

Analysis of factor Leading to Mobile Commerce Adoption in Semarang City

Analisis Faktor-Faktor yang Menyebabkan Adopsi Mobile Commerce di Kota Semarang

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Abstract

Mobile phones were originally wireless devices for one-on-one voice communication. Mobile commerce has changed the purpose and capabilities of mobile devices. This study aims to examine the factors that enable the adoption of m-commerce in Semarang. The theories used in this research are UTAUT and SERVQUAL as well as the constructs of trust and security. A quantitative approach method based on SEM-PLS was applied. Respondents were drawn from m-commerce users across different platforms in Semarang, Indonesia, through an online questionnaire. The findings of this study found positive and significant evidence of an integrated model with consumers' behavioral intention in utilizing m-commerce. This means that researchers and practitioners can gain a more comprehensive understanding of how consumers respond to m-commerce and what influences their intention to use it. The combination of UTAUT and service quality measured by SERVQUAL can provide valuable insights into optimising consumer experience in m-commerce and increasing the adoption rate of the platform.

Keywords: behavioral intention, consumer, m-commerce, SERVQUAL, UTAUT

Abstrak

Ponsel pada awalnya adalah perangkat nirkabel untuk komunikasi suara satu lawan satu. Perdagangan seluler telah mengubah tujuan dan kemampuan perangkat seluler. Studi ini bertujuan untuk mengkaji faktor-faktor yang memungkinkan adopsi m-commerce di Kabupaten Semarang. Teori digunakan dalam riset ini adalah UTAUT dan SERVQUAL serta konstruk trust dan security. Metode pendekatan kuantitatif berdasarkan SEM-PLS diterapkan. Responden diambil dari pengguna m-commerce di berbagai platform di Kabupaten Semarang, Indonesia, melalui kuesioner online. Temuan studi ini menemukan bukti positif dan signifikan model terintegrasi dengan behavioural intention konsumen dalam memanfaatkan m-commerce. Artinya, peneliti dan praktisi dapat mendapatkan pemahaman yang lebih komprehensif tentang bagaimana konsumen merespon m-commerce dan apa yang memengaruhi niat mereka untuk menggunakannya. Kombinasi Teori UTAUT dan kualitas layanan yang diukur oleh SERVQUAL dapat memberikan wawasan yang berharga dalam mengoptimalkan pengalaman konsumen dalam m-commerce dan meningkatkan tingkat adopsi platform tersebut.

Kata kunci: intensi perilaku, konsumen, m-commerce, SERVQUAL, UTAUT

INTRODUCTION

For nearly 15 years, cell phones were wireless one-on-one voice devices. Mobile gadgets' uses and capabilities have changed substantially. Smartphones are the main means to communicate due to their affordability, flexibility, and accessibility. Thus, mobile devices are growing in popularity and speed (N. Abdallah et al., 2020). Global mobile phone usage is anticipated to rise (Parasuraman et al., 2017). Wireless cellular is the fastest-growing telecoms market due to its massive customer base and attractiveness. Studying how IT affects m-commerce is vital due to its rapid growth. M-commerce is a new type of commerce that employs wireless connectivity on mobile devices. M-commerce uses mobile phones, smartphones, and PDAs for business transactions (Wasiq et al., 2022). E-commerce deployment requires m-commerce's potential and benefits (Almaududi Ausat et al., 2021).

Rapid mobile device development and market penetration have provided new mobile technology opportunities, fueling m-commerce growth. This change is growing (Attar et al., 2022). M-commerce makes worldwide business easier, hence researchers are interested (Ciupac-Ulici et al., 2022). Mobile internet connectivity is now available anywhere. This allows people to buy and sell almost anywhere in the world without visiting stores. Businesses are researching and utilising mobile phone transaction advances. M-commerce is vital to modern business. A business's worldwide market share is one of the most promising due to m-commerce's quick expansion (AlFahl, 2018). In July 2021, 5.3 billion individuals utilised mobile phones, according to Stock Apps. Android will lead at 70.93 percent with 7.33 billion people by 2023. It makes up 67% of the global population, more than most of Earth. This pace exceeds that of tablets and portable PCs, which reached 3.8%, or 310 million units. This highlights m-commerce's worldwide potential and disruptive impact on international business.

