the loadings with other constructs. The factor loadings of the corresponding latent constructs have been represented in bold in table 4.10.

The study further focuses on performing the second test known as the Fornell-Larcker criteria for verifying discriminant validity after confirming discriminant validity in the first test. The Fornell-Larcker (1981) approach (Fornell and Larcker 1981) is believed to be a more conventional approach to confirming discriminant validity. This approach must verify that the square root of the average variance extracted (AVE) is greater than the correlation with other indicators. Table 4.11 shows the results of the discriminant validity test using the Fornell-Larcker criteria.

The ‘square root of AVE’ values are the diagonally placed values represented in bold in the table. Table 4.11 shows that the square root of AVE of the latent constructs is higher than all inter constructs correlations (Hair et al. 2015). Thus, it has been confirmed that the latent constructs are different, and the Fornell-Larcker criteria for discriminant validity is satisfied.

Table 4.11: Discriminant validity test using Fornell-Larcker criteria

	PE	EE	SI	FC	HM	H	PI	T	WOMC	BI	AU
PE	**.757**										
EE	.510**	**.839**									
SI	.430**	.489**	**.828**								
FC	.403**	.446**	.380**	**.736**							
HM	.018	.030	.027	.043	**.732**						
H	.300**	.479**	.483**	.370**	.060*	**.811**					
PI	.485**	.364**	.383**	251**	.012	.229**	**.739**				
T	.390**	.391**	.389**	.372**	.018	.374**	.421**	**.865**			
WOMC	.111**	.224**	.270**	.282**	-.018	.314**	.033	.282**	**.756**		
BI	.544**	.486**	.496**	.391**	-.012	.408**	.487**	.583**	.155**	**.866**	
AU	.117**	.163**	.208**	.140**	.026	.191**	.126**	.129**	.122**	.176**	**.721**
** Correlation is significant at the 0.01 level (2-tailed).											
* Correlation is significant at the 0.05 level (2-tailed).											

Note: PE- Performance Expectancy, EE- Effort Expectancy, SI- Social Influence, FC- Facilitating Conditions, HM- Hedonic motivation, H-Habit, PI- Personal Innovativeness, T- Trust, WOMC- Word of Mouth Content, BI- Behavioral Intention, AU- Actual Usage.

Source: Survey data analysis

4.8.3 Common Method Bias

Common method Bias occurs when variation in response is caused by the research instrument instead of inclination of respondents. It is the variance that is accountable to the measurement method rather than to the constructs the indicators are supposed to represent (Podsakoff et al. 2003). If measures are influenced by common-method bias, the inter-correlations among them would be inflated or deflated (Williams and Brown 1994). In empirical research, lack of careful consideration on the effects of common method bias can direct to numerous negative repercussions on the interpretations made from the outcomes of research (Aguirre-Urreta and Hu 2019). Presence of common method bias in the data set might lead to biased estimation of reliability and validity of the measures or biased estimation of the relationships between constructs of interest, which in turn could even affect verification of the proposed hypotheses. To check common method bias, both Harman's Single factor test as well as Confirmatory Factor Analysis (CFA) common factor test was conducted.

4.8.3.1 Harman's single factor test

Harman's single factor test is one of the most popular techniques to identify common method variance. Though literature possesses arguments about the effectiveness of this test for common method bias verification (Aguirre-Urreta and Hu 2019), yet this technique is popular and widely adopted by researchers in the domain of social science. If a single factor accounts for the majority of the covariance among the measures, it can be interpreted that a considerable amount of common method variance exists in the data set. It is recommended that the single factor should not account for more than 50% variance. After conducting Harman's single factor test for this study, using principal axis factoring method of extraction, promax rotation and setting up the number of factors to 1, the results showed that the total variance explained by a single factor is 24.96% which is less than the recommended threshold of 50% (Podsakoff et al. 2003). To strengthen the fact that the data set is free from common method bias, the study also conducted common factor test which has been explained in the next section.

4.8.3.2 Common factor test

Tripathi et al. (2020) stated that to test for common method bias adopting common factor test, the difference of regression weights with and without common latent factor should be below 0.2. Table 4.12 shows the results of common method bias estimations using common factor test. The table makes mention of the regression weights without common latent factor, regression weights with common latent factor and the difference between the two regression weights.

Table 4.12: Common method bias estimations using common factor test

Sl No.	Construct	Measurement Items	Regression weights without common latent factor	Regression weights with common latent factor	Difference
1.	Performance Expectancy	PE1	0.760	0.709	0.051
		PE2	0.682	0.644	0.038
		PE3	0.614	0.573	0.041
		PE4	0.582	0.512	0.070
2.	Effort Expectancy	EE1	0.741	0.708	0.033
		EE2	0.779	0.746	0.033
		EE3	0.716	0.697	0.019
3.	Social Influence	SI1	0.658	0.615	0.043
		SI2	0.811	0.803	0.008
		SI3	0.732	0.728	0.004
4.	Facilitating Conditions	FC1	0.603	0.574	0.029
		FC2	0.622	0.594	0.028
		FC3	0.461	0.453	0.008
5.	Hedonic Motivation	HM1	0.538	0.496	0.042
		HM2	0.640	0.608	0.032
		HM3	0.692	0.659	0.033
		HM4	0.600	0.560	0.040

6.	Habit	H1	0.777	0.761	0.016
		H2	0.706	0.688	0.018
		H3	0.799	0.786	0.013
		H4	0.678	0.646	0.033
7.	Personal Innovativeness	PI1	0.537	0.492	0.045
		PI2	0.574	0.522	0.052
		PI3	0.685	0.632	0.053
		PI4	0.722	0.668	0.054
8.	Trust	T1	0.823	0.792	0.031
		T2	0.843	0.810	0.033
		T3	0.837	0.813	0.024
		T4	0.757	0.733	0.024
9.	Word of Mouth Content	WOMC1	0.463	0.449	0.014
		WOMC2	0.678	0.671	0.007
		WOMC3	0.664	0.645	0.019
10.	Behavioral Intention	BI1	0.787	0.740	0.047
		BI2	0.856	0.815	0.041
		BI3	0.859	0.823	0.036
		BI4	0.884	0.846	0.038
		BI5	0.766	0.725	0.041
11.	Actual Usage	AU1	0.565	0.538	0.027
		AU2	0.629	0.610	0.019
		AU3	0.686	0.672	0.014
		AU4	0.549	0.533	0.016

Note: PE- Performance Expectancy, EE- Effort Expectancy, SI- Social Influence, FC- Facilitating Conditions, HM- Hedonic motivation, H-Habit, PI- Personal Innovativeness, T- Trust, WOMC- Word of Mouth Content, BI- Behavioral Intention, AU- Actual Usage.
Source: Survey data analysis

The results demonstrate that the difference of regression weights with and without common latent factor is below 0.2 for all the measured items. Thus it can be confirmed that the dataset has no concerns of common method bias.

4.8.4 Multicollinearity Test

Collinearity demonstrates that two or more variables are measuring the same attribute. This generally results to overlapping of variables. Thus it is important to check multicollinearity of data. When the predictor latent variables are highly correlated with each other, it is termed as vertical collinearity (Kock and Lynn 2012). Multicollinearity can be verified by calculating the variance inflation factor (VIF) and comparing the same with threshold value. A VIF value of 5 and above signifies presence of multicollinearity (Kaiser 1974). Table 4.13 demonstrates the empirical findings of multicollinearity test where the tolerance values and the variance inflation factor values are noted.

Table 4.13: Multicollinearity test results

Dependent Variable	Independent variables	Collinearity Statistics	
		Tolerance	VIF
Performance Expectancy	Effort Expectancy	.606	1.649
	Social Influence	.615	1.625
	Facilitating Condition	.713	1.402
	Hedonic motivation	.994	1.006
	Habit	.643	1.556
	Personal Innovativeness	.726	1.377
	Trust	.670	1.492
	Word of Mouth Content	.823	1.215
Effort Expectancy	Performance Expectancy	.637	1.571
	Social Influence	.622	1.608
	Facilitating Condition	.713	1.402
	Hedonic motivation	.994	1.006
	Habit	.682	1.467
	Personal Innovativeness	.670	1.492
	Trust	.667	1.500
	Word of Mouth Content	.821	1.219
Social Influence	Performance Expectancy	.603	1.659
	Effort Expectancy	.580	1.724

	Facilitating Condition	.696	1.437
	Hedonic motivation	.994	1.006
	Habit	.687	1.456
	Personal Innovativeness	.685	1.460
	Trust	.667	1.499
	Word of Mouth Content	.831	1.204
Facilitating Condition	Performance Expectancy	.611	1.637
	Effort Expectancy	.582	1.718
	Social Influence	.608	1.643
	Hedonic motivation	.995	1.005
	Habit	.648	1.544
	Personal Innovativeness	. 667	1.499
	Trust	.675	1.481
	Word of Mouth Content	.837	1.195
Hedonic motivation	Performance Expectancy	.593	1.687
	Effort Expectancy	.564	1.772
	Social Influence	.605	1.653
	Facilitating Condition	.693	1.444
	Habit	.644	1.553
	Personal Innovativeness	.667	1.499
	Trust	.665	1.505
	Word of Mouth Content	.822	1.217
Habit	Performance Expectancy	.593	1.686
	Effort Expectancy	.599	1.668
	Social Influence	.647	1.545
	Facilitating Condition	.698	1.432
	Hedonic motivation	.997	1.003
	Personal Innovativeness	.668	1.498
	Trust	.675	1.481
	Word of Mouth Content	.838	1.193
Personal	Performance Expectancy	.645	1.550

Innovativeness	Effort Expectancy	.567	1.763
	Social Influence	.621	1.610
	Facilitating Condition	.692	1.445
	Hedonic motivation	.994	1.006
	Habit	643	1.556
	Trust	.713	1.403
	Word of Mouth Content	.835	1.197
Trust	Performance Expectancy	.598	1.673
	Effort Expectancy	.566	1.765
	Social Influence	.607	1.646
	Facilitating Condition	.703	1.423
	Hedonic motivation	.994	1.006
	Habit	.653	1.533
	Personal Innovativeness	.715	1.398
	Word of Mouth Content	.846	1.183
Word of Mouth Content	Performance Expectancy	.595	1.681
	Effort Expectancy	.565	1.771
	Social Influence	.613	1.632
	Facilitating Condition	.706	1.416
	Hedonic motivation	.996	1.004
	Habit	.656	1.523
	Personal Innovativeness	.679	1.472
	Trust	.685	1.459

Source: Survey data analysis

Variance Inflation Factor, a measure of multicollinearity, has been computed in this study and the results show that all the VIF values are less than the recommended threshold value. The lowest VIF value noted in this research work was 1.003 and the highest value was 1.772. As all the VIF values are less than 5, hence it can be affirmed that multicollinearity issue does not exist in the dataset.

