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Examining The Impact of Mobile Payment Apps on Use Behaviour and Satisfaction Through an Extended UTAUT2 Framework.

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Abstract
The financial landscape and Indian payment industry have been changing rapidly during the last two decades due to the rise of smartphones, technological advancements, rapid adoption of mobile payment applications and supportive government regulations. As mobile phones become more common, people can make payments and manage their finances more easily and flexibly. With the increasing use of mobile internet, mobile payments are becoming a regular part of daily life, making it simpler for people to carry out transactions. This shift is helping more people access financial services and paving the way for new ways to send and receive money in the future. Therefore, this study aims to assess the factors influencing user behaviour and satisfaction with mobile payment apps through an extended Unified Theory of Acceptance and Use of Technology 2 (UTAUT2) framework. After developing a research model, hypotheses were framed, and data were collected from 330 valid respondents in Ahmedabad and Baroda using an online and offline survey. Following the data gathering, confirmatory factor analysis and structural equation modelling were carried out to validate the measurement and structural models. Finally, the study's findings revealed that anticipated performance, effort expectation, habit, price value, hedonic motivation, enabling conditions, system, service and information quality favourably influence the user behaviour of mobile payment users, which in turn strongly impact satisfaction. In addition, the study contributes to the growing body of literature on mobile payment technologies and offers practical implications for service providers, developers and marketers aiming to boost mobile payment adoption and use.

Keywords: Mobile Payment, SEM, UTAUT2, IS Success Model, Use Behaviour, and Satisfaction

1. Introduction to the study

Mobile payment applications are reshaping financial systems worldwide, particularly impacting emerging economies like India. The transition from traditional payment methods—such as cash or credit cards—to digital transactions has been driven by economic changes, technological advancements, and the increasing accessibility of smartphones and the Internet. Integrating mobile services with social media and developing multi-functional technologies have further facilitated the global adoption of mobile payments. (Shin, 2009; Thakur & Srivastava, 2014a). In Asia, mobile payments have rapidly gained traction, offering consumers a quick, efficient, and user-friendly solution for managing transactions.(Goel & Nath, 2020; Liébana-Cabanillas et al., 2020).Despite their widespread use, limited research exists into the specific factors that shape user behaviour and satisfaction, especially in India, a country characterised by diverse demographic, economic, and technological landscapes.

While numerous studies globally have identified key factors influencing mobile payment adoption—such as ease of use, perceived usefulness, and trust—a significant gap exists in understanding the elements that drive sustained usage and long-term satisfaction. Most research focuses on behavioural

intention as a predictor of adoption rather than examining actual usage patterns. Additionally, there has been limited focus on how system-related factors, like information quality, service quality, and system reliability, influence user experiences alongside traditional motivators such as convenience and price. (N. Singh et al., 2020a). This gap is particularly evident in India, where diverse user demographics, digital literacy, and varying price sensitivity play a significant role in shaping user behaviour and the overall success of mobile payment services.

To address these research gaps, the present study looks deeper at the factors contributing to mobile payment usage and satisfaction, particularly in India. The research builds upon established models from the information systems field to evaluate customer behaviour(Oliveira et al., 2016; Thakur & Srivastava, 2014a). The UTAUT2 model, known for its comprehensive approach to understanding the adoption of new technologies, was chosen for this study. It offers valuable insights into how various factors influence the intention to use and actual usage behaviour. Furthermore, the study integrates system-related constructs from Delone and McLean's (2003) Information Systems Success Model to provide a more holistic view of mobile payment adoption. By emphasising actual use behaviour and its impact on user satisfaction, the research shifts the focus from mere adoption intentions to long-term engagement and loyalty.

Over the past few years, mobile payments in India have surged due to various factors. High-speed internet access, affordable mobile data plans, the government's Digital India initiative, and the Unified Payments Interface (UPI) expansion have all played crucial roles in fostering this growth. As mobile payment services gain popularity, providers are under increasing pressure to attract new users and ensure their ongoing engagement and satisfaction. This study aims to close the knowledge gap by identifying the key drivers behind mobile payment usage and satisfaction in India. The insights gathered will be valuable for regulators, practitioners, academics, mobile payment service providers, developers, and policymakers, helping them enhance user experiences and improve the adoption of mobile payments in one of the world's most dynamic digital markets.

The rest of the paper is structured as follows: Section 2 provides a review of the literature and theoretical background. Section 3 outlines the research objectives. Section 4 presents the conceptual model and hypothesis development. Section 5 details the research methodology. Section 6 covers the data analysis. Section 7 presents the findings and discussion. Finally, Sections 8, 9, and 10 address the theoretical and practical implications, limitations, and suggestions for future research.

2. Literature Review and Theoretical Background

2.1 Conceptualising - Mobile Payment

Mobile payment can be described as payment for goods, services, and bills using a mobility device, such as smartphones or PDAs. It uses wireless technologies, such as mobile networks, NFC, Bluetooth, and RFID, to complete transactions. (Kaur et al., 2020; Liébana-Cabanillas et al., 2018; Park et al., 2019; Thakur & Srivastava, 2014a). Many authors also refer to mobile payment as an effective technology that allows users to make payments, check balances, and transfer money conveniently, no matter when or where they are. Similarly, Fatima et al. (2021) define mobile payment as a "transfer of funds against the purchase of goods and services with the help of a mobile device from initiation to completion of payment". In other words, mobile payment systems transform finance by enabling transactions through mobile devices, providing convenience and accessibility. Mobile payment systems rely on key technologies such as near-field communication, quick response codes, mobile wallets, UPI, SMS or USSD technology, etc. Mobile payment systems comprise several critical components (user interface, payment gateway, security features, integration with financial institutions and customer support systems) that collectively ensure functionality and reliability.

Adopting mobile payment brings many benefits for users, such as convenience, speed, financial inclusion, cost efficiency, and enhanced security. However, despite these benefits, mobile payment systems face several challenges from the consumer's perspective, such as security concerns, digital literacy or education, infrastructure gaps, adoption resistance, and regulatory compliance. Therefore, by understanding the technical and functional aspects, benefits, and challenges apart from the latest trends, businesses and policymakers can better use the power of mobile payment systems.

2.2 Literature Review – Mobile Payment

The adoption and usage of mobile payment systems have been extensively researched, employing theoretical frameworks such as Venkatesh et al.'s (2012b) UTAUT2 theory and DeLone and McLean's (2003) Information Systems Success Model (D&M IS). These studies have highlighted various determinants, providing a nuanced understanding of behavioural intentions and user satisfaction in different contexts. In their research**,** Al-Saedi et al. (2020) the UTAUT model was extended by including perceived trust, cost, and self-efficacy to examine mobile payment adoption in Oman. The study found that anticipated performance and the influence of social pressure were the strongest predictors of behavioural intention, while perceived risk had an insignificant negative impact.

Singh (2020) integrated the UTAUT framework with the Expectation Confirmation Model (ECM) to analyse post-adoption behaviour. Satisfaction, trust, performance, and effort expectancy emerged as significant factors influencing continuance intentions. Slade et al. (2015) examined mobile payment adoption in the UK, finding that performance expectancy, innovativeness, and perceived risk were critical determinants, while effort expectancy was less significant. Trust was particularly influential for users with prior mobile payment knowledge.

Alalwan et al. (2017) extended UTAUT2 by incorporating trust to study mobile banking adoption in Jordan. The study's result found that the pleasure from the system use, cost factor, and user's perceived usefulness significantly influence the use behaviour intention emphasising the need for user motivation. Putranta et al. (2020) used UTAUT2 to explore mobile payment adoption in Indonesia, focusing on incentives like cashback. Hedonic motivation and performance expectancy were significant, but price value had no impact.