E-commerce consumer acceptance has been studied extensively. Due to its dynamic and developing nature, our understanding of m-commerce adoption behaviour is limited (Zhang et al., 2012). The thorough systematic literature study by Ciupac-Ulici et al. (2022) found that industrialised nations have paid attention to m-commerce adoption. However, empirical data on m-commerce adoption in poor nations is few. Mobile commerce in Asia is still developing compared to Western countries (N. Abdallah et al., 2020). Developing nations, including Indonesia, may have unique dynamics and obstacles in adopting mobile commerce technology, thus there is still a significant chance to study m-commerce adoption.

Smartphone use is booming in Indonesia. People can easily buy online with mobile devices. Indonesians purchase online on mobile phones increasingly due to greater internet and network quality. These factors have made Indonesians adopt m-commerce regularly. Consumer behaviour and firm operations must change to compete in a tightening market. This only works in computer-savvy cities. Thus, distribution is uneven. Semarang residents still use traditional consumption practises, limiting technology use. Rural Semarang inhabitants may have problems accessing mobile devices or dependable internet. Some areas lack technological infrastructure, which affects m-commerce (Ben Youssef & Dahmani, 2023). Credit card numbers can be uncomfortable to share online (Trepte & Reinecke, 2011). Cybercrime and data security may concern people. Products and services not available online or locally may limit m-commerce. The study explores elements that may prevent or promote m-commerce in Semarang. This research can help local or national m-commerce enterprises create consumer-friendly mobile apps and marketing strategies. An integrated model might give a theoretical basis for future research.

In recent years, various major theories have been used to understand users' behavioural

intention (BI) to use and adopt specific technologies. Social psychology, innovation diffusion theory, theory of reasoned action (TRA), theory of planned behaviour (TPB), social cognitive theory, technology acceptance model (TAM), UTAUT 2, and SERVQUAL were used in the analysis and findings (Venkatesh et al., 2012). This study will use UTAUT2 factors like Performance Expectancy (PE), Effort Expectancy (EE), Social Influence (SI), Facilitating Conditions (FC), Hedonic Motivation (HM), Perceived Value (PV), Habit (H), and Self-Efficacy. Service Quality (SQ), Service Value (SVQ), Information Quality (IQ), Trust, and Security (TR) will also be considered. To analyse consumers' behavioural intention (BI) to embrace m-commerce services. These two models were integrated because of their strong theoretical foundations, consistent prediction powers, and durability compared to other technological acceptance research models and theories. The Theory of Reasoned Action (TRA), Motivational Model, Theory of Planned Behaviour (TPB), integrated TPB, Technology Acceptance Model (TAM), Model of Personal Computer Use, Diffusion of Innovation Theory, and Social Cognitive Theory were examined to create the Unified Theory of Acceptance and Use of Technology (UTAUT). Researchers have collected empirical evidence to support the UTAUT model in diverse contexts and throughout time (Venkatesh et al., 2012). UTAUT2 and SERVQUAL (SV, SVQ, and IQ) components with Trust and Security (TR) are important for m-commerce acceptance. A complete and dynamic social theoretical model can improve parsimony, explanatory power, and predictive capacity by addressing adoption model limitations.

The variables' correlation will be studied. Performance expectancy (PE) is the extent to which motivated people adopt specific behaviours due to external motivation and the extent to which they expect m-commerce to help them complete business activities efficiently, saving time, money, and effort (Zhou et al., 2010). PE also correlates with subjective usability. M-commerce is familiar to developed nations like China, but most internet users are unfamiliar with it, especially considering mobile app functionalities. For beginners, mobile phone-based buying and selling can be difficult. Small screen sizes can make it hard to filter user needs and track product progress (Kim et al., 2007). Mobile internet use is rising, opening up m-commerce prospects. Critically observe evidentiary inconsistencies. (AlFahl, 2018) underlined performance expectancy (PE) in m-commerce consumer adoption. This encourages numerous activities and transactions. PE may explain m-commerce (Al-somali et al., 2009). PE is essential to mobile commerce adoption, according to most experts. In the banking industries of Taiwan (C. W. Hsu & Yeh, 2018), Malaysia (Hung & Chou, 2014), and China (Sun & Chi, 2017) performance expectancy (PE) positively affects behavioural intention (BI) to use m-commerce services. In the insurance industry, Heinze et al. (2017) found that the lack of performance expectancy (PE) is a major reason customer are hesitant to adopt m-commerce. In developing countries like Oman, PE strongly influences customers' behavioural intention (BI) to embrace or reject m-commerce technologies. A large portion of Oman's consumers prefer traditional transactions. This preference is driven by security and the opportunity to avoid exchanging personal data with other businesses (Bhuiyan & Sharma, 2017). Through user-friendly online services, m-commerce may attract more users despite its early development. Customers are more likely to adopt technology, especially m-commerce, if they think it's easy. According to Tarhini et al. (2019), others' motivation increases the possibility of adopting m-commerce technologies.