4.8.5 Confirmatory Factor Analysis

Confirmatory Factor Analysis (CFA) is a statistical technique which gives logical representation of the constructs mentioned in the model. It validates the factor structure of a set of observed variables (Brown and Moore 2012). CFA verifies whether the measures of the construct are consistent with the actual understanding of the construct and the findings of the research. The measurement model verifies that the observed items together represent the latent construct. This verification is done using confirmatory factor analysis. The present research work executed confirmatory factor analysis of the model as a precursor to structural equation modeling. Using AMOS software, the CFA analysis confirmed the item wise factor loadings of all the latent constructs of the proposed model. The figure below illustrates the CFA loadings of all the indicators corresponding to the latent constructs. All the factor loadings are above the threshold limit but the measurement model does not demonstrate a good model fit. The normed chi square value which is supposed to be less than or equal to 3 as suggested by Hair et al. (2015) is 3.205 for the measurement model. Hence a viable re-specification of the model was considered checking the modification indices. The modification indices value denotes the anticipated fall in the overall chi-square value if a specific parameter were released instead of keeping constrained – leading to re-estimation of the model (Byrne 2001). In simple words, the modification value indicates the extent of improvement in the model fit. Hair et al. (2010) asserted that a modification index value of approximately 4 and above symbolizes that the model fit could be improved by identifying the analogous route. After some additional examinations, a scope for improving the model fit was identified by covariating e35 and e36 (MI = 54.05), e28 and e29 (MI = 48.33) and e27 and e29 (MI = 43.84). Subsequent to these alterations, the model demonstrated good model fit with normed chi square value of 2.97 and goodness of fit index of 0.912.

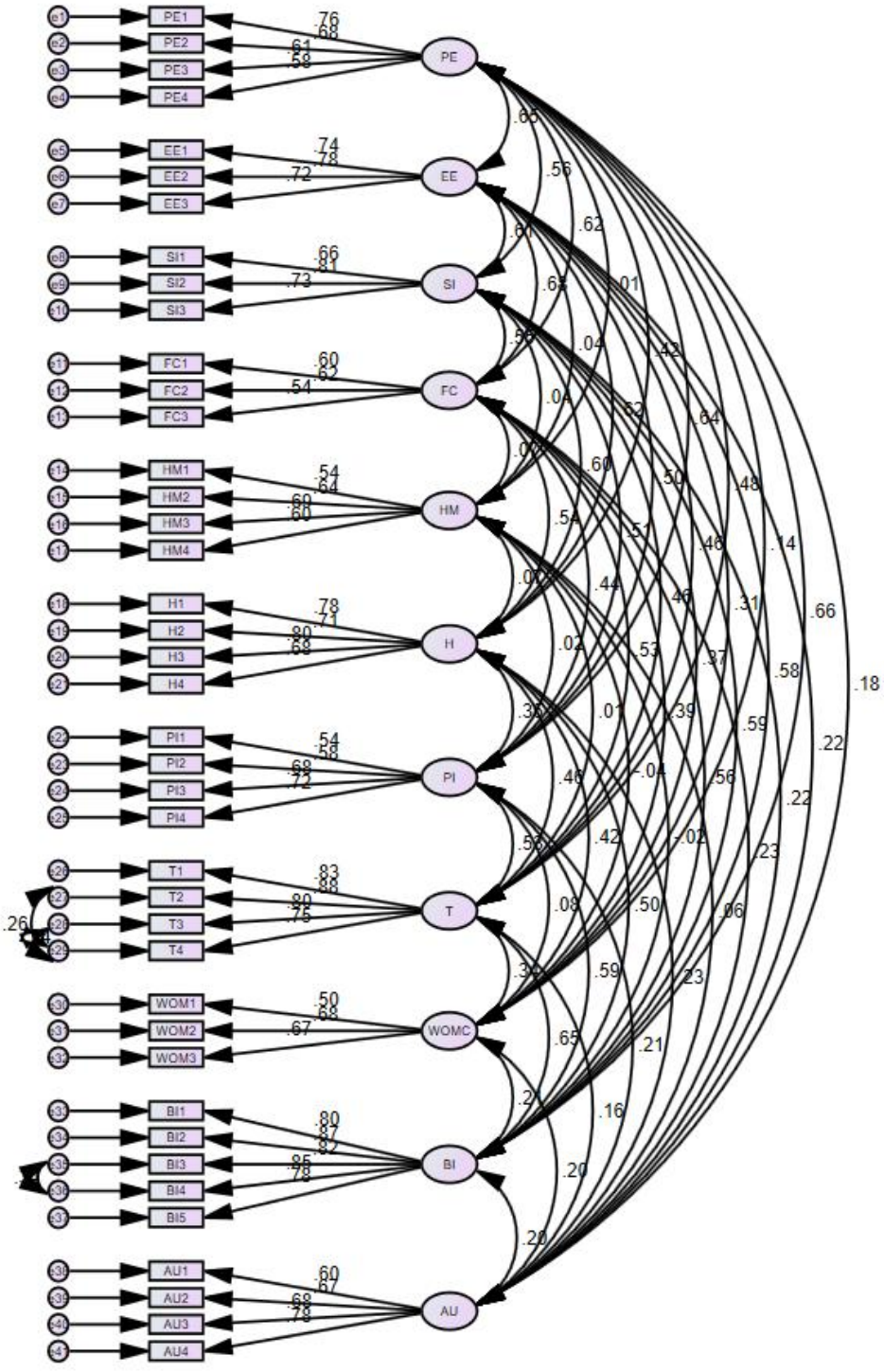

Figure 4.4: Measurement model

Source: Data Analysis

The present study completed the evaluation of the proposed measurement model which comprises of observed variables (measurement items) that define each latent construct, basic test like checking unidimensionality, reliability and validity followed by some additional tests like checking the presence of common method bias and multicollinearity in the dataset. As the measurement model did yield satisfactory results concerning reliability and validity and also illustrated that the data set is free from common method bias and has no multicollinearity issues, hence the accuracy of the measurement model has been ensured from confirmatory factor analysis. Hence the advanced data analysis can now be conducted which concerns evaluation of the structural model.

4.9 EVALUATION OF STRUCTURAL MODEL

After obtaining acceptable reliability and construct validity results, the present study examined the structural model. Arbuckle and Wothke (1999) described structural model as a segment of the model that specifies the relationship between the latent variables. Assessment of structural model focuses on the strength of association between the independent variables and the dependent variables. Figure 4.5 shows the structural model where nine exogenous variables on the left side and two endogenous variables on the right side are represented. Exogenous variables are the variables that predict other latent constructs whereas endogenous variables are the dependent variables which get determined by the association it has with other latent constructs. The structural model analysis has been carried out by performing the following tests:

i. Checking the relevance of path coefficients
ii. Evaluating the coefficient of determination (R^2)
iii. Examining the model fit of the proposed model.

The causal paths or hypotheses proposed on the basis of literature support were examined and the relevance of the proposed paths was verified. The coefficient of determination as well as the model fit of the proposed structural model were also investigated and have been explained in details below.