Nur and Panggabean (2021) investigated Generation Z's mobile payment adoption in Indonesia, identifying trust, social influence, and performance expectancy as key factors. Singh et al. (2020) focused on mobile wallet adoption in India, finding that perceived risk and ease of use significantly influenced satisfaction and recommendation intentions. Bailey et al. (2022) examined mobile payment adoption in Latin America, emphasising bank trust and system confidence as mediators of behavioural intention. In their study, Manrai and Gupta (2020) integrated UTAUT2 with trust and perceived benefits to check mobile payment adoption in India. Facilitating conditions, performance expectancy, and trust were significant determinants.

Ibrahim and Siddiqui (2020) explored retailer adoption of mobile payments in Pakistan using UTAUT and TAM frameworks. Technological and environmental factors were the most influential. Al-Okaily et al. (2023) investigated mobile payment adoption in Jordan, incorporating awareness and privacy concerns into the UTAUT2 framework. Price value and social influence were significant. Baabdullah et al. (2019) combined UTAUT2 and the D&M IS Success Model to study mobile banking in Saudi Arabia. Hedonic motivation, habit, and system quality were critical determinants.

Nandru et al. (2023) undertook one study in India in 2019 during the COVID-19 period. They developed an extended UTAUT2 model by integrating the trust and security constructs. The study's findings revealed that the key factors influencing behavioural intentions and actual usage under the survey were trust, ease of use, and usefulness or anticipated expectations of the users. Patil et al. (2020) extended UTAUT2 with individual characteristics like anxiety and grievance redressal in the Indian context. Performance expectancy and grievance redressal emerged as significant predictors of adoption, emphasising the importance of user support. Akgül (2021) integrated UTAUT2 with innovation diffusion theory to study mobile payment adoption in Turkey. Perceived technology security and innovativeness were the strongest predictors of behavioural intention, offering insights into consumer technology diffusion.

Suo et al. (2022) explored QR-code payment adoption in Southeast Asia, extending UTAUT2 with personal innovativeness. The study's outcome found that the ease of use was non-significant. In contrast, the user's innovativeness and usefulness due to its performance significantly impact the actual use and behavioural intentions. One researcher conducted a comparative study to check mobile payment adoption versus other countries. The study found habit, compatibility, and perceived usefulness as key determinants of adoption (Zhong et al., 2013). They also highlighted the cultural challenges of replicating payment models across countries. Teo et al. (2015) integrated UTAUT2 with perceived financial cost and trust to explore mobile payment adoption in Malaysia. Performance expectancy and trust emerged as critical factors moderated by user experience.

Aligarh et al. (2023) combined UTAUT2 with utilitarian value to study mobile payment adoption in Indonesia during COVID-19. Trust and perceived value emerged as significant factors influencing user behaviour. Musa et al. (2015) focused on mobile payment adoption in Qatar, incorporating perceived information security into the UTAUT framework. Performance expectancy and social influence were the strongest predictors of behavioural intention. Kalinić et al. (2019) examined customer satisfaction in mobile commerce in Europe using UTAUT2. Trust and performance expectancy were the strongest predictors of satisfaction, emphasising their importance in m-commerce services.

Wu and Liu (2023) assessed the robustness of UTAUT2 across cultures in China, the US, and Belgium. They found that individualism moderated the influence of social norms, impacting behavioural intention. Lin et al. (2019) conducted a cross-cultural study on mobile payment usage in Korea and China. Trust and task-technology fit emerged as critical factors influencing satisfaction and usage intentions. Lin et al. (2022) integrated UTAUT2, the Information Systems Success Model, and an initial trust model to study cross-border payment behaviour in Korea. Trust and system quality were critical determinants of sustainable usage intentions.

Khan et al. (2024) examined mobile payment adoption in Pakistan, highlighting trust, personal innovativeness, and grievance redressal as significant factors influencing behavioural intentions. Sobti (2019) extended UTAUT with perceived cost and demonetisation effects to examine mobile payment adoption in India. The result found that behavioural intention and facilitating conditions were significant predictors of actual usage. In Indonesia, Widyanto et al. (2021) incorporated perceived security and trust into UTAUT to study mobile payment adoption. Social influence and trust significantly influenced behavioural intentions, whereas perceived risk had an indirect effect through trust.

2.3 Theoretical Background

The study of the factors influencing technology adoption and utilisation is central to information system research. Various theories have been suggested in the literature to analyse the acceptability and usage of technology. Prominent among these are the Theory of Reasoned Action (TRA), the Theory of Planned Behavior (TPB), and the Technology Acceptance Model (TAM) (Ajzen, 1991b; Davis, 1989; Fishbein & Ajzen, 1975). TRA and TPB further argue that the user's attitude and other external factors result in the behaviour intention and in turn, these intentions will lead to use behaviour. Later, TPB extends the TRA by accounting for behaviours that may not be entirely under voluntary control, introducing the concept of perceived behavioural control. TAM, specifically designed for the information systems field, is an adaptation of TRA, focusing on two critical factors that determine technology usage: Perceived Usefulness (PU) and Perceived Ease of Use (PEOU). These factors influence users' intentions and attitudes, ultimately affecting their technology adoption and use.

The extended version of TAM, known as TAM2, incorporates subjective norms to explain further adoption behaviour (Venkatesh & Davis, 2000). The UTAUT theory (Unified Theory of Acceptance and Use of Technology) combined the constructs from various theories studied in the past (Venkatesh et al., 2003) such as Roger's (1961) IDT, Bandura's (1986) SCT, Taylor and Todd's (1995) C-TAM, Davis et al.'s (1992) MM, Thompson et al.'s (1991) MPCU, Davis's (1989) TAM, Ajzen and Fishbein's (1980) TRA, and Ajzen's (1991a) TPB. This theory introduced four key constructs that determine the adoption of technology and use. The first one is "Performance Expectancy", the second is "Effort Expectancy", the third one is "Facilitating Conditions", and the fourth one is "Social Influence". Additionally, UTAUT identifies moderating variables such as age, gender, and experience, which influence the strength of these relationships.

To address the limitations of UTAUT in the consumer context, Venkatesh et al. (2012a) developed UTAUT2, an extension of the original model. This extended model retained the four core constructs of the original model but introduced three additional constructs: "Hedonic Motivation," "Price Value," and "Habit." The addition of these new factors helped explain technology adoption and use behaviour in consumer settings, such as mobile payments. This extension of UTAUT2 has improved the overall variance in technology use and adoption, providing a more comprehensive understanding of adoption behaviours.(Venkatesh et al., 2016).

Despite UTAUT2's broad applicability in understanding technology adoption, it focuses primarily on behavioural intention and actual usage, without fully addressing the quality dimensions that influence post-adoption experiences. To fill this gap, the study integrates constructs from the DeLone and McLean IS Success Model (Delone & McLean, 1992, 2003), which emphasizes three key quality dimensions namely system quality, information quality, and service quality. These dimensions are crucial for understanding users' ongoing perceptions, satisfaction, and engagement with technology after initial adoption. Hence, the current study has proposed an extended "UTAUT2" model by integrating seven constructs of this model with three constructs of the IS Success Model to check the factors that drive the use behaviour of users towards mobile payment systems. Moreover, this study also incorporated satisfaction as a dependent construct to check the impact of user behaviour on customer satisfaction. By exploring these drivers, the study aims to contribute to a deeper understanding of user behaviour and its impact on customer satisfaction in the rapidly evolving digital payments landscape.