Effort expectancy (EE) measures customers' technology usability (Venkatesh et al., 2003). Research shows that consumers are more likely to adopt innovation when mobile commerce services are easy to use. An individual's desire to participate in an activity due to external rewards or incentives. Users may choose e-commerce over m-commerce. Wireless internet allows people to research products and watch movies online. Like perceived usefulness, m-commerce customers

are more willing to adopt EE if they see its benefits. "EE" is key to tech adoption. EE boosts m-commerce adoption (Venkatesh et al., 2003). Most studies suggest that perceived ease of use increases m-commerce adoption, despite certain research anomalies owing to topics like mobile commerce context and sample size. Electronic engineering helps m-commerce overcome interface challenges such small screens and keypads (Madan & Yadav, 2017). The intricate functionalities of mobile applications might impact users with diverse educational backgrounds and levels of internet literacy. Underdeveloped nations with low technical advancement experience this effect most (Chong et al., 2014). Many GCC countries and developing nations are adopting m-commerce. Bill payments and restaurant ordering are easy for these consumers with mobile internet (Sharma, 2015). M-commerce technologies may be less popular if they are hard to use (Tarhini et al., 2019).

In m-commerce, social influence (SI) continues to evolve. Society-related values, innovation, and entrepreneurship are included (Kamarudin, 2016). Customers and society can gain from SI adoption. These can increase income, client loyalty, unemployment, and m-commerce BI (Moorthy et al., 2017). People shape an individual's beliefs, feelings, actions, and viewpoints through social influence. This affects our daily lives (Venkatesh et al., 2012). M-commerce adoption can be affected by social media and friend and family relationships. Many research suggest that social influences (SI) affect mobile commerce uptake. Social influencers (SI) assist clients trust innovation by confirming its legitimacy and relevance (Lu et al., 2005). Instant access and information sharing are possible with m-commerce. This allows buyers to compare costs and share their purchases with friends and family. Yang et al. (2012) found that social impact (SI) encourages mobile payment service use in China. According to Tarhini et al. (2019) Omanese buyers oppose m-commerce due of SI. Commerce if they think friends and family have adopted it (Taylor & Todd, 1995). M-commerce adoption varies by industry: banking, digital imaging, travel, and entertainment. In emerging nations, system integrators could enhance m-commerce acceptance. Word-of-mouth and personal experience guide decision-making in developing nations. When users feel protected and encouraged, social media influencers can encourage m-commerce (Omonedo & Bocij, 2017).

Hedonic motivation (HM) in m-commerce is consumers' desire for pleasure, enjoyment, and fulfilment through mobile internet (Venkatesh et al., 2012). Several m-commerce studies have examined these incentives and how perceived trust and consumer pleasure affect product purchases. Additionally, perceived satisfaction is crucial to electronic commerce system adoption and use. Arnold & Reynolds (2003) identified six aspects of hedonic motivation (HM). The authors list these factors: 1) Social: This involves technology-related socialisation with family and friends. 2) Ideas: The desire to keep up with market technology. 3) Gratification is pleasure or reward. 4) Role: Mobile commerce pleasure. 5) Value includes sales and discount benefits. 6) Adventure: Being in a new and fascinating world. Hedonic motivation (HM) affects consumer motivation and technology use. Creating a pleasant m-commerce experience is linked to innovation satisfaction and frequency of usage. To improve interactions, HM integrates users' technology and emotional experiences. Thus, users are more inclined to accept m-commerce if they are entertained.