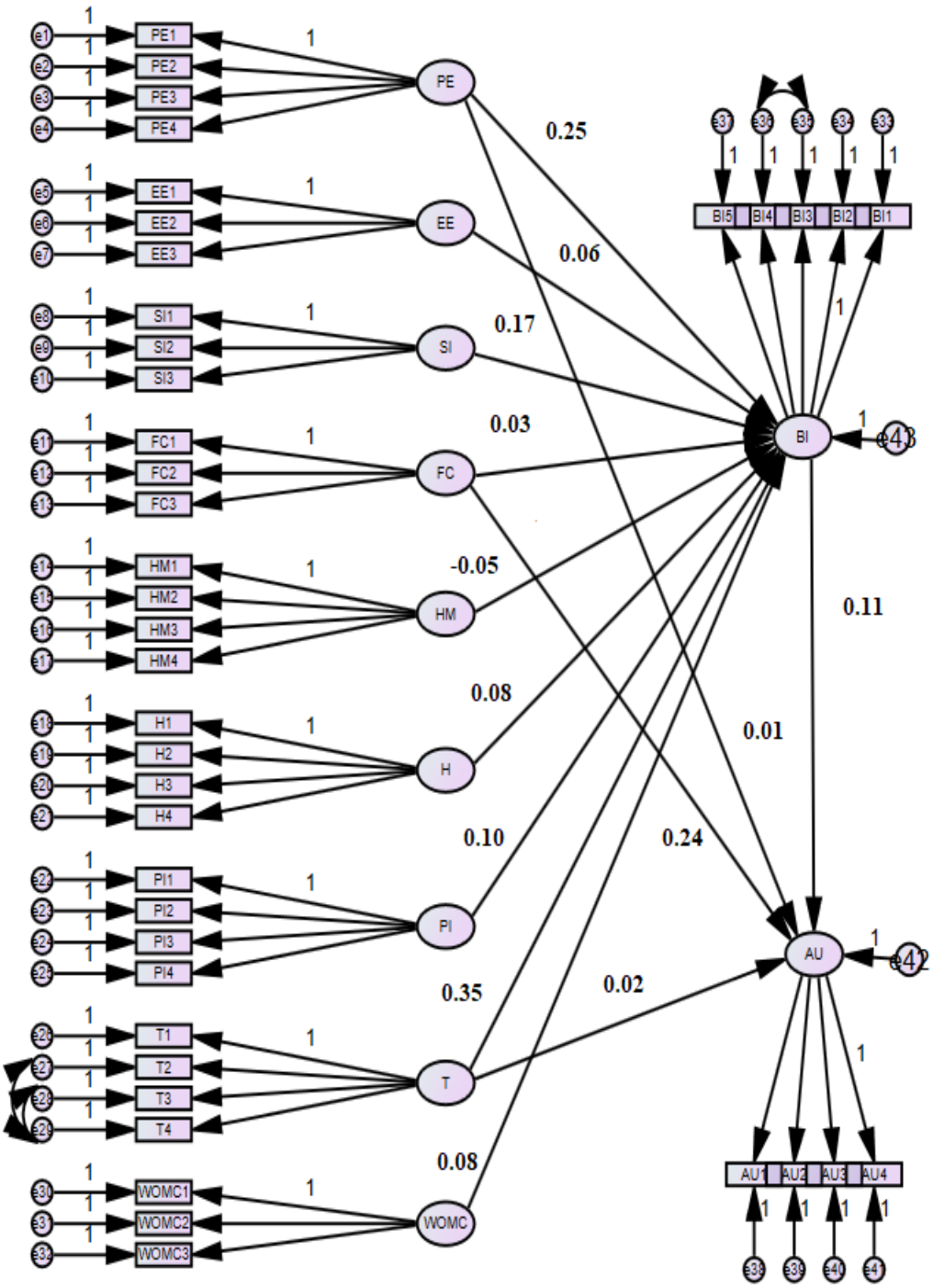

Figure 4.5: Structural model
Source: Data Analysis

4.9.1 Path Analysis

Path analysis is a type of multiple regression analysis that is used to assess causal models by investigating the relationships between an endogenous variable and two or more exogenous variables. Path analysis was used to examine the hypothesized association between the latent constructs of the study. The table below shows the hypothesis number, the proposed path followed by the standardized regression weight of the path (β value) and the final decision reflecting the acceptance and rejection of the stated hypothesis.

Table 4.14: Path analysis of proposed hypotheses

Hypothesis	Path	β - value	Result
H1a	PE → BI	0.254***	Supported
H1b	PE → AU	0.011	*Rejected*
H2	EE → BI	0.056	*Rejected*
H3	SI → BI	0.170***	Supported
H4a	FC → BI	0.032	*Rejected*
H4b	FC → AU	0.241***	Supported
H5	HM → BI	-0.048	*Rejected*
H6	H → BI	0.083*	Supported
H7	PI → BI	0.095**	Supported
H8a	T → BI	0.352***	Supported
H8b	T → AU	0.013	*Rejected*
H9	WOMC → BI	0.082*	Supported
H10	BI → AU	0.106*	Supported

*** denotes $p < 0.001$, ** denotes $p < 0.01$ and * denotes $p < 0.05$ where p is the level of significance.

Note: PE- Performance Expectancy, EE- Effort Expectancy, SI- Social Influence, FC- Facilitating Conditions, HM- Hedonic motivation, H-Habit, PI- Personal Innovativeness, T- Trust, WOMC- Word of Mouth Content, BI- Behavioral Intention, AU- Actual Usage.

Source: Survey data analysis

The table demonstrates that a total number of thirteen hypotheses were proposed in the study and eight out of those thirteen hypothesized relationships were accepted and the rest five hypotheses were rejected. Performance expectancy (PE), social influence (SI), habit (H), personal innovativeness (PI), trust (T) and word of mouth content (WOMC) have significant impact on behavioral intention (BI) of people towards UPI

usage. The results also demonstrated a significant relationship of facilitating condition (FC) and behavioral intention (BI) with actual usage (AU) of UPI and a non-significant relationship of performance expectancy and trust with actual usage. But FC has no significant impact on BI. Similarly, non significant relationship was noted between effort expectancy (EE), hedonic motivation (HM) and BI. Out of the eight supported associations, four supported relationships were highly significant and the rest four were moderately significant. The level of significance have been denoted by asterisks sign where *** denotes $p < 0.001$, ** denotes $p < 0.01$ and * denotes $p < 0.05$ where p is the level of significance. A detailed explanation of the implications of the findings have been highlighted and elaborated in the next chapter.

4.9.2 Coefficient of Determination

The coefficient of determination, commonly known as R^2 is a widely used measure to assess structural model. Hair et al. (2013) described R-squared (R^2) as the measure of a model's predictive accuracy. In statistics, R^2 evaluates the proportion of variance in the response variable explained by the predictor variable. In simple words, R^2 calculates the amount of variance explained by the exogenous variables on the endogenous variables. The explanatory power of a model is considered to be substantial, moderate or weak when the R squared values are approximately around 0.67, 0.33 and 0.19 respectively (Chin 1998). However Hair et al. (2021) stated those R^2 values to be 0.75, 0.50, and 0.25 to exhibit substantial, moderate or weak explanatory power respectively. Yet the interpretation based on the R squared values should only be done based on the context and complexity of the study (Hair et al. 2021)

The total variance explained by the model with the exogenous variables PE, EE, SI, FC, HM, H and PI on BI was 56.2%. Adding trust and word of mouth content as new constructs to the established model has increased the variance on the endogenous variable by 7%, resulting to a total variance of 63.2%. In behavioral research, if the variance explained by R^2 is 20% and above, it is considered to have a strong explanatory power (Hair et al. 2013). Thus the proposed model has a strong explanatory power to comprehend behavioral intention of people towards usage of UPI.

4.9.3 Goodness of Fit Index

The final criterion for assessing the structural model is the establishment of the goodness of fit of the proposed model. Goodness-of-fit can be described as the degree to which a model reproduces the covariance matrix among the variables. There are various types of indices like absolute fit indices and incremental/relative fit indices that confirm goodness of fit of a model. Absolute fit indices decide how well a model fits the sample data (McDonald and Ho 2002) and provide the most elemental hint of how well the proposed theory fits the data. The calculation of absolute fit indices does not rely on comparison with a baseline model like incremental fit indices. Some of the absolute fit indices include Chi-Squared test, Goodness of Fit Index (GFI), Adjusted Goodness-of-Fit Index (AGFI), Root Mean Square Error of Approximation (RMSEA) and Root Mean Square Residual (RMR). This research work computed all these absolute fit indices and additionally computed an incremental fit index called the Comparative Fit Index (CFI). Table 4.15 illustrates the goodness of fit indices of the structural model and the acceptable values of those indices. A brief discussion on the above mentioned fit indices is noted further.

Though Chi-Square value is the traditional measure for evaluating overall model fit but it has some restrictiveness concerning the sample size. Hence Wheaton et al. (1977) proposed normed chi square which can be evaluated by dividing chi square with the degrees of freedom. A normed chi square value of less than 3 is considered as an acceptable fit (Hair et al. 2015, Kline 1998).

Goodness of Fit Index (GFI) is a measure of the relative amount of variance and covariance in the data set jointly explained by hypothesized model (Byrne 2010). The range of goodness of fit index value ranges from 0 to 1. Closer the GFI value to 1 better is the fit of the model. Hair et al. (2015) recommended that a GFI value greater than 0.90 exemplifies better model fit. Associated to GFI is AGFI which adjusts the goodness of fit index based upon degrees of freedom (Tabachnick and Fidell 2007). AGFI, classified as an absolute index of fit, takes into account the different degrees of model complexity. For both GFI and AGFI, a value greater than or equal to 0.9 is considered satisfactory and represents good model fit.

Root mean square error of approximation (RMSEA) considers the error of approximation in the population and defines to what extent the model with unknown

but optimally selected parameter values fits the population covariance matrix (Byrne 2013, HooperD and Mullen 2008). As RMSEA is sensitive to the number of estimated parameters, it is considered as one of the most informative fit indices (Siguaw and Diamantopoulos 2000). Hu and Bentler (1999) stated that a cut off value of 0.6 seems to be acceptable. However, Hair et al. (2015) affirmed that a RMSE value of less than 0.08 is an indication of good fit. The Root Mean Square Residual (RMR) is the square root of the difference between the residuals of sample covariance matrix and the hypothesized covariance model. The acceptable RMR value ranges from 0 to 1 with a preference to values lower than 0.5 for well fit models (Byrne 2013) whereas Hair et al. (2015) asserted that a RMR value less than or equal to 0.1 is desirable to signify good model fit.

Comparative Fit Index (CFI), a type of incremental fit index, was first introduced by Bentler (1990). It evaluates how well the measurement model fits compared to some alternative baseline model. Hu and Bentler (1999) recommended that a CFI value greater than 0.95 is an indication of good fit where as a CFI value of 0.9 or more is considered acceptable as stated by Hair et al. (2015). CFI is least affected by sample size, and hence it evolved as one of the most popularly reported fit indices (Fan et al. 1999).

Table 4.15: Goodness of fit indices of structural model

Indices	Threshold Value	Results obtained
Normed chi square CMIN/DF	≤3 (Hair et al. 2015)	2.847
GFI	≥ 0.90 (Hair et al. 2015)	0.910
AGFI	≥ 0.90 (Hair et al. 2015)	0.900
CFI	≥0.90 (Hair et al. 2015)	0.927
RMR	≤ 0.1 (Hair et al. 2015)	0.033
RMSEA	<0.08 (Hair et al. 2015)	0.040

Note: GFI- Goodness of Fit Index, AGFI- Adjusted Goodness of Fit Index, CFI- Comparative Fit Index, RMR- Root Mean Square Residual, RMSEA- Root Mean Square Error of Approximation.