3. Objectives

The main aim of this study is to check the determinants that impact mobile payment users' use behaviour and its impact on satisfaction. Therefore, below are the key objectives for the study

- To develop a theoretical model to understand the factors that influence the usage behaviour of mobile payment users.
- To check the impact of use behaviour on customer satisfaction
- To empirically test and validate the theoretical framework.

4. Conceptual framework and Hypothesis development

Figure 1 shows the proposed conceptual model for this study. It explains the constructs used in the model and their relationships. The model includes ten constructs influencing people's use behaviour. In this study, the independent variables are "performance expectancy," "effort expectancy," "social influence," "facilitating conditions," "hedonic motivation," "habit," "price value," "information quality," "system quality," and "service quality". The dependent variables are "use behaviour" and "satisfaction." This study does not consider the moderating effects of demographic factors such as "age," "gender," and "experience" based on earlier findings. (Martins et al., 2014; Riffai et al., 2012; Venkatesh et al., 2012b). The following sections discuss each construct in the proposed model and outline the hypotheses.

4.1 Performance Expectancy

"Performance Expectancy (PE)" reflects the belief that using a specific system or technology enhances performance or efficiency. (Venkatesh et al., 2012a). It is a key determinant in mobile payment adoption, and several past studies confirmed that PE is one of the significant constructs that influences users' behavioural intention or use behaviour. (Malarvizhi et al., 2022; Riquelme & Rios, 2010; Slade et al., 2015; Tsai, 2021). Thus, based on findings from prior research, the study hypothesises and proposes:

H1. Performance expectancy influences the use behaviour of mobile payment users.

4.2 Effort Expectancy

"Effort expectancy (EE) " refers to the ease and comfort customers experience due to less effort while using a specific system or technology. (Venkatesh et al., 2012a). This motivates them to adopt the technology and influences their usage behaviour. In the context of mobile payments, it relates to how users perceive these systems as simple and user-friendly. Several researchers in the past confirmed EE positively influences use behaviour. (Gupta & Arora, 2019; Koksal, 2016; Mohammadi, 2015). Thus, based on findings from prior research, the study hypothesises and proposes:

H2. Effort expectancy influences the use behaviour of mobile payment users.

4.3 Social Influence

Social Influence (SI) refers to how the opinions of others—like family, friends, coworkers, bosses, and the media—affect decisions to adopt or use any technology or system. In the context of mobile payment, it is users' perception that people in their circle believe that they should use a specific mobile payment option. SI plays a significant role in collectivist societies and has been validated as a critical determinant in mobile payment adoption and use studies in the past. (Dwivedi et al., 2017; Malarvizhi et al., 2022; Yang et al., 2012). Thus, based on findings from prior research, the study hypothesises and proposes:

H3. Social influence influences the use behaviour of mobile payment users.

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4.4 Habit

"Habit (HT)" represents repetitive behaviour shaped by users' prior experiences with technology. It also includes actions people learn from the social influence that led to the habit of using technology over time (Bandyopadhyay & Fraccastoro, 2007). Previous studies have also discovered that habit is the most significant predictor of use behaviour intention among all predictors. (Gupta & Arora, 2019; Limayem et al., 2007; Slade et al., 2015). As a result, understanding the concept of habit is critical to improving technology usage. Thus, based on findings from prior research, the study hypothesises and proposes:

H4. Habit influences the use behaviour of mobile payment users.

4.5 Price Value

"Price Value (PV)" measures the cost-benefit trade-off in technology use. Affordable and cost-effective solutions positively influence use behaviours (Slade et al., 2015). In the mobile payment context, perceived cost is the financial cost, which includes installation cost and the cost of using the application. Consumers will use this technology if they feel that this cost is affordable. (Alalwan et al., 2017; Lee et al., 2012), as validated by several past studies. (Lu & Wung, 2021; Slade et al., 2015; Yang et al., 2012). Thus, based on findings from prior research, the study hypothesises and proposes:

H5. Price value influences the use behaviour of mobile payment users.

4.6 Hedonic Motivation

"Hedonic Motivation (HM)" is the enjoyment or pleasure derived from using technology. In the mobile payment context, when customers feel that using any specific technology brings happiness, joy and fun, this enjoyment and happiness factor will lead them to continue using technology in the future or make them less likely to switch to other options. It significantly impacts mobile payment adoption through engaging features and gamification (Koenig-Lewis et al., 2015). Studies have confirmed this finding many times in the past. (D. J. Kim et al., 2008; Zhang et al., 2012). Thus, based on findings from prior research, the study hypothesises and proposes:

H6. Hedonic motivation influences the use behaviour of mobile payment users.

4.7 Facilitating Conditions

"Facilitating conditions (FC)" denotes the infrastructure and support available for using technology. In other words, these enabling conditions, such as training, assistance, and guidance, help consumers use technology, systems, or services better. (Dwivedi et al., 2017). In the mobile payment system context, FC refers to consumers' beliefs about ease of access to resources and technical support, which helps them use mobile payment systems or platforms effectively. Empirical research from the past confirms and highlights the FC as a key enabler for mobile payment adoption and use behaviour. (P. Patil et al., 2020; Sivathanu, 2019; Tsai, 2021). Thus, based on findings from prior research, the study hypothesises and proposes:

H7. Facilitating conditions influence the behaviour of mobile payment users.

4.8 Information Quality

Information quality (INQ) refers to how relevant, sufficient, accurate, and timely information is from a system or platform. (Delone & McLean, 2003; P. P. Patil et al., 2017). This is one of the system characteristics, and users start and keep using the system when they find the information relevant,

accurate, and up-to-date. In the mobile payment context, accurate and timely information about their account and transactions helps users perform their financial transactions smoothly over the mobile payment platform. Moreover, accurate and actionable information fosters trust, satisfaction and engagement. This is confirmed by previous researchers as well. (Changchit et al., 2017; Slade et al., 2015; Wixom & Todd, 2005). Therefore, this study proposes the following hypothesis:

H8. Information quality influences the behaviour of mobile payment users.

4.9 System Quality

"System Quality (SSQ)" is about how well a system works, focusing on factors like speed, connection quality, reliability, ease of navigation, and visual appeal (Delone & McLean, 2003; Gao et al., 2015). This is being measured by individuals' perceptions. When service providers offer a high-quality system, it becomes easier and encourages people to adopt and keep using it (Zhou, 2011). In mobile payments, system quality means how users perceive the ease of access, response time, integration, and flexibility of the system or platform. Various researchers have confirmed this in past studies. (Franque et al., 2021; Yuan et al., 2020). Thus, the below hypothesis is proposed in this study:

H9. System quality influences the behaviour of mobile payment users.

4.10Service Quality

“Service quality (SRQ)” is how users perceive the overall service quality support they receive from an information system service provider (Delone & McLean, 2003). This service or support aid can be in responsiveness, credibility, simplicity, or technical ability obtained by consumers from service providers of such mobile payment systems or platforms. In the mobile payment context, when users find the service reliable and get support when needed, they feel satisfied and are encouraged to use the service. This is aligned with some studies conducted in the past. (Baabdullah et al., 2019; Lin et al., 2022; Nan et al., 2020). Thus, this study proposes the hypothesis:

H10. Service quality influences the behaviour of mobile payment users.

4.11Use Behaviour and Satisfaction

Any system or technology is measured as successful depending on its usage and how much it is used (Delone & McLean, 2003). Use Behavior (UB) reflects the different ways and frequencies or habits with which users interact with a system (Gupta & Arora, 2019). System use also refers to how target users use an information or mobile payment system for its intended purpose. Satisfaction (SAT) measures the user's overall experience with the technology. Based on their experiences, it reflects how comfortable and valued users feel when using mobile payment services (Nan et al., 2020). This means that people only realise their satisfaction after using the service, which helps measure how service use impacts their satisfaction. Many studies have confirmed this outcome. (Franque et al., 2021; Tam & Oliveira, 2016, 2017)

H11. Use behaviour influences the satisfaction of mobile payment users.