According to Venkatesh et al. (2012), habit (H) is an individual's tendency to perform a familiar behaviour automatically. The term "Habit" (H) refers to acquired, purpose-driven activities that trigger automatic behavioural responses owing to environmental cues linked to pleasant consequences. Habit (H) is also linked to automatic behaviour, which develops over time through experience, knowledge, and skills (Venkatesh et al., 2012). After developing a habit (H), people will naturally perform it, but they must be proficient (Venkatesh et al., 2012). In mobile commerce,

consumers' m-commerce activity may improve their behavioural intention. This strengthens the link between m-commerce frequent use and loyalty. A. Abdallah et al. (2017) found that habit (H) improves customers' m-commerce behavioural intention (BI). Even though mobile internet connectivity is available 24/7, people may struggle to switch habits. Mobile commerce becomes easier to understand once people get used to it. Thus, habit positively affects mobile commerce adoption and use.

Price value (PV) is customers' cognitive assessment of an app's perceived benefits and its related financial costs (Venkatesh et al., 2012). Customers' views of trade channel pricing can influence their choice. Mobile commerce users actively search for price information from several sources of the same commodities (Moorthy et al., 2017). They do this to improve their decision-making. Marketing value can be determined by how subjectively people evaluate the cost of a product or service based on its utility and quality. According to Al-somali et al. (2009), most consumers shop online because they can compare prices. E-commerce can be affordable for customers, but (Wei et al., 2009) note that this can sometimes slow m-commerce growth. The question concerns the cost-effectiveness of m-commerce, which users may do using improved technology. Venkatesh et al. (2012) found that pricing value positively affects m-commerce innovation uptake. Thus, PV technology aids mobile commerce adoption.

The concept of facilitating conditions (FC) can be defined as an individual's perception of the extent to which organisational resources and technical infrastructure are available to facilitate the utilisation of a system (Venkatesh et al., 2003). In the realm of mobile commerce (m-commerce), it is imperative to prioritise the provision of suitable resources and technical infrastructure to meet the pressing demands of customers (Bhuian & Sharma, 2017). To function optimally and with high proficiency as a superior service, mobile commerce necessitates that mobile consumers possess access to cutting-edge technology. Hence, the provision of access to the most recent features offered by these technologies is expected to enhance user adoption.

According to R. Wood & Bandura (1989), self-efficacy (SE) as an individual's confidence in their ability to use motivation, cognitive resources, and behaviours to meet situational needs. Performance achievements, vicarious experiences, verbal encouragement, and physiological state shape these beliefs (Bandura, 1977). Mobile commerce users often feel unsure about their abilities. Motivation shortage may explain the occurrence (Hung & Chou, 2014). M-commerce can be uncomfortable for certain consumers, and those who think it's too complicated and can't master it choose to avoid it. However, as shown in Oman (Tarhini et al., 2019), self-efficacy (SE) may not statistically affect customers' m-commerce use. Research in Taiwan, Malaysia, Saudi Arabia, China, and other countries has shown that self-efficacy (SE) influences technology adoption. SE significantly predicts consumers' m-commerce behavioural intention (BI).

Technology adoption and customer behaviour are heavily influenced by trust (TR) (Bhuian & Sharma, 2017). Recent technology adoption research has focused on user trust (Cho et al., 2007). Trust (TR) increases expectations of positive outcomes and confidence in behaviour, reducing social complexity and perceived risk in a transaction. In e-commerce and m-commerce research, trust (TR) refers to consumers' willingness to give personal and financial information on websites in exchange for goods or services and follow policies and procedures (Kaplan & Nieschwietz, 2003). Trust (TR) is a key factor in m-commerce adoption (N. Abdallah et al., 2020). If consumers don't trust an e-commerce/m-commerce site to meet their needs, they won't use it. Before shopping online, consumers must trust the seller. E-commerce and m-commerce are harder to trust than physical businesses since salespeople are not directly involved (Kang & Johnson, 2013). Salespeople are the key source of trust in traditional retail. Salespeople's

expertise, preferences, and similarities with customers establish confidence (Sharif et al., 2014). Help buttons and search features replace salespeople in m-commerce to decrease consumer anxiety. Shopping online without salespeople is less stressful for consumers who can easily use assistance buttons and search features on m-commerce websites.