Source: Survey data analysis

The table demonstrates that the normed chi-square value for the structural model is 2.847, which is below 3, indicating proper fit. Additionally the structural model exhibits good model fit with GFI=0.910, AGFI = 0.900, CFI = 0.927, RMSEA = 0.040 and RMR = 0.033. All the values are within the threshold values stated in literature by researchers and academicians.

4.10 MEDIATION ANALYSIS

Mediation is a common phenomenon in behavioral research. Mediation occurs when a predictor variable influences a dependent variable through one or more intervening variables. Those intervening variables are the mediators. Figure 4.6 drawn below is a direct model with A as the exogenous variable and B as the endogenous variable. The straight one sided arrow connecting A and B is denoted by 'c' and path c represents the total effect of A on B.

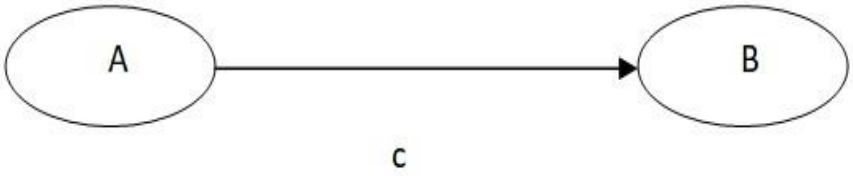

Figure 4.6: Direct model
Source: Survey data analysis

Figure 4.7 drawn below is a mediated model where A is the exogenous variable, B is the endogenous variable and M is the mediator variable. The effect of A on M is denoted by 'a', the effect of M on B is denoted by 'b' and path 'c" represents the direct effect of A on B in the presence of M.

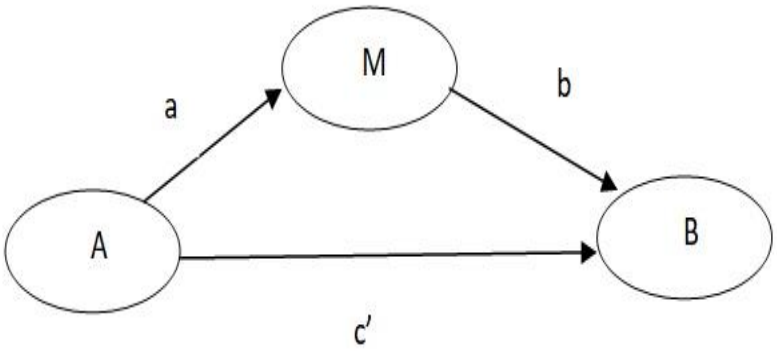

Figure 4.7: Mediated model
Source: Survey data analysis

The difference between figure 4.6 and figure 4.7 is the intervention of the mediator variable M. The effect of the mediator can be computed as the product of a and b. Thus the total effect, c, for the mediated model is the sum of c ' and the product of a and b (c = c ' + a*b). Thus a generic clarification on mediation has been achieved. The study further elaborates the method to be adopted for conducting mediation analysis.
The most widely adopted method for assessment of mediation is the Baron and Kenny approach. Baron and Kenny (1986) noted that mediation relation can be established only when the following four criteria gets satisfied.

i. There must be a significant relationship between the exogenous variable and the endogenous variable.
ii. There must be a significant relationship between exogenous variable and the mediator variable.
iii. There must be a significant relationship between mediator variable and endogenous variable.
iv. After the mediator variable is added, the relationship between exogenous variable and endogenous variable should either be non-significant or the strength of their relationship should become weak.

On satisfying the first three criteria, if the relationship between the exogenous variable and endogenous variable becomes non-significant due to the intervention of

the mediator variable, then that is considered as full mediation or total mediation. On the other hand, if the relationship or the direct path becomes weaker, it signifies partial mediation. Hence mediation can be of two categories: full mediation and partial mediation. To get an idea on the form of mediation that occurred in the study, a flow chart shown below graphically represents the methods and steps followed to conduct mediation analysis.

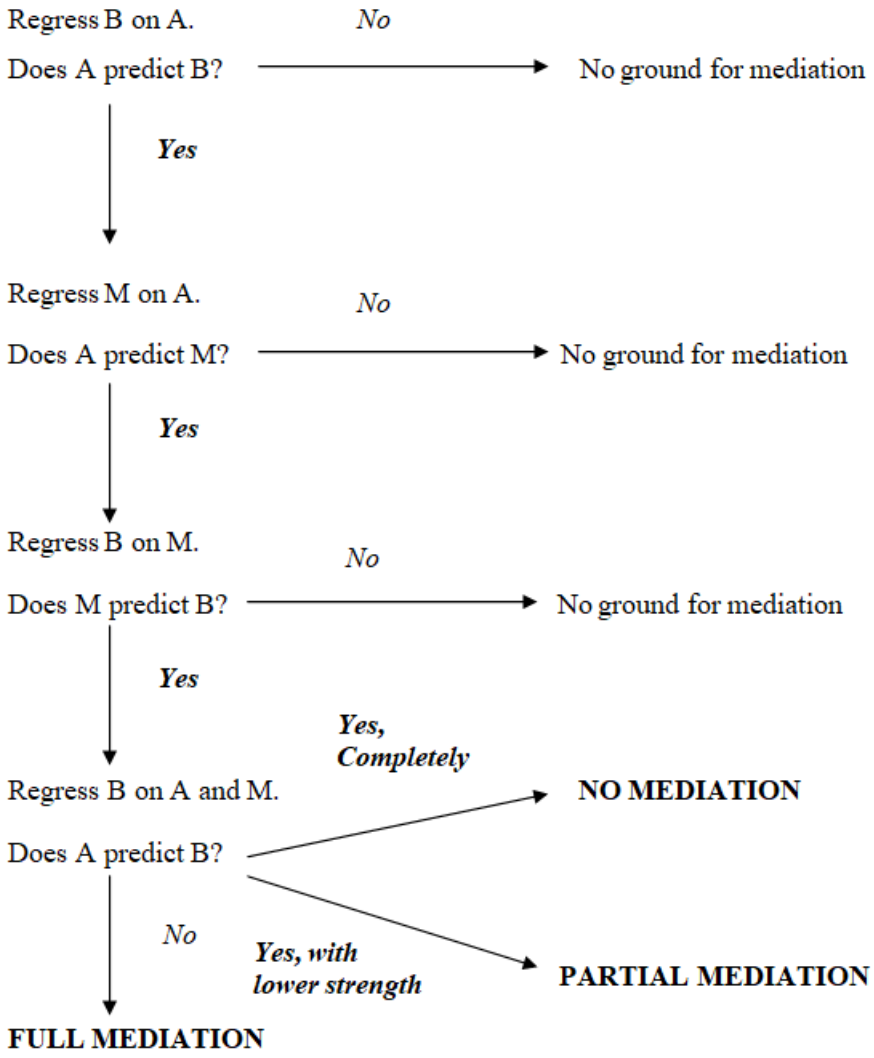

Figure 4.8: Flow chart for mediation analysis
Source: Author's representation

The research work attempted to examine the fourth objective after completing the first three research objectives. Based on some additional findings in the literature archive, the study attempted to propose a mediation model where the mediating role of behavioral intention on the association between performance expectancy, trust and actual usage was investigated. Patil et al. (2020) established performance expectancy as the strongest predictor of actual usage. The present study already established a positive association between performance expectancy and behavioral intention concerning UPI usage but the direct effect of performance expectancy on actual usage in the presence of behavioral intention was found non-significant. Furthermore, Ifedayo et al. (2021) reported that behavioral intention mediates the relationship between performance expectancy and actual usage regarding podcast acceptance amongst Nigerian students. Thus the present study also attempted to examine the role of behavioral intention as a mediator between performance expectancy and actual usage.

Koloseni and Mandari (2017) tested the relationship between trust and actual usage concerning adoption of mobile money services in Tanzania. They reported a significant association between the two variables. Similarly, Malaquias and Hwang (2019) also reported a significant association between trust and use behavior (actual usage in the present study) concerning mobile banking usage for users of Brazil and the USA. The present study, concerning UPI adoption, reported a strong significant association between trust and behavioral intention, but the direct effect of trust on actual usage in the presence of behavioral intention was seen non-significant. Thus the present study examines the mediating role of behavioral intention as a mediator between trust and actual usage.

The statistical significance of the mediation model was tested using bootstrap re-sampling technique with 2000 samples at 95% bias-corrected confidence level. Bootstrapping, a non parametric method, is basically a re-sampling technique done with replacement. Figure 4.9 demonstrates the mediation model of the study and table 4.16 shows the mediation analysis results.