5. Research Methods

5.1 Population and Sample

The study targeted participants who were existing users of mobile payment applications and were at least 18 years old. The research focused on individuals from two cities in Gujarat: Ahmedabad and Baroda. These cities were chosen due to their diverse demographic profiles, high penetration of digital technologies, and active use of mobile payment systems (Financial Express, Times of India). This

population is relevant to the study's objectives, which aim to understand user behaviour and satisfaction in an increasingly digital context.

5.2 Survey Instrument

The primary data for the study was collected with the help of a structured questionnaire with three main sections, i.e., demographic, general, and research questions. The questionnaire for the study consisted of 68 questions and was designed to collect data online and offline. Of these, 12 are about demographics and general information. The demographic questions include five items for details about respondents' gender, age, occupation, and income. The other seven questions focus on transaction value, how often mobile payments are used, the types of usage, and payment methods. All demographic and general questions were on a nominal scale. The remaining 56 questions used a five-point Likert scale that prompted respondents to score their opinion over a range of responses. (Dwivedi et al., 2006). The five-point Likert scale comprises 1 (as "Strongly disagree"), 2 (as "Disagree"), 3 (as "Neither Agree nor Disagree"), 4 (as "Agree"), and 5 (as "Strongly Agree"). These questions were designed to cover all twelve constructs of the theoretical model and help gather the data needed to test proposed hypotheses. Moreover, each construct in the study had 3 to 6 items, making up the 56 questions. Table 5 shows all the scale items along with their attributes.

5.3 Measurement Development

This study is based on developing a theoretical model that includes twelve constructs. The scales for these constructs have been derived from existing literature. Specifically, the scale items for "performance expectancy", "effort expectancy", and "social influence" were sourced from (P. Patil et al., 2020; Venkatesh et al., 2012a, 2003). Additionally, the constructs of habit, price value, hedonic motivation, and enabling conditions were taken from (P. Patil et al., 2020; Sivathanu, 2019; Slade et al., 2015; Venkatesh et al., 2012b). Similarly, the scales for information quality, system quality, and service quality were adapted from (Baabdullah et al., 2019; Zhou, 2011, 2013). Finally, the scale items for use behaviour and satisfaction were adopted from (P. Patil et al., 2020; Venkatesh et al., 2012b) and (Baabdullah et al., 2019; Sharma & Sharma, 2019) respectively.

5.4 Pilot Study and Expert Validation

The study questionnaire was checked using a two-step process. First, the survey instrument was sent to professionals in the BFSI sector (knowing technology and digital payment) and academics for feedback. Second, a pilot study was conducted with 20 respondents offline to check the clarity and ease of understanding of the questions. Based on input from the pilot respondents and industry experts, required changes were made to improve the questionnaire's wording, structure, and sequence.

5.5 Data Collection

This study used a convenient sampling method for data collection, which is effective and affordable due to ease of implementation. (P. Patil et al., 2020; Yao et al., 2015). Data were collected through face-to-face interactions and an online survey in the cities of Ahmedabad and Baroda in Gujarat State between January 1 and February 28, 2023. A total of 400 questionnaires were distributed to respondents, and 350 completed responses were received from consumers. Of these, only 330 samples were usable for further analysis; the remaining forms were rejected due to missing values and inadequate information.

6. Data Analysis

In this study, the first level of analysis focused on demographic data. The theoretical model proposed in the study was then tested using a technique called Structural Equation Modelling (SEM). The SEM was utilised in two phases to validate the present study's framework and assess the research

hypotheses. (Oliveira et al., 2016). During the initial phase, the measurement model was evaluated through confirmatory factor analyses to ensure an appropriate model fit and the validity and reliability of the constructs. The primary research hypotheses were examined using the structural model in the second phase.

6.1 Demographic Analysis

The characteristics of the 330 samples collected in the study are mentioned in Table 1 (n = 330) shows that the samples are diverse and provide meaningful insight. The sample balanced genders, with a slight majority of male respondents. 53% were male (n=175), whereas 47% of respondents (n=155) were female. All the participants were between 18 and 59 years old, except thirty respondents over 59. Age-wise, 32% of respondents were from the 29-38 years age group, followed by 24% of respondents from 18-28 years, 21% of respondents from 39-48 years, 14% of respondents from 49-58 years, and 9% of respondents above 59 years of age. Similarly, most respondents who submitted their responses to the survey were well-educated. By education, 15% and 30% of respondents were PhD holders and postgraduates, respectively, followed by 35% graduates and 20% undergraduates. Occupation-wise, 42% of respondents were working with private companies, 27% of respondents were students, 15% of respondents were from government service, and the rest, 15%, had their businesses. Income-wise, 45% of respondents had a yearly income between 6 lacs and 10 lacs, followed by 31%, 19%, and 5% of respondents having annual incomes less than five lacs, between 11 lacs and 15 lacs, and above 15 lacs, respectively.

6.2 Reliability and Validity Analysis

The reliability of a construct is evaluated through its internal consistency using Cronbach's alpha, with an acceptable cutoff of 0.7 (Hair et al., 2012; Nunnally & Bernstein, 1978). This study's alpha values ranged from 0.82 to 0.87, surpassing the cutoff. Convergent validity indicates that constructs show more significant variation within themselves than with others. (Henseler et al., 2009).This was assessed using composite reliability and average variance extracted (AVE) (Anderson & Gerbing, 1988). According to prior research, acceptable thresholds are composite reliability above 0.7 and AVE above 0.5 (Fornell & Larcker, 1981). As shown in Table 2, both metrics confirmed convergent validity. The discriminant validity of the constructs in this study was checked by comparing the square root of the AVE to correlations between construct pairs, where the former must exceed the latter. (Fornell & Larcker, 1981)The result revealed that validity is established, as found in Table 3. Therefore, the proposed model is reliable and valid for further analysis. Finally, confirmatory factor analysis of all constructs also confirmed that the proposed measurement model satisfies all parameters. ($\chi 2$ / df = 2.10, $p < 0.001$, GFI = 0.905, AGFI = 0.82, CFI = 0.91, NFI = 0.92, and RMSEA = 0.07).

6.3 Structural Model Testing

The structural model was tested in the next stage to verify the theoretical model and its associated hypotheses. Like the measurement model, data analysis demonstrated that the structural model's indices met fit criteria and were observed to be within acceptable levels : ($\chi 2$ / df = 2.15, $p < 0.001$, GFI = 0.91, AGFI = 0.81, CFI = 0.90, NFI = 0.91, and RMSEA = 0.07) (Tabachnick & Fidell, 2007). This means the structural model demonstrates an acceptable fit and supports hypothesis testing *(Please see Figures 3 and 4)*

As illustrated in Figure 2, the study's proposed theoretical model explained 72% variations (R2 value) in actual usage behaviour through R2 value. Similarly, the R2 value of the satisfaction construct demonstrated 68 % variation. This further reinforces the predictive validity of the current study's model.