One very important aspect of m-commerce is the content of the system, website, or mobile app. Content refers to the key information, services, and features provided by the system in a way that is clear to all users (J. Liu et al., 2021). Content and information quality (IQ) have a positive impact on m-commerce adoption. In C. Liu & Forsythe (2011) view, the success of a system is determined by the system's ability to provide clear information, which can attract users from the start because it appears reliable and trustworthy. The same applies to m-commerce adoption, where the system must provide a significant influence in helping consumers make purchasing decisions. Therefore, a good understanding of what meets consumer expectations regarding information quality (IQ) in m-commerce is essential (Tarhini et al., 2019). The information disseminated to consumers encompasses a range of categories, including personal information of users, details about products, information about suppliers, and other relevant data. Despite the abundance of available information accessible to users, the process of perusing numerous products and doing evaluations to arrive at an informed conclusion is frequently arduous and time-intensive.

Related to the statement Vasileiadis (2014), the system implemented in the website and mobile application allows users to purchase products using the mobile internet, facilitating the search for product information more easily and quickly. System quality (SQ) is defined as the extent to which business processes meet the needs and requirements of consumers to increase their satisfaction. In addition, system design quality also affects users' decisions to use m-commerce (Zhou et al., 2010). However, the findings of Tarhini et al. (2019) differ, stating that there is no support for the SQ factor influencing consumer adoption of m-commerce in Oman. In addition, Elliott et al. (2016) identified five key factors in the system, namely product information, entertainment, currency, ease of use, and relative quality, which influence consumers' behavioral intention to use m-commerce. Moreover, the higher the level of SQ, the more users adopt m-commerce.

Service quality (SVQ) refers to the extent to which consumers rate the system as safe, credible, and reliable (Delone & Mclean, 2004). In consumer adoption of m-commerce, there are two very important factors in SVQ, namely personalization (such as special offers and discounts) and the level of interactivity. SVQ also plays a central role in building user trust in the system. Therefore, when users perceive that the system (such as a website or mobile app) provides a high standard of service, they are more likely to be motivated to adopt m-commerce (Bhuian & Sharma, 2017). In addition, in a study by Heinze et al. (2017) on consumer resistance to m-commerce adoption in the insurance industry, it was found that one of the problems was the lack of quality in the services provided.

This study will integrate factors from UTAUT2 and SERVQUAL as well as Trust and Security (TR), to analyze consumers' behavioral intention (BI) in adopting m-commerce services. The following hypotheses are built in this study.

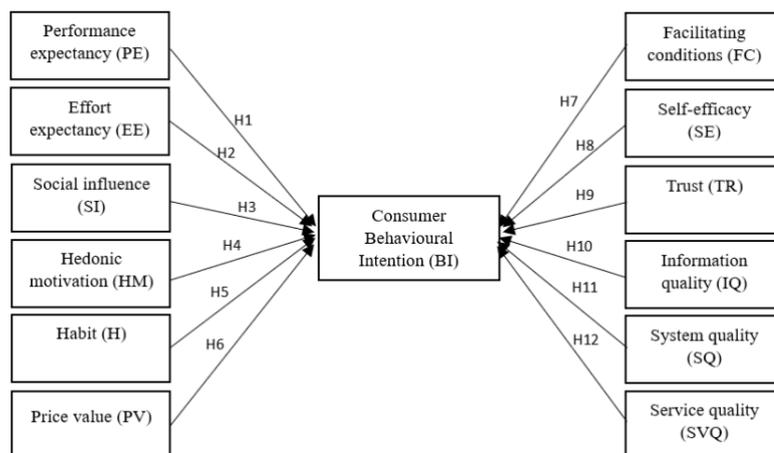


Figure 1. The Proposed Conceptual Model

METHODS

The present study adopts a quantitative approach, wherein data is gathered in numerical and statistical formats to meet the rigorous scientific standards of being concrete, objective, measurable, logical, and employing scientific methodologies (Igwenagu, 2016). In the context of this study, the variables PE, EE, SI, HM, H, PV, FC, SE, TR, IQ, SQ, and SVQ are considered exogenous variables, while BI is considered an endogenous variable. This relates to the reason why this study uses integrated factors as exogenous variables. The UTAUT theory tries to explain the factors that influence the acceptance and use of technology by individuals or users, including beliefs, perceptions, and experiences. The author believes that the combined model of UTAUT and SERVQUAL used in this study can be applied by Semarang consumers to understand and use advanced technologies that make life easier, especially in the context of shopping, as described in the introduction chapter.