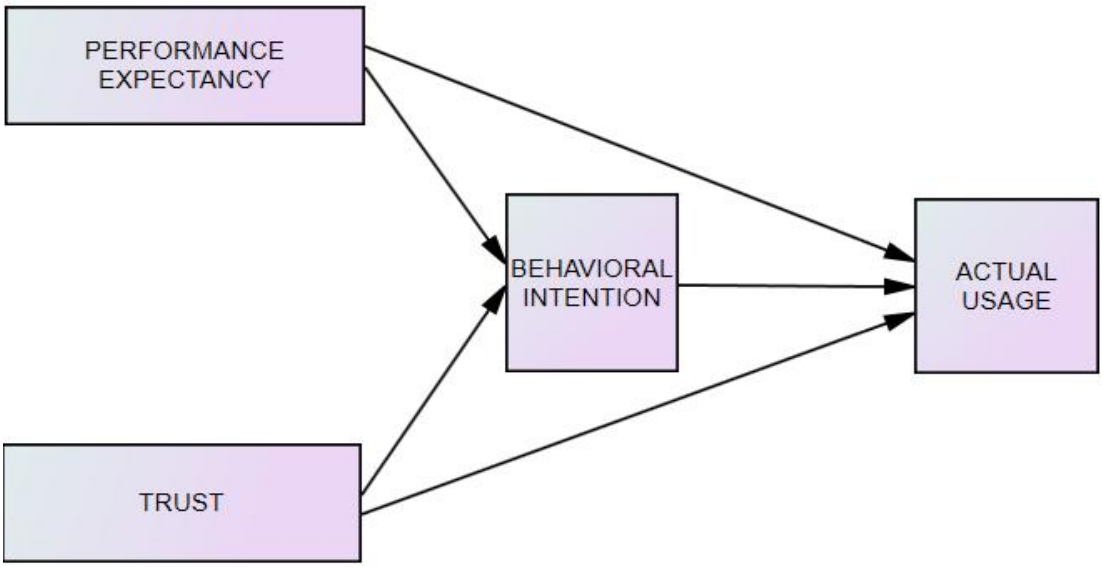

Figure 4.9: Mediation model
Source: Author's representation

Table 4.16: Results of mediation analysis

	Direct Effect	Indirect effect	
	β value	β value	Result
Performance expectancy→ Behavioral intention → Actual usage	0.66 (ns)	0.056**	Full mediation
Trust→ Behavioral intention → Actual usage	0.049 (ns)	0.055**	Full Mediation

Source: Survey data analysis

Table 4.16 illustrates the mediating influence of behavioral intention. Behavioral intention is the mediator variable, performance expectancy and trust are the exogenous variables and actual usage is the endogenous variable. When mediating variable was introduced, the direct effect of performance expectancy and trust on actual usage became insignificant whereas the indirect effect was significant. The results revealed that behavioral intention fully mediates the relationship between performance expectancy and actual usage as well as trust and actual usage. The next

chapter will highlight a detailed explanation of the role of behavioral intention as a mediator.

4.11 CHAPTER SUMMARY

The chapter titled 'analysis and interpretations' has reported the statistical analysis results carried out with the final data set. The data set used for analysis was first screened, cleaned and normalized using SPSS 20. The information regarding the demographic profile of the respondents and the descriptive statistics of the latent constructs of the study were noted. Additionally, the reliability and validity of the constructs were evaluated and reported in this chapter. Further various other tests were performed to examine the measurement model. A detailed explanation of all those tests has been documented in this chapter. After validation of the measurement model of the study, the structural model was evaluated using AMOS. The chapter has also examined the proposed hypotheses and confirmed the model's goodness of fit. The chapter briefs about mediation analysis at the later end of the chapter, which is the fourth and the last objective of the study concerning examination of the mediating role of behavioral intention. A detailed discussion of the obtained results, their implications, followed by the limitations and recommendations for future research, has been presented in the next chapter.

CHAPTER 5

DISCUSSION AND CONCLUSION

5.1 INTRODUCTION

The discussion section is the final part of the research work and bears immense importance. In this section, the researcher illustrates, analyzes and interprets the findings of the research work. Based on the results of the research data mentioned in the previous chapter, the present chapter discusses in detail the significance of the results obtained and ties those findings back to the research objectives. The chapter provides a logical justification of the findings and highlights the connection between the findings of this research work and the previous findings present in the literature archive. The chapter throws light on implications of this study, which comprises two subsections: theoretical implication and managerial implication. Theoretical implications are the inferences made at the end of the research investigation stating that the adopted theory is appropriate for explaining and understanding the phenomenon investigated in the research. It also highlights the contributions of the research work in the theoretical background. On the other hand, managerial implications summarize the meaning of the results in terms of actions. It recommends management actions based on practical observation, which is supposed to help make practical management decisions. Every research work is unique in its own way and this research investigation has its own merits. The present chapter highlights the novelty of the study followed by the limitations. The chapter also provides recommendations for future researchers to extend the research and wraps up with a concluding note of the entire research work.

5.2 A REVIEW OF THE FINIDINGS

A constructive way to summarize the findings of the study and have an elaborate discussion on the same is by revisiting the research objectives set at the beginning of the research and narrating the results obtained. The study followed the positivist paradigm to investigate current events empirically through practical insights and generalize the research observations. Both deductive and inductive research approach was adopted to validate the existing theory and at the same time discover some new observations regarding people's perceptions. This research investigation is a cross-sectional study that used a survey method to collect responses from Tier I cities of

India and used quantitative approach as the research method to analyze the data to get some numerical observations. The collected data was considered for multivariate data analysis and the analysis was carried out using SPSS and AMOS.

The research work attempted to identify the influential antecedents of behavioral intention of Indian consumers towards usage of UPI. The study adopted UTAUT3 as the theoretical lens and additionally examined the influence of two other variables – trust and word of mouth content. The role of these two variables, along with the variables present in UTAUT3, was examined to verify their influence on behavioral intention. To assess the relationship between the variables, thirteen hypotheses were proposed which were further tested and verified. The model proposed in this study has been critically examined to verify its fitness and understand its predictive power. The results indicated that the proposed model has a good model fit with 63.2% explanatory power. Further, out of thirteen proposed hypotheses, eight were accepted and five of them were rejected. A detailed discussion on those proposed paths representing the association between the variables have been presented in the following sections.

Another essential part to discuss before asserting the conclusion of the research work is getting accustomed to the respondents' demographics. The section below discusses the demographics of the respondents. It also confers the findings based on the research objectives and the association between the latent constructs explored in this study.

5.2.1 The Socio Demographic Profile

The demographic profile of the respondents illustrates that majority of the respondents are 15 to 35 years old. There is a reason behind not having enough respondents from older adults. This is because that generation was not used to UPI usage at that point of time. The gender distribution seems proportionate, with an almost equal number of males and females responding to the survey. All the respondents were well educated and held good academic qualifications. The responses were received from people of various income levels. Salaried respondents had a higher frequency in comparison to that of students and self-employed personnel. The study also possesses respondents who do not have any income yet use UPI. The

percentage of those respondents is 26.5% which constitutes students who use UPI for their daily expenditure and tend to use UPI for almost all other financial transactions. To summarize, the demographic profile of the respondents does not indicate any extremities and seems proportionate enough to generalize the findings.

5.2.2 Drivers of Behavioral Intention

The research work encompasses around identification of the influential drivers of behavioral intention towards UPI usage. A discussion on the findings of the study concerning the association between the independent and dependent variables is noted in the following subsections.

5.2.2.1 Performance expectancy, behavioral intention and actual usage

Performance expectancy, a variable claimed to be the most significant predictor of behavioral intention (Venkatesh et al. 2003) was also found to be a significant driver of behavioral intention in the context of adoption of UPI. The findings revealed that there is a significant positive impact of performance expectancy on intention of Indian consumers to use UPI. Several other studies declared performance expectancy as the strongest antecedent of intention (Dwivedi et al. 2019, Sharma et al. 2020, Venkatesh et al. 2012), yet it emerged as the second most influential factor to impact intention towards UPI adoption. Bhatiasevi (2016), in the context of mobile banking adoption in Thailand reported a positive significant relationship of performance expectancy and behavioral intention. Similar to the findings of aforementioned studies, findings of the present study are in accordance with the findings of various other studies as well (Alalwan et al. 2017, Alalwan et al. 2018, Bhuasiri et al. 2016, Sheel and Nath 2020, Slade et al. 2015, Sultana 2020).

The association between performance expectancy and actual usage is a less explored topic. Though Baabdullah et al. (2019) investigated the direct effect of performance expectancy on actual usage but they did not examine the impact of those two variables in the presence of behavioral intention. Later Patil et al. (2020) explored the relationship between performance expectancy and actual usage and found a significant and strong association between these two variables. The present study

contradicts the findings of Patil et al. (2020) and reports a non significant association between performance expectancy and actual usage of UPI.

5.2.2.2 Effort expectancy and behavioral intention

The present study proposed a hypothesis stating the existence of a significant impact of effort expectancy on behavioral intention. On the ground of the study conducted by Farooq et al. (2017), where a significant impact of effort expectancy on behavioral intention was mentioned in the context of the adoption of lecture capture system, the present study also projected that effort expectancy might impact intention. But a contradictory finding was observed in this context. Effort expectancy demonstrated a non-significant relationship with behavioral intention to adopt UPI. Literature possesses several such articles where authors reported a significant relationship between the two constructs (Alalwan et al. 2018, Bhatiasevi 2016, Sultana 2020). But the findings of this research study are similar to the results reported by Baptista and Oliveira (2015), Bhuasiri et al. (2016) and Sheel and Nath (2020) where a non-significant association between effort expectancy and intention was reported in the context of mobile banking adoption in Africa, acceptance of e-government services in Thailand and blockchain technology adoption in India respectively. Al-Gahtani et al. (2007) also established that effort expectancy did not influence intention to use information technology in Saudi. A possible justification behind this non-significant relationship with regards to UPI usage could be the tech-savvy nature of the respondents. People are technically sound and habituated to technology usage. UPI is user-friendly and designed to facilitate effortless financial transactions. Moreover this could also be the outcome of high level of mobile phone usage, users find using UPI easy and anticipates few problems, and become familiar to it very quickly.

5.2.2.3 Social influence and behavioral intention

People often get influenced by socially important others and hence in most technology adoption studies, social influence and behavioral intention were significantly related. The present study also proposed a hypothesis to verify the association between social influence and behavioral intention. The results of data analysis demonstrated that

social influence has a significant positive relationship with behavioral intention regarding the adoption of UPI. Chhonker et al. (2019) conducted a thematic analysis of scholarly research concerning m-commerce adoption where the author asserted that social influence is a dominant factor influencing behavioral intention. Both Gupta et al. (2019) and Sheel and Nath (2020) reported a positive association of social influence on behavioral intention in terms of adoption of payment banks and blockchain technology respectively by Indian customers. But Alalwan et al. (2018), with regards to internet banking adoption amongst Jordanians, reported that social influence did not influence the intention of Jordanians to adopt internet banking. Similarly, Sultana (2020) also concluded that social influence has no impact on intention of students of the University of Leeds, UK, to use Mobile Cloud Learning (MCL) platform Blackboard. Alkhunaizan and Love (2012) also stated that social influence did not influence intention to use mobile commerce in Saudi Arabia. An interesting observation can be highlighted from all these above-mentioned studies. The studies conducted in India reported a positive influence of social influence on behavioral intention. Contrarily, studies conducted in countries like UK, Jordan and Saudi Arabia reported a non-significant association between social influence and intention. Hence the study concludes that Indians are more concerned about others' perceptions. They get easily influenced by social acquaintances, and it is a matter of concern for them what their friends, family and important social connections feel about them. The present study, conducted in the Indian context, also reported a significant association between the two, validating the justification.