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6.4 Hypothesis Testing

As shown in Table 4, the study's findings confirm that all eleven hypotheses tested were supported. First, H1, which examined the relationship between performance expectancy and use behaviour, was confirmed, with results indicating that performance expectancy positively predicts use behaviour ($\beta = 0.39$; $p < 0.0001$). Similarly, H2, exploring the impact of effort expectancy on use behaviour, was supported, with findings suggesting that higher effort expectancy positively influences use behaviour ($\beta = 0.29$, $p < 0.001$). The third hypothesis, H3, which tested the effect of social influence on use behaviour, was also supported, showing that social influence significantly impacts use behaviour ($\beta = 0.22$, $p < 0.001$). The relationship between habit and use behaviour, as proposed in H4, was supported as well, with the results indicating that habit has a strong positive influence on use behaviour ($\beta = 0.41$, $p < 0.001$). In H5, the connection between price value and use behaviour was examined, and the hypothesis was supported, showing that price value does indeed influence use behaviour ($\beta = 0.35$, $p < 0.001$). H6, which tested the relationship between hedonic motivation and use behaviour, was also supported, with results suggesting that hedonic motivation positively influences use behaviour ($\beta = 0.31$, $p < 0.001$).

The seventh hypothesis, H7, regarding the influence of facilitating conditions on use behaviour, was confirmed, indicating that facilitating conditions significantly positively affect use behaviour ($\beta = 0.28$, $p < 0.001$). H8, which explored the impact of information quality on use behaviour, was also supported, with the findings revealing a positive influence ($\beta = 0.27$, $p < 0.001$). H9, testing the relationship between system quality and use behaviour, was also confirmed, showing a positive effect ($\beta = 0.24$, $p < 0.001$). Finally, the last two hypotheses, H10 and H11, were supported. H10, which examined the effect of service quality on use behaviour, was confirmed, indicating that service quality positively influences use behaviour ($\beta = 0.26$, $p < 0.001$). H11, which explored the relationship between use behaviour and customer satisfaction, was also supported, with results showing that use behaviour has a strong positive impact on customer satisfaction ($\beta = 0.85$, $p < 0.001$). In conclusion, the study revealed that all the factors, including performance expectancy, effort expectancy, social influence, habit, price value, hedonic motivation, facilitating conditions, information quality, system quality, and service quality, positively influenced use behaviour, while use behaviour, in turn, had a significant impact on customer satisfaction.

7. Discussion

This section compares results with diverse research findings to provide a comprehensive picture of the variables influencing mobile payment users' usage behaviour and its effect on satisfaction. The study validates the extended theoretical model developed by incorporating constructs from the Unified Theory of Acceptance and Use of Technology 2 (UTAUT2) and DeLone & McLean IS Success Model. The model was tested and strongly supported by the data. The result also indicated that all constructs taken together in the model effectively predicted the use behaviour, and use behaviour explained the satisfaction. This was supported by the R2 values of 0.72 and 0.68 of two dependent variables under the study, i.e., use behaviour and satisfaction.

According to the study's findings, all seven hypothesised relationships of UTAUT2 under the proposed model were supported. Given the responses and observations, performance expectancy is one of the factors influencing the use behaviour ($\beta = 0.39$) because customers tend to adopt and use mobile payment applications when they perceive these options or apps will make their tasks more productive, efficient and time-saving. Some previous findings support this result because most customers lack time. (Yan & Yang, 2015). Another construct, effort expectancy ($\beta = 0.29$), impacted the use behaviour in the study's findings. This shows that users find m-payment applications simple

and easy to use compared to other traditional payment methods like cash or credit or debit cards, which take longer and carry the risk of holding it physically. The involvement of user primarily correlates to their perceived ease of usage. This is evident from the findings of some previous studies. (Martins et al., 2014; P. Patil et al., 2020; Zhou et al., 2010). Similarly, the result of the social influence construct is aligned with previous studies, which revealed that social influence (β =0.22) does influence the use behaviour. (G. S. Kim et al., 2008; Zhou et al., 2010). This is primarily because mobile payment is becoming more mainstream. Therefore, peer pressure, family recommendations, and visible trends in society influence the adoption and use of mobile payment.

Habit is another construct influencing use behaviour (β =0.41). This is evident because the current generation uses mobile phones for every possible task and has developed a habit of conducting transactions through mobile payment due to its ease-of-use feature. Previous findings support this result. (Lankton et al., 2010; Yen & Wu, 2016).The following construct influences use behaviour is price value (β =0.35). This highlights that users are more concerned with benefits or promotional offers from the service provider than the cost they incur for using mobile payment (device cost, internet cost, or transaction charges). This finding is aligned with previous studies. (Indrawati & Putri, 2018; Putranta et al., 2020). The result of the following hypothesis, the effect of hedonic motivation on use behaviour, was found to be (β = 0.31) statistically significant as mobile payment users enjoy intrinsic benefits like convenience and novelty. Past studies support this, with mobile technology and innovation adding to the appeal beyond just price-related benefits. (Alalwan et al., 2018; Shaw & Kesharwani, 2019). Similarly, enabling or facilitating situations (β=0.28) influence mobile payment usage, emphasising the importance of infrastructure, resources, customer support, and required skills and knowledge. This finding aligns with previous research. (P. Patil et al., 2020; Sivathanu, 2019).

The study's findings supported three constructs defined in the theoretical model and picked up from the IS Success model. Information quality (β=0.27) was another construct that positively influenced the mobile payment user's use behaviour. This indicates that users feel confident and less uncertain when they get clear, accurate, and understandable information. This may also lead to higher and continual system usage. Other researchers have supported this finding in the past. (Franque et al., 2021; Kendle & Chipangura, 2024; Rosa, 2024). System quality is a second construct (β=0.24) that influences the successful adoption of technology, as this study supports. It indicates that users are more likely to effectively engage with mobile payment applications when they perceive them as highly usable, dependable, adaptable, and available with quick response times. This finding is aligned with some of the previous findings. (Nani & Lina, 2022; Nuhu et al., 2022). Finally, the third construct of the IS Success model, service quality, was also found to influence use behaviour positively. (β=0.26). This revealed that use behaviour heavily depends on the effectiveness of customer support systems, dispute resolution mechanisms and responsiveness provided by the service quality. The finding suggested the need for collaboration between stakeholders (developers, service providers, internet providers, banks, IS departments, etc) to deliver high-quality service to consumers. Other studies support this finding. (Rosa, 2024; Wang et al., 2019)

Finally, as proposed in the theoretical model, a significant relationship was proved between the actual usage of mobile payment users and the level of satisfaction (β=0.85) among customers. Such results indicate that those customers who extensively use mobile banking services will be more likely to be satisfied with the mobile payment application or system. Moreover, findings suggest that consumers from Ahmedabad and Baroda perceive mobile payment as a productive way to make financial transactions that save time, effort, and money and consider such systems as a source of hedonic benefits. This, in turn, explains why using mobile banking contributes to customer satisfaction. The

results concerning customer satisfaction are in line with what has been discussed and proposed by other researchers. (Baabdullah et al., 2019; Delone & McLean, 2003).

8. **Theoretical Implications**

As stated in the past, the primary goal of this study was to theoretically investigate the factors influencing the usage behaviour of existing mobile payment users in two cities of Gujarat. Therefore, this study has extended the UTAUT2 model by integrating system quality-related constructs from the DeLone & McLean IS Success Model, such as information, service, and system quality. Integrating these quality constructs bridges the gap between technology acceptance models and information systems success frameworks, offering a more holistic understanding of mobile payment adoption and providing valuable insights into factors that drive both initial and continued usage of digital payment platforms. This is evident from the result of the study, which reveals that the proposed model has explained 72% and 68% variation in predicting use behaviour and satisfaction amongst mobile payment users.