Thus, consumers recognise the relevance of technology expertise and e-business adaptability in today's purchase process. Understanding trust beyond UTAUT and SERVQUAL can achieve this. The last page appendix table lists research variables. This study also used purposive sampling using criteria like smartphone or mobile device, internet connectivity, mobile apps, and user accounts. People who utilised m-commerce in the past two years were evaluated. The researcher found that consumers who have used m-commerce for two years have used it for Shopping Apps, Mobile Banking, Digital Payments, Transportation Apps, Ticket and Reservation Apps, Messaging Service Apps, Entertainment Apps, Educational Apps, Healthcare Service Apps, and Food Ordering Apps. Instead, the authors try to show that users' experience and knowledge can improve their thinking as they age. Thus, they should have more flexibility in handling digital business difficulties, particularly mobile commerce devices. The author chose purposive sampling for this investigation. Purposive sampling seeks a sample that meets the researcher's criteria. The author prefers m-commerce users who have been actively using the app for more than two years because m-commerce's position in business has grown in that time.

From May to August 2023, Semarang m-commerce consumers from diverse sectors completed an online Likert scale questionnaire. This poll had 168 respondents, however 11 were eliminated after screening due to eligibility requirements. The researchers selected m-commerce in Semarang because to the concurrent rise in smartphone usage, the presence of reliable internet connectivity, and the widespread acceptance of digital payment systems, all of which have contributed to the growth of mobile commerce in the area. The proliferation of online enterprises,

digital marketing campaigns, and convenient availability of mobile commerce applications are also catalysing transformations in consumer behaviour. These characteristics collectively constitute an environment that fosters the growth of M-commerce in the city, providing favourable conditions for online firms to prosper and effectively meet consumer demands. Therefore, 157 people were sampled as respondents. Table 1 shows survey respondents' demographics. After checking the Google spreadsheet form, the author found that all online questionnaire responders were the study's direct subjects and active m-commerce users. The data and hypotheses in this study were analysed using SEM-PLS statistical methods and SmartPLS software version 3.2.9. SEM-PLS analysis tests outer model relationships for convergent, discriminant, and reliability. R-square, Q-square, and hypothesis testing for the inner model were also assessed.

Table 1. Demographic Respondents (Source: research result)

Demographic		Frequency	Percentage
Duration of Use	1-5 years	145	92,35%
	6-10 years	12	7,65%
	11-15 years	0	0%
	>15 years	0	0%
	Total	157	100%
Gender	Male	98	62%
	Female	59	38%
	Total	157	100%
Respondents Age	15-25 years	102	65%
	26-35 years	30	19%
	36-45 years	14	9%
	>45 years	11	7%
	Total	157	100%
M-commerce Frequently Used	Shopping Apps	28	18%
	Mobile Banking	70	45%
	Digital Payments	8	5%
	Transportation Apps	12	8%
	Ticket and Reservation Apps	8	5%
	Messaging Service Apps	2	1%
	Entertainment Apps	5	3%
	Educational Apps	8	5%
	Healthcare Service Apps	5	3%
	Food Ordering	11	7%
	Total	157	100%

Table 1 illustrates the demographic data of the 157 respondents who participated in the study in Semarang. The results from this table show that the majority of respondents, 145 out of 157, have been using m-commerce for a period between 1 to 5 years, while the remaining 12 respondents have been using m-commerce for more than 5 years. Furthermore, in terms of gender distribution, there are 59 female and 98 male respondents in this sample. This finding indicates that the contribution made by men to the success of this study is quite significant. Furthermore, if we look at the age range of the respondents, we can see that 102 respondents are in the age group between 15 to 25 years old. This group has a very important role in this research as the main contributor. Furthermore, in the context of m-commerce which is most frequently used by users or consumers, it can be seen that mobile banking dominate with 70 respondents.

RESULT AND DISCUSSION

Outer Model

The initial phase in the SEM-PLS analysis involves the examination of the outer model, a pivotal step showcased within this research, where a comprehensive assessment is conducted encompassing the assessment of convergent validity, discriminant validity, and the evaluation of reliability.