5.2.2.4 Facilitating conditions, behavioral intention and actual usage

Concerning the adoption of UPI, facilitating conditions did not influence behavioral intention, but the association of facilitating conditions with actual usage was found significant. Venkatesh et al. (2003) stated that facilitating condition is a direct determinant of actual usage for adoption of new technology. Even in this context of UPI usage, facilitating condition has a significant impact on actual usage. The reason for this significant association might be because, for using UPI as a payment interface, if users believe that they have sufficient knowledge and necessary resources to use UPI, they will definitely use it. Facilitating conditions ensure users' reliance on

the infrastructure and technical backup of any newly introduced technology. Developers have designed UPI as a technology to be adopted by general users; thus, it is compatible and does not require others to help much. The findings of the study concerning FC and BI are in line with the findings of numerous studies where these two construct did not influence each other (Venkatesh et al. 2012, Gruzd et al. 2012). The findings are consistent with Venkatesh et al. (2003), where it was mentioned that facilitating condition is not likely to impact users' behavioral intention where performance expectancy and effort expectancy prove to be significant predictors of BI. Besides that, the non-significant impact of FC implies that Indian UPI users rely on the infrastructure and consider UPI safe and easy to use. Hence they end up using UPI as reflected by the results of statistical analysis. Both Baptista and Oliveira (2015) and Sultana (2020), with regards to acceptance of mobile banking in Africa and adoption of Mobile Cloud Learning (MCL) platform Blackboard in the UK, respectively, reported a non-significant impact of facilitating conditions on both intention and actual usage. Contrarily Baabdullah et al. (2019), Alawan et al. (2018), Bhatiasevi (2016), Tosuntas et al. (2015), Oliveira et al. (2014) and McKenna et al. (2013) reported a significant relationship between facilitating conditions and actual usage, which is consistent with the results of the present research work.

5.2.2.5 Hedonic motivation and behavioral intention

Venkatesh et al. (2012) highlighted that in non organizational context, hedonic motivation - which is a critical determinant of intention, is an influential driver of intention. But hedonic motivation does not have any significant impact on behavioral intention in the context of UPI adoption. This finding is in line with the results of Oliveira et al. (2016) but contradicts the findings of Farooq et al. (2017), Kaur and Arora (2021) and Macedo (2017). Farooq et al. (2017) found a positive relationship between hedonic motivation and behavioral intention in the usage of the Lecture Capture System (LCS). This is because a user needs to be motivated while studying and this motivation comes when someone uses a new system wholeheartedly with fun and enjoyment. The same notion of hedonic motivation also works in the context of online shopping (To et al. 2007). Kaur and Arora (2021) highlighted a remarkable observation where it was stated that intention to adopt online banking facility is

higher among people who finds it entertaining and enjoyable. Likewise, Macedo (2017) asserted that the intention to use ICT (information and communication technology) by older adults gets influenced by hedonic motivation. But when it comes to financial transactions, playfulness and enjoyment are not factors that create much of an impact. Users instead choose UPI as a payment infrastructure for pragmatic purposes like efficiency, saving time and making some gains from cash-back offers. As financial transactions are a serious point of concern, thus users might not have considered using it as a matter of fun or enjoyment, leading to a non-significant association between hedonic motivation and intention to use UPI.

5.2.2.6 Habit and behavioral intention

Habit is a construct related to stored intention and has a direct connection between stimulus and behavior. The present study proposed a significant relationship between habit and behavioral intention. Statistical analysis of data revealed a positive and significant association between habit and behavioral intention. Similar to Macedo (2017) and Farooq et al. (2017), habit demonstrated a positive relationship with BI concerning UPI usage. Numerous other studies reported habit as a significant predictor of intention (Kolodinsky et al. 2004, Farooq et al. 2017, Macedo 2017, Tam et al. 2020). The data collection of this study was conducted within two to three years since UPI was launched. Indian users who adopted UPI started using it and gradually got habituated to it, moved by its efficiency and time-saving nature. Moreover, once an individual becomes accustomed to performing a task efficiently rendering less effort, that becomes the most preferred means to complete the task subsequently and the person gets habituated to it. The same scenario got replicated in the context of UPI usage and hence habit has been established as a significant driver of behavioral intention.

5.2.2.7 Personal innovativeness and behavioral intention

Personal innovativeness is an enduring trait that almost every individual possesses. This research work proposed a hypothesis stating that personal innovativeness significantly influences the behavioral intention of individuals to adopt UPI. The

results illustrated a significant relationship between personal innovativeness and intention. More innovative the user, more will be the intention to adopt UPI. The findings of this study are consistent with the conclusions made by Jackson et al. (2013), Farooq et al. (2017) and Lara-Rubio et al. (2021). Slade et al. (2015) and Makki et al. (2016) also reported a significant association between personal innovativeness and behavioral intention regarding mobile payment system usage in restaurant industry and remote mobile payment acceptance in the UK respectively. In the context of adoption of mobile shopping applications, Natarajan et al. (2017) also established a positive association between personal innovativeness and behavioral intention. UPI is a newly introduced technology concerning financial transactions. An individual not innovative enough would not take the initiative to adopt or adapt to such changes. As the study reported, a positive and significant connection exists between PI and BI. It can be noted that innovative people adopted UPI first and their innovative nature impacted their intention to adopt UPI.

5.2.2.8 Trust, behavioral intention and actual usage

The new construct added to UTAUT3, i.e., trust, was proposed to have a significant influence on intention to use UPI. Trust demonstrated a significant positive association with behavioral intention concerning UPI usage. It signifies that trust motivates the intention of users to adopt UPI and develops positive insight about UPI. The finding of the research investigation concerning trust is in line with the results of Alalwan et al. (2017) regarding mobile banking in Jordan. Shareef et al. (2018) and Al-Momani et al. (2018) also established that trust significantly influences behavioral intention regarding mobile banking adoption in Bangladesh and IoT (Internet of Things) adoption in Jordan. Trust is a crucial factor in multiple domains, but its importance in finance is noteworthy. Given the security and privacy considerations, consumers resist to share their personal data without trust on the system. Especially when an individual attempts to adopt a newly introduced technology that makes payment quick, easy and hassle–free; but in return requires synchronizing bank account details with the system, trust is the factor that acts as a game changer. A user, who cannot trust UPI and its facilities, will have no intention to adopt UPI. Hence trust is a significant driver of intention. Kar (2020), in the context of usage

satisfaction towards mobile payment, also concluded trust to be an influential factor. Similarly, Sharma and Sharma (2019) emphasized that the intention of Omani residents is highly influenced by trust. The results of the present research investigation highlighted that trust emerged as the strongest predictor of behavioral intention towards usage of UPI. The significant association between trust and behavioral intention concerning UPI usage is also established in a recent work by Saha and Kiran (2022).

Furthermore, the present study also investigated the relationship between trust and actual usage and established that the direct effect of trust and actual usage is non-significant. To explore further the reason behind the non significant association between trust and actual usage, the study investigate the mediating influence of behavioral intention in the relationship between trust and actual usage which has been discussed in section 5.2.3.

5.2.2.9 Word of mouth content and behavioral intention

The concept of word of mouth in marketing is not new and has always been prevalent. Researchers have explored the impact of word of mouth in diverse contexts. Word of mouth has been recognized as a dominant factor affecting a user's behavior (East et al. 2007, Fu et al. 2015) whereas Baber et al. (2016) reported an indirect impact of word of mouth on intention fully mediated by attitude. Studies conveyed that word of mouth is perceived to be more trustworthy by users (Wilson and Sherrell 1993). The level of trustworthiness increases with blood relations or social relations (Gilly et al. 1998, Xia and Bechwati 2008) which implies that users get more confidence to adopt a product or service once recommended by family or friends. To contribute to the existing body of knowledge, the present research work predominantly focuses on a dimension of word of mouth – word of mouth content. The study intends to examine how 'word of mouth content – WOMC' influences behavioral intention to adopt UPI as a payment mechanism. Things that are being spoken about UPI (word of mouth content - WOMC) are believed to control a user's behavior. Word of mouth content is not about recommending whether to use or not to use UPI; it is about the facts being shared about UPI by any random known or unknown person to someone else. The statistical analysis results indicate a significant positive association of word of mouth

content with behavioral intention to adopt UPI, which denotes that it matters to UPI users what is being spoken about UPI usage by recommenders. Additionally, it is implied that people spoke positively about UPI, which influenced others to adopt UPI for making payments.

5.2.2.10 Behavioral intention and actual usage

Behavioral intention is a direct determinant of actual usage (Venkatesh et al. 2012). A user who has the intention to perform a behavior will act towards the behavior. Earlier, several research studies showcased the significant association between behavioral intention and actual usage (Venkatesh et al. 2012, Agudo et al. 2014, Alalwan et al. 2018). The present research study also proposed that Indian users' behavioral intention might significantly influence the actual usage of UPI. But India is a land of diverse cultures and Indians are habituated to payment in cash (Sivathanu 2018). Only a greater extent of positive intention could make Indians actually use UPI for day-to-day expenses. However, the statistical analysis results of the current investigation established a significant positive influence of behavioral intention on actual usage of UPI. It implies that the intention was essentially high, which gradually resulted in an inclination towards actual usage of UPI. Indian UPI users intended to use UPI and became UPI users for financial transactions.