The second contribution of this study to the information system domain is predicting actual use behaviour using an extended UTAUT2 theoretical foundation instead of behavioural intention. Prior studies have used behaviour intention as a predictor, but none of the studies conducted used behaviour as a dependent variable or outcome in a developing country like India in the mobile payment context. The last and third contribution of the study is incorporating satisfaction as one of the dependent variables to check the post-adoption phase, which has been neglected by most of the UTAUT2 studies in the past. By understanding the impact of use behaviour on satisfaction, the study highlights how user interaction with mobile payment applications will transform into satisfaction, impacting the continued and sustained use of such applications over time.

9. **Managerial Implications**

The findings of this study offer valuable insights for businesses in the mobile payment industry, guiding them on how to improve user adoption and retention. To begin with, consumers are more likely to adopt mobile payment solutions if they perceive clear benefits, such as convenience and speed. As a result, businesses should emphasise these advantages in their marketing efforts to attract new users. Additionally, the study highlights the importance of simplicity in the user experience. Mobile payment platforms must be intuitive and easy to navigate, reducing any complexity that could discourage potential users. (Dwivedi et al., 2019; Upadhyay et al., 2022). Social influence also plays a key role, as the behaviour of those around them often influences people. Marketers should use social networks, influencers, and word-of-mouth strategies to boost credibility and drive adoption. The study further suggests that once mobile payments become a regular habit, consumers are more likely to continue using them. Businesses can encourage this by offering incentives or rewards to make mobile payments a part of daily routines.

Moreover, ensuring that the necessary infrastructure, such as reliable internet connections and compatible devices, is in place is critical for seamless transactions. In addition to functional aspects, businesses should consider adding features that enhance the user experience, such as gamification or rewards, to keep users engaged. The study also points out that offering competitive transaction fees or discounts can attract price-sensitive consumers, making mobile payments more appealing. Investing in high-quality information, timely updates, and a reliable platform is essential to build user trust. Excellent customer support and service are also crucial for retaining users and ensuring a smooth experience. Finally, user satisfaction is directly linked to continued usage. Therefore, businesses should optimise the user experience to ensure high satisfaction, driving long-term loyalty and

sustained engagement with mobile payment platforms. By focusing on these key factors, companies can improve adoption rates, increase user engagement, and build lasting customer relationships.

10. Limitation and Future Scope of Study

Although this study's results provide fresh insight into users' behaviour toward mobile payment usage, several limitations restrict it. First, this study surveyed consumers from Ahmedabad and Baroda in Gujarat State using convenience sampling. Because of these geographical limits, one should be careful when applying the findings to the whole population or other countries and cultures. Future studies should be conducted with a wide array of geographical territories to achieve better generalisation. Second, the study found that most respondents were young people with medium incomes working in private service jobs or engaged in business. Because of this, the results may not apply to other groups such as homemakers, government employees, students, etc. Future studies should target better socio-demographic groups or samples to ensure a representation of all groups. Third, the current study is cross-sectional in nature and captures the response at a particular time. Future studies can be conducted with a longitudinal nature to capture the response of different time periods to capture the changes happening in mobile payment systems through technological developments and altering user needs combined with regulatory and economic variables. Fourth, the study did not consider how demographic factors like age, gender, ethnicity, education level, and experience might influence how users behave. Understanding how these factors affect user behaviour would give us better insights in the future. Fifth, the current study checked the impact on use behaviour through key determinants towards mobile payment applications in general instead of specific service providers' systems. Future studies can be conducted to check the use behaviour of users either by focusing on specific mobile payment platforms or comparison of two or three platforms. Sixth, the number of mobile payment users is increasing in India; the finding of 330 sample size may not represent the behaviour of the entire population. Thus, future studies can be determined with a larger sample size. Lastly, the current study was conducted by integrating constructs from the IS Success model with the UTAUT2 to check its impact on user behaviour. Therefore, future studies can be performed by adding new independent variables (promotion, trust, risk, etc.) or theories from the information systems domain (task technology fit, etc.) to understand its impact on user use behaviour with reference to mobile payment options.