Actual usage, the outcome variable of this research, had two significant antecedents – facilitating conditions and behavioral intention. The statistical analysis results depicted that facilitating conditions emerged as the strongest predictor of actual usage with path value of 0.241 with significance value less than 0.001. Further, behavioral intention, the most frequently used proxy variable for actual usage, appeared to be the second strongest predictor of actual usage with path value of 0.106 having significance value less than 0.05.

5.2.3 The Mediating Role of Behavioral Intention

The present study also explored the mediating role of behavioral intention on the relationship between performance expectancy, trust and actual usage. It was observed that behavioral intention fully mediates the relationship between performance expectancy, trust and actual usage. The findings of the study are consistent with the

opinion made by Jeyaraj (2021) where it was highlighted that behavioral intention fully mediated the effect of other variables on actual usage in various studies. The role of behavioral intention as a mediator between performance expectancy and actual usage is consistent with the findings of Ifedayo et al. (2021).

Concerning the findings of Koloseni and Mandari (2017), where a direct effect of trust on actual usage was reported, the present study contradicts the finding. This research established that the direct effect of trust on actual usage is non-significant because the relationship between trust and actual usage is fully mediated by behavioral intention.

5.3 IMPLICATIONS

The research investigation started with some research objectives based on which some propositions were made about the relationship between certain constructs that were examined and analyzed successfully. Thus it is obligatory to showcase the findings of this research work that might be important to decision makers for formulating policies and researchers and academicians to conduct subsequent research. Both theoretical and managerial implications have been noted below in two different sections.

5.3.1 Theoretical Implications

This research study extensively reviews and evaluates the widely accepted technology acceptance theories and models proposed by researchers. It adopts and examines a model that was not done before in the context of contactless payment using UPI. The research identified the influential drivers of behavioral intention to adopt UPI using UTAUT3 as the theoretical lens. Though UTAUT3 adequately explained behavioral intention, yet a competent enough model to interpret users' intention towards usage of sensitive financial technology like UPI calls for the integration of some context-specific variables in the proposed model to verify the influential antecedents of behavioral intention. The study additionally investigated the impact of two other context-specific variables - trust and word of mouth content on intention to use UPI. The research study successfully contributed to the existing body of literature by

highlighting the importance and significant influence of trust and word of mouth content on the behavioral intention of users to adopt UPI.

Additionally, the outcomes of the current study have intensely contributed to the area of contactless payments, especially payments through UPI enabled applications, by extending the present understanding regarding UPI and providing insights into people's perception of UPI usage.

5.3.2 Managerial Implications

The study addressed the need for policymakers to emphasize on influential drivers of UPI adoption to penetrate the consumer segment that has not adopted UPI yet. Understanding the key constructs is crucial for policymakers to design, refine, and implement contactless payment services that achieve high consumer acceptance, value and high rates of positive recommendations. To expand their reach as the pioneer of a real-time payment infrastructure, policymakers should focus on strategies to encourage Indians to stick to UPI payments rather than moving back to the traditional payment system.

Payment using UPI is trending and is acquiring attention amongst individual users and merchants as an alternative to cash. UPI made payment mechanisms easy, fast and hassle-free. But with technological prowess comes adversities. A key concern to financial settlements is safety and privacy. A user must trust the payment service providers for a reposeful adoption of UPI. Without trust, a user cannot attain a convincing experience. A sense of trust not only influence intention but also endows with a subjective assurance that permits users to acquire a positive knowledge about the ability and goodwill gesture of payment service providers. Managing a technological innovation is not the primary challenge; the major challenge is to convince customers to try the technology. As trust is the most important antecedent of behavioral intention, thus creating a sense of trust amongst individuals must be the central area of concern for NPCI - the organization that launched UPI. Policymakers should attempt to maintain transparency in the system and emphasize trust-enhancing activities. Creating awareness of its safety and security and making payment free from malicious interferences can help to build trust amongst potential and interested consumers. UPI already has a two-factor authentication system to keep it safe. But to

make it more reliable, a feature like reconfirming the recipient's name as the third authentication can help users stop fraudulent transactions initiated by tricksters.

Performance expectancy being the second most influential predictor of intention, policymakers should emphasize offering utilitarian benefits to users so that they do not move back to the traditional payment system. The inceptors can emphasize more on customized performance, enhanced facilities and arranging promotional campaigns to draw attention to the benefits of adopting contactless payments.

The research study examined the impact of word of mouth content on intention to use UPI and established that word of mouth content significantly influences the intention of UPI users. Hence, policymakers should focus on what is being spoken about UPI by recommenders. Policymakers should thoroughly concentrate on eliminating fraud cases to get a positive recommendation from existing users. Enhancing security policies will lead to satisfactory approval from recommenders leading to positive word of mouth content. The study also established that social word of mouth creates more awareness than traditional word of mouth. Thus policymakers can focus more on shout-outs and promotions on digital platforms or online buzz marketing to reach more customers.

A market survey focusing on expectation of users possibly would be a good drive towards an improved performance. The parent organization should contemplate creating awareness drives as social influence makes a massive impact on people too. The more people speak about UPI, the more will be the number of adopters leading to a deeper market penetration. Banking organizations and other major players who have adopted UPI in their payment applications should advertise and use marketing skills to boost people's trust in UPI.

5.4 NOVELTY OF THE STUDY

This research is a pioneer study to investigate antecedents of behavioral intention towards UPI usage empirically. Furthermore, the impact of word of mouth content has not been investigated before in technology adoption literature. Thus a new relationship has been proposed and statistically verified in this study demonstrating its novelty. Though previous literature has examined the influence of trust on intention in

numerous technology adoption studies yet its impact on intention to use UPI has been explored for the first time. The statistical analysis of the data illustrated a significant positive relationship of trust and word of mouth content with intention to adopt UPI as a payment mechanism, successfully adding a new feather to the existing body of knowledge.

5.5 LIMITATIONS AND DIRECTIONS FOR FUTURE RESEARCH

Regardless of the several contributions, the study has some limitations too. It is obvious to expect development and extension to a research investigation and this research work is no exception. Discussion on the limitations of the study might grant avenue for future research. The first limitation of the study is that it is a cross-sectional study and in comparison to that of longitudinal studies, cross-sectional studies have predictive restrictions. Therefore, a prospective examination of the same proposed model can be conducted using panel data where data collection takes place at different intervals of time. The present investigation could not collect data at different intervals of time due to time constraints. Performing a longitudinal study would validate the long-term causal association between constructs.

The study was conducted in India and India is a land of diverse cultures. The findings of the study can be generalized in Indian context but might differ from studies conducted outside India. Hence a comparative study using the same model in the domain of contactless payment would prosper the literature with the effect of cultural difference.

The present study considered investigating the influence of the factors mentioned in UTAUT3 and two more context-specific factors on intention to adopt and use UPI as a payment mechanism. The study can be extended in future by including few more variables like perceived security and perceived risk and examine the impact of those variables on intention to adopt UPI. The same model can also be tested on adoption of upcoming technologies like artificial intelligence and metaverse. An investigation on drivers of crypto currency adoption can also be conducted with the proposed model.

5.6 CONCLUSION

The second-largest mobile market in the world, India, has 616 million subscribers (Gsmaintelligence 2017) and 7.6% of the entire Indian population uses mobile phones for day-to-day transactions (Kats 2018). India, recognized as a cash-based economy, depended on transactions via cash. But a change in this status-quo was observed post demonetization. But research in this domain is still in its infancy and adoption of UPI remains unexplored. In this scenario, studies on mobile phone payment have a huge prospect, and hence the present study explored the significant drivers of UPI adoption. After conducting the research investigation, the study came up with the following conclusions:

- The objective of the study to identify the factors influencing behavioral intention to adopt UPI has been fulfilled successfully and the identified significant drivers of behavioral intention to use UPI as a payment mechanism are performance expectancy, social influence, habit, personal innovativeness, trust and word of mouth content.
- Amongst all the significant drivers of behavioral intention, the strongest predictor of behavioral intention concerning UPI usage is trust at 99% significance level with a path coefficient value of 0.352.
- The significant factors that influence actual usage of UPI are facilitating conditions and behavioral intention where the influence of facilitating conditions on actual usage is stronger than the impact that behavioral intention creates on actual usage.
- The proposed model of the study exhibits good model fit. The total variance explained by the exogenous variables on behavioral intention is 63.2% which implies a strong explanatory power of the model.
- The mediation analysis results revealed that behavioral intention fully mediates the relationship between performance expectancy and trust with actual usage. The statistical analysis demonstrated in table 4.16 reveals that the direct effect between performance expectancy and actual usage, and trust

and actual usage is not significant whereas in both the cases the indirect effect is significant, denoting full mediation.

To summarize, the present study has drawn attention to people's perceptions about UPI and the statistics of their usage patterns. The study extends the understanding of various factors affecting people's intention to adopt UPI, which might help policymakers formulate policies. The findings of the study can be considered as a guideline to decide a suitable marketing strategy to attract more customers towards adoption of UPI. Focusing on strategizing, based on the influential drivers of intention, would enhance the UPI user base and fulfill the dream of the government to turn India into a cashless economy – a smart digitized India in the making.

APPENDIX

QUESTIONNAIRE

Dear Respondent,

I am Poulami Saha, Research Scholar, School Of Humanities, Social Sciences and Management, National Institute of Technology, Karnataka (NITK), Surathkal. I am pursuing my doctoral studies at NITK.

Research is never possible without data which eventually contributes to society. As you are an active member of new age digital India, I request you to kindly fill up the entire form and help me present useful insights to better serve the society. Please let me help you to be a part of the study which is going to change how digital economy works in India and controls user behavior.

As a part of my research, I am surveying to study the factors affecting behavioral intention of users to adopt UPI (Unified Payments Interface) as a payment mechanism. UPI is a smartphone-based money transfer system which can be integrated on any banking app. It is a kind of payment mechanism which permits instant money transfer. Since time is required to complete this task, I thank you in advance for your time and effort and look forward for your valuable insights.

The questionnaire consists of two sections and will approximately take 12 minutes to respond to all the questions. The data will be kept confidential and will be used for academic purpose only. Thanks in advance for your valuable response. Please feel free to contact me at 7760161646 or mail me at poulami.saha0102@gmail.com in case of any doubts regarding the survey or clarifications on the questions asked.

SECTION I

Tick (✓) any one from the options of your choice

- UPI helps me to achieve my tasks in a better way

Strongly Agree ☐ Agree ☐ Neutral ☐ Disagree ☐ Strongly Disagree ☐

- Use of UPI enhances my productivity

Strongly Agree ☐ Agree ☐ Neutral ☐ Disagree ☐ Strongly Disagree ☐

- Use of UPI optimizes my financial operations

Strongly Agree ☐ Agree ☐ Neutral ☐ Disagree ☐ Strongly Disagree ☐

- UPI allows me to make my payments quicker

Strongly Agree ☐ Agree ☐ Neutral ☐ Disagree ☐ Strongly Disagree ☐

- I find UPI easy to use

Strongly Agree ☐ Agree ☐ Neutral ☐ Disagree ☐ Strongly Disagree ☐

- UPI usage do not require much effort

Strongly Agree ☐ Agree ☐ Neutral ☐ Disagree ☐ Strongly Disagree ☐

- It is easy to become skilful at using UPI

Strongly Agree ☐ Agree ☐ Neutral ☐ Disagree ☐ Strongly Disagree ☐

- My friends and family give value to the use of UPI

Strongly Agree ☐ Agree ☐ Neutral ☐ Disagree ☐ Strongly Disagree ☐

- People who influence me regularly use UPI

Strongly Agree ☐ Agree ☐ Neutral ☐ Disagree ☐ Strongly Disagree ☐

- The use of UPI gives me professional status

Strongly Agree ☐ Agree ☐ Neutral ☐ Disagree ☐ Strongly Disagree ☐

- UPI platform technically supports my transactions

Strongly Agree ☐ Agree ☐ Neutral ☐ Disagree ☐ Strongly Disagree ☐

- All the contents of UPI are easy to understand

Strongly Agree ☐ Agree ☐ Neutral ☐ Disagree ☐ Strongly Disagree ☐

- I have the necessary knowledge to use UPI

Strongly Agree ☐ Agree ☐ Neutral ☐ Disagree ☐ Strongly Disagree ☐

- Use of UPI is very interesting for me

Strongly Agree ☐ Agree ☐ Neutral ☐ Disagree ☐ Strongly Disagree ☐

- Use of UPI motivates me to complete payment in a comfortable way

Strongly Agree ☐ Agree ☐ Neutral ☐ Disagree ☐ Strongly Disagree ☐

- Using UPI is enjoyable for making payments

Strongly Agree ☐ Agree ☐ Neutral ☐ Disagree ☐ Strongly Disagree ☐

- It is entertaining to use UPI platform to transfer money

Strongly Agree ☐ Agree ☐ Neutral ☐ Disagree ☐ Strongly Disagree ☐

- I often use UPI featured mobile wallet for payments

Strongly Agree ☐ Agree ☐ Neutral ☐ Disagree ☐ Strongly Disagree ☐

- I am used to make payments through UPI

Strongly Agree ☐ Agree ☐ Neutral ☐ Disagree ☐ Strongly Disagree ☐

- Use of UPI is a habit for me

Strongly Agree ☐ Agree ☐ Neutral ☐ Disagree ☐ Strongly Disagree ☐

- I am addicted to money transfer through UPI

Strongly Agree ☐ Agree ☐ Neutral ☐ Disagree ☐ Strongly Disagree ☐

- I am keen to try new features available in payment systems

Strongly Agree ☐ Agree ☐ Neutral ☐ Disagree ☐ Strongly Disagree ☐

- If I come to know about a new UPI featured payment wallet, I would look for ways to gain experience with it

Strongly Agree ☐ Agree ☐ Neutral ☐ Disagree ☐ Strongly Disagree ☐

- Among my peers, I am usually the first to try out innovations in UPI platform

Strongly Agree ☐ Agree ☐ Neutral ☐ Disagree ☐ Strongly Disagree ☐

- I like to experiment with new UPI featured payment wallets

Strongly Agree ☐ Agree ☐ Neutral ☐ Disagree ☐ Strongly Disagree ☐

- Payment through UPI is secure

Strongly Agree ☐ Agree ☐ Neutral ☐ Disagree ☐ Strongly Disagree ☐

- UPI has been created to help clients

Strongly Agree ☐ Agree ☐ Neutral ☐ Disagree ☐ Strongly Disagree ☐

- Payment through UPI is trustworthy

Strongly Agree ☐ Agree ☐ Neutral ☐ Disagree ☐ Strongly Disagree ☐

- UPI keeps my personal data safe

Strongly Agree ☐ Agree ☐ Neutral ☐ Disagree ☐ Strongly Disagree ☐

- The recommender discussed about the user friendliness of UPI

Strongly Agree ☐ Agree ☐ Neutral ☐ Disagree ☐ Strongly Disagree ☐

- The recommender spoke about the security and ease of transaction using UPI

Strongly Agree ☐ Agree ☐ Neutral ☐ Disagree ☐ Strongly Disagree ☐

- The recommender also discussed about notoriety of payment using UPI

Strongly Agree ☐ Agree ☐ Neutral ☐ Disagree ☐ Strongly Disagree ☐

- I have positive perceptions about payments through UPI

Strongly Agree ☐ Agree ☐ Neutral ☐ Disagree ☐ Strongly Disagree ☐

- I will keep using UPI for payments

Strongly Agree ☐ Agree ☐ Neutral ☐ Disagree ☐ Strongly Disagree ☐

- I will recommend my family and friends to use UPI

Strongly Agree ☐ Agree ☐ Neutral ☐ Disagree ☐ Strongly Disagree ☐

- I will try to use UPI in daily life

Strongly Agree ☐ Agree ☐ Neutral ☐ Disagree ☐ Strongly Disagree ☐

- I have strong intentions to do more UPI based transactions in future

Strongly Agree ☐ Agree ☐ Neutral ☐ Disagree ☐ Strongly Disagree ☐

- I use UPI to transfer and remit money

Strongly Agree ☐ Agree ☐ Neutral ☐ Disagree ☐ Strongly Disagree ☐

- I use UPI to manage my bank accounts

Strongly Agree ☐ Agree ☐ Neutral ☐ Disagree ☐ Strongly Disagree ☐

- I use UPI to perform financial transactions

Strongly Agree ☐ Agree ☐ Neutral ☐ Disagree ☐ Strongly Disagree ☐

- I opt for financial services that especially has UPI enabled payment options

Strongly Agree ☐ Agree ☐ Neutral ☐ Disagree ☐ Strongly Disagree ☐

SECTION II

Tick (✓) any one from the options of your choice

- Age:

15-25 yrs ☐ 26-35 yrs ☐ 36-45 yrs ☐ Above 45 yrs ☐

- Gender:

Male ☐ Female ☐ Others ☐

- Academic qualification:

Higher Secondary ☐ Graduation ☐ Post Graduation ☐ Ph.D. ☐

- Occupation:

Student ☐ Salaried ☐ Self-employed ☐ Not Working ☐

- Annual income:

Nil ☐ Up to 2.5 lakhs ☐ Above 2.5 - 5 lakhs ☐ Above 5 - 10 lakhs ☐

Above 10 lakhs ☐

- Where from did you get to know about UPI?

Face to face conversation with family / friends / colleagues ☐

Via internet/ online reviews / digital media ☐

<u>You can select more than one option for the following questions</u>

- I use UPI for

Paying bills ☐

In-store purchases ☐

Sending or receiving money ☐

Online shopping ☐

Ordering food ☐

Buying groceries ☐

Others ☐

- Which of the following UPI enabled application do you use for payments?

BHIM ☐

GooglePay ☐

Phonepe ☐

Paytm ☐

Amazon Pay ☐

<u>Thank you for your time and valuable response</u>

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List of Publications based on Ph.D. Work

Sl. No.	Title of the paper	Authors	Name of the Journal/ Conference/Symposium, Vol., No., Pages	Month & Year of Publication	Category
1.	An exploration of trust as an antecedent of Unified Payment Interface usage: A SEM – Neural network approach.	Poulami Saha, K.B.Kiran	International Journal of electronic Government Research	April, 2022	1
2.	Assessing the predictors of intention to use Unified Payment Interface: The role of age and gender as moderators.	Poulami Saha, K.B.Kiran	International Journal of Business Innovation and Research	In Press	1
3.	Effect of COVID 19 on adoption of Unified Payment Interface: A study on behavioral intention of baby boomers.	Poulami Saha, K.B.Kiran	Global Conference on Innovations in Management and Business	June, 2022	3
4.	What insisted baby boomers adopt Unified Payment Interface as a payment mechanism? : An exploration of drivers of behavioral intention.	Poulami Saha, K.B.Kiran	Journal of Advances in Management Research	July, 2022	1

*Category 1: Journal paper, full paper reviewed
2: Journal paper, Abstract reviewed
3. Conference/Symposium paper, full paper reviewed
4. Conference/Symposium paper, abstract reviewed
5. Others (including papers in workshops, NITK Research Bulletins, Short notes etc.)
(If the paper has been accepted for publication but yet to be published, the supporting documents must be attached)

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ABOUT

Poulami Saha, with both technical and managerial knowledge, looks forwards to be a competent researcher and contribute more to the existing body of knowledge concerning behavioral research. Being a techie, she possesses interest in technology adoption studies and also aims to make use of her understanding to data-driven research.

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I declare that the above information is true and correct to the best of my knowledge.

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