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Figures

Figure 1. The Proposed Research Model

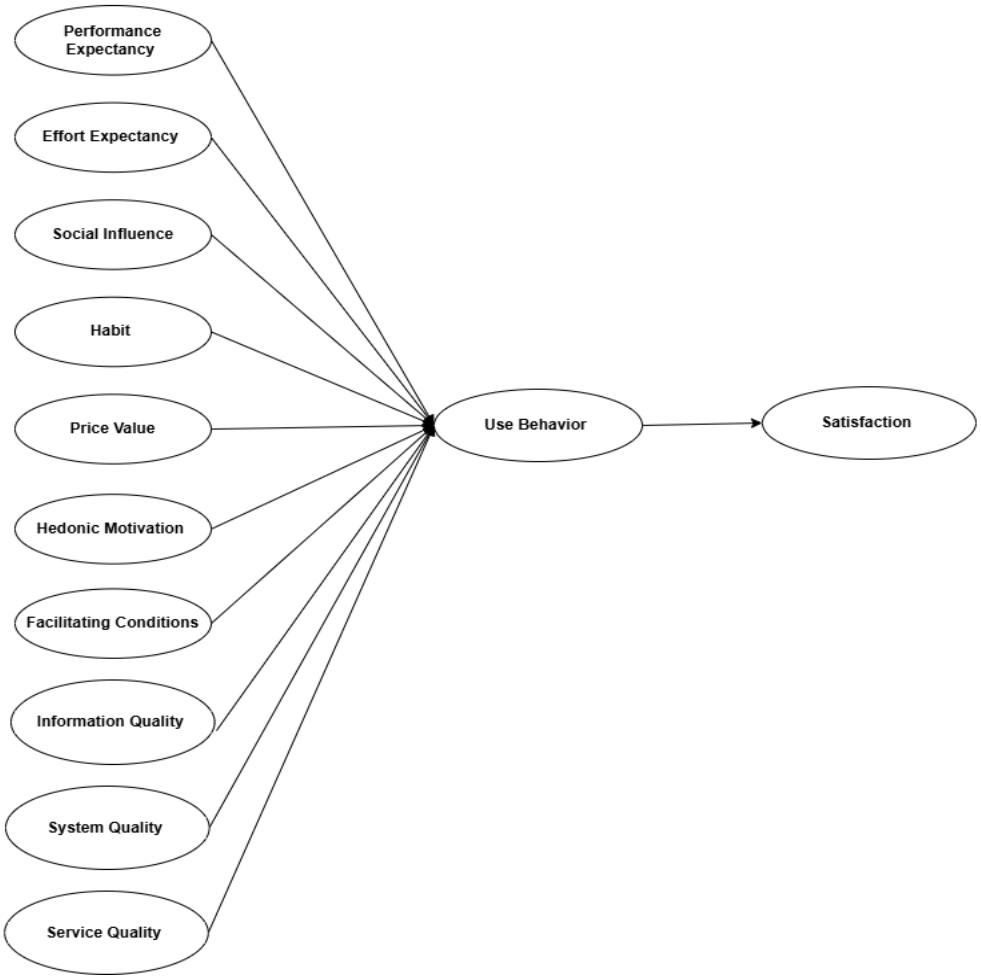

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Figure 2. Structural Model

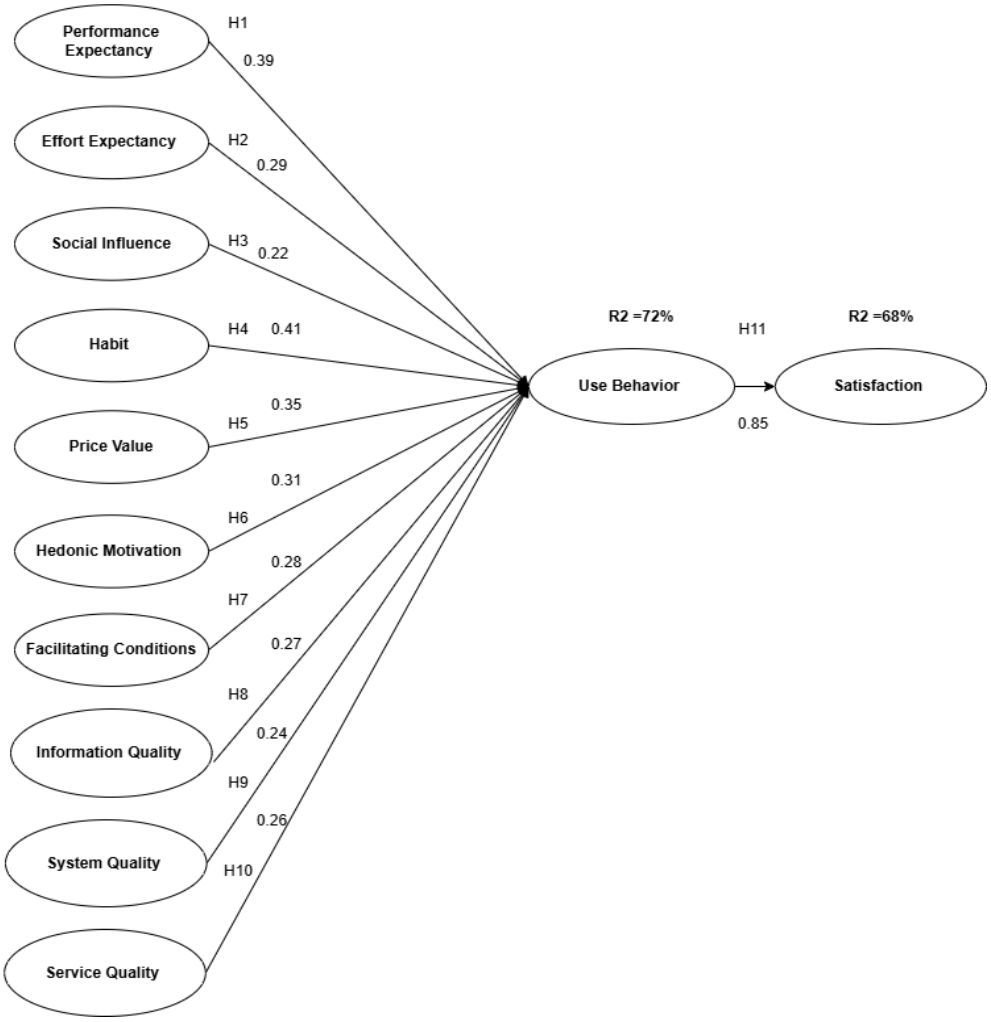

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Figure 3. Measurement Model

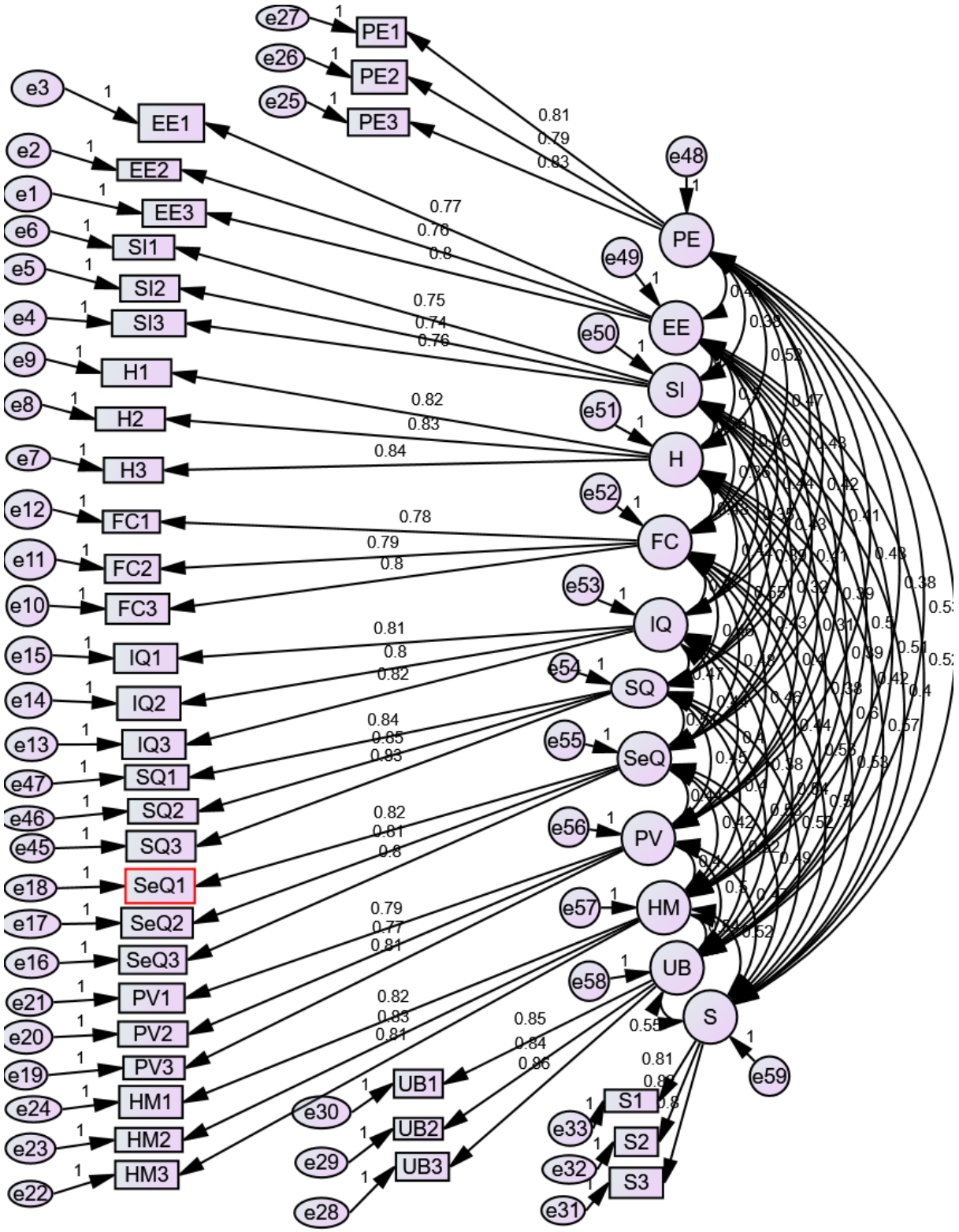

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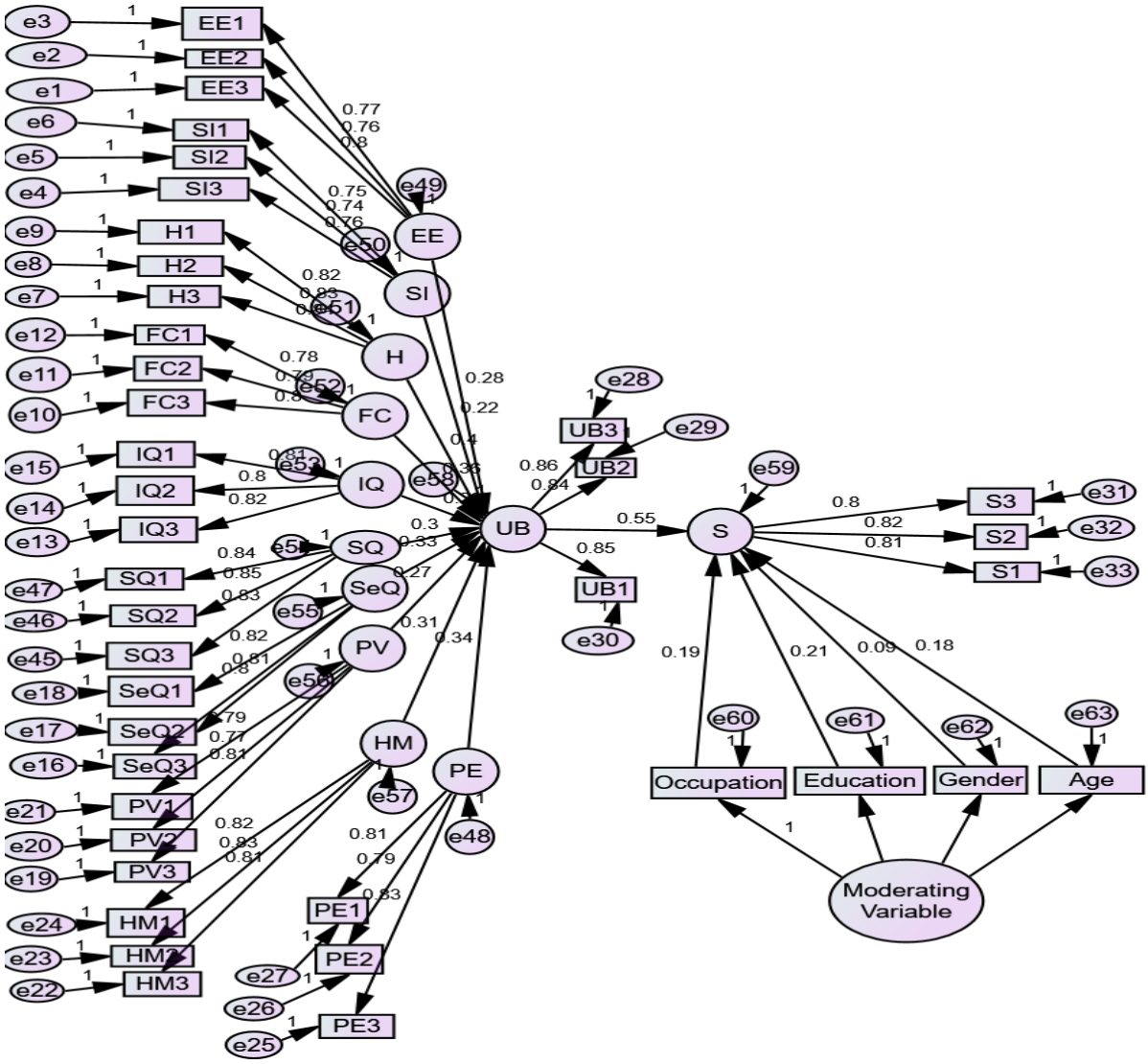
Figure 4. Structural Model



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Tables

Table 1. Demographic Characteristics of Samples

Demographic Variable	Category	Frequency (n)	Percentage (%)
Gender	Male	175	53%
	Female	155	47%
Age	18-28 years	80	24%
	29-38 years	105	32%
	39-48 years	70	21%
	49-58 years	45	14%
	59+ years	30	9%
Education	High School	65	20%
	Graduate	115	35%
	Postgraduate	100	30%
	PhD	50	15%
Occupation	Student	90	27%
	Private Employee	140	42%
	Government Employee	50	15%
	Self-employed/Business	50	15%
Yearly Income	Less than 5 Lacs	102	31%
	6 Lacs to 10 Lacs	148	45%
	11 Lacs to 15 Lacs	63	19%
	More than 15 Lacs	17	5%

Table 2. Reliability and Validity

Construct	Cronbach's Alpha	Composite Reliability (CR)	Average Variance Extracted (AVE)
Performance Expectancy	0.84	0.85	0.65
Effort Expectancy	0.86	0.87	0.68
Social Influence	0.82	0.83	0.62
Habit	0.85	0.86	0.70
Price Value	0.87	0.88	0.69
Facilitating Conditions	0.84	0.85	0.67
Hedonic Motivation	0.88	0.89	0.72
Information Quality	0.89	0.90	0.72
System Quality	0.87	0.88	0.70
Service Quality	0.86	0.87	0.68
Use Behaviour	0.88	0.89	0.73
Satisfaction	0.89	0.90	0.75

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Table 3. Discriminant Validity

Constructs	PE	EE	SI	HT	FC	HM	PV	INQ	SSQ	SRQ	UB	SAT
Performance Expectancy (PE)	**0.76**	0.82	0.63	0.55	0.67	0.59	0.40	0.56	0.66	0.51	0.80	0.46
Effort Expectancy (EE)	0.82	**0.71**	0.79	0.45	0.49	0.54	0.81	0.56	0.61	0.44	0.85	0.57
Social Influence (SI)	0.63	0.79	**0.82**	0.74	0.88	0.81	0.75	0.76	0.41	0.54	0.56	0.87
Habit (H)	0.55	0.45	0.74	**0.80**	0.79	0.58	0.76	0.72	0.45	0.48	0.46	0.56
Facilitating Conditions (FC)	0.67	0.49	0.88	0.79	**0.71**	0.54	0.79	0.84	0.42	0.86	0.51	0.66
Hedonic Motivation (HM)	0.59	0.54	0.81	0.58	0.54	**0.81**	0.48	0.57	0.49	0.48	0.50	0.63
Price Value (PV)	0.40	0.81	0.75	0.76	0.79	0.48	**0.80**	0.60	0.43	0.52	0.47	0.64
Information Quality (INQ)	0.56	0.56	0.76	0.72	0.84	0.57	0.60	**0.82**	0.50	0.53	0.55	0.62
System Quality (SSQ)	0.66	0.61	0.41	0.45	0.42	0.49	0.43	0.50	**0.79**	0.48	0.53	0.61
Service Quality (SRQ)	0.51	0.44	0.54	0.48	0.86	0.48	0.52	0.53	0.48	**0.80**	0.52	0.58
Use Behaviour (UB)	0.80	0.85	0.56	0.46	0.51	0.50	0.47	0.55	0.53	0.52	**0.83**	0.69
Satisfaction (SAT)	0.46	0.57	0.87	0.56	0.66	0.63	0.64	0.62	0.61	0.58	0.69	**0.85**

Note: Factor correlation matrix with √AVE on the diagonal, AVE, average variance extracted; CR; composite reliability

Table 4. Standardised Coefficient, Error, Critical Ratio and p-values.

Hypothesis	Path Co-efficient	St. Estimate (β)	St. Error (S.E.)	Critical Ratio (C.R.)	p-value	Result
H1	PE → UB	0.39	0.08	7.12	< 0.001	Supported
H2	EE → UB	0.29	0.07	5.63	< 0.001	Supported
H3	SI → UB	0.22	0.09	3.98	< 0.001	Supported
H4	HT → UB	0.41	0.09	8.45	< 0.001	Supported
H5	PV → UB	0.35	0.07	6.99	< 0.001	Supported
H6	FC → UB	0.31	0.06	6.21	< 0.001	Supported
H7	HM → UB	0.28	0.09	5.32	< 0.001	Supported
H8	INQ → UB	0.27	0.08	4.85	< 0.001	Supported
H9	SSQ → UB	0.24	0.09	4.52	< 0.001	Supported
H10	SRQ → UB	0.26	0.08	4.74	< 0.001	Supported
H11	UB → SAT	0.85	0.06	12.03	< 0.001	Supported

Standardised Estimate (β) – (a); Standard error (S.E.) – (b); Critical Ratio (C.R.) – (c)