Convergent Validity

The fundamental concept underlying the assessment of construct measures (indicators) underscores the importance of establishing a strong correlation. In the context of the convergent testing using SmartPLS 3.2.9, it becomes evident that the reflexive indicators exhibit the expected characteristics. This is substantiated by the fact that the loading factor values for all the requisite construct manifest variables surpass the threshold of 0.70, as stipulated by (Hair et al., 2011). The resulting data presented in Table 2 unequivocally demonstrates that each of the construct indicators exceeds the 0.70 threshold, thereby affirming their validity and unequivocally confirming their adherence to the principles of convergent validity.

Discriminant Validity

The assessment of discriminant validity entails a procedure involving the computation of the square root of the Average Variance Extracted (AVE) and its subsequent comparison with the inter-construct correlations. As per the guidelines established by (Hair et al., 2011), if the squared AVE value exceeds the correlation value between constructs, the criterion for demonstrating discriminant validity is satisfied. The evaluation results, as displayed in Table 3, clearly establish the model's correctness and conformity to the criteria for discriminant validity.

Reliability Test

To assess the reliability of variables with reflective indicators, it is imperative to examine both Cronbach's Alpha and Composite Reliability values. According to the criteria set forth by (Hair et al., 2011), if these values surpass the threshold of 0.70, it signifies that the variables have successfully met the reliability test. The tabulated data presented in Table 2 serves to provide a comprehensive insight into the results of the reliability assessment. Notably, all Cronbach's Alpha and Reliability values documented in the table substantially exceed the 0.70 benchmark, conclusively establishing the reliability of all the research constructs under consideration.

Table 2. Measurement Model Analysis (Source: research result)

Variable	Item	Factor Loading	Cronbach's Alpha	Composite Reliability	AVE
Performance expectancy (X1)	X1.1	0,824	0,894	0,801	0,622
	X1.2	0,733			
	X1.3	0,702			
Effort expectancy (X2)	X2.1	0,799	0,882	0,882	0,653
	X2.2	0,772			
	X2.3	0,711			
Social influence (X3)	X3.1	0,741	0,776	0,771	0,691
	X3.2	0,718			
	X3.3	0,887			
Hedonic motivation (X4)	X4.1	0,890			

	X4.2	0,733	0,793	0,721	0,609
	X4.3	0,739			
Habit (X5)	X5.1	0,853			
	X5.2	0,746	0,721	0,857	0,633
	X5.3	0,766			
Price value (X6)	X6.1	0,738			
	X6.2	0,882	0,844	0,877	0,685
	X6.3	0,822			
Facilitating condition (X7)	X7.1	0,874			
	X7.2	0,741	0,873	0,853	0,675
	X7.3	0,718			
Self-efficacy (X8)	X8.1	0,856			
	X8.2	0,821	0,777	0,770	0,612
	X8.3	0,822			
Trust (X9)	X9.1	0,779	0,732		
	X9.2	0,789		0,721	0,607
	X9.3	0,810			
Information quality (X10)	X10.1	0,890			
	X10.2	0,710	0,802	0,804	0,619
	X10.3	0,718			
System quality (X11)	X11.1	0,852			
	X11.2	0,702	0,833	0,828	0,688
	X11.3	0,788			
Service quality (X12)	X12.1	0,738			
	X12.2	0,885	0,736	0,811	0,664
	X12.3	0,871			
Behavioural intention (Y1)	Y1.1	0,739			
	Y2.2	0,784	0,790	0,864	0,697
	Y3.3	0,832			

Table 3. Discriminant Validity (Source: research result)

Var/Ind	X1	X2	X3	X4	X5	X6	X7	X8	X9	X10	X11	X12	Y1
	0,794	0,742	0,668	0,841	0,704	0,698	0,714	0,707	0,696	0,749	0,604	0,622	0,829
	0,830	0,892	0,645	0,612	0,752	0,693	0,830	0,841	0,844	0,812	0,665	0,654	0,809
	0,808	0,792	0,765	0,781	0,632	0,616	0,888	0,812	0,654	0,801	0,839	0,671	0,742

Inner Model

The subsequent phase in the SEM-PLS analysis process involves the examination of the inner model, which encompasses a multifaceted evaluation that includes the assessment of R-square, Q-square, and the rigorous testing of hypotheses. This holistic approach is meticulously demonstrated within the context of this study, providing a comprehensive understanding of the model's performance and its capacity for hypothesis validation.

R-Square

In assessing the influence of exogenous constructs on endogenous constructs, the metric known as R-square (R²) comes into play. The R-square values, elucidating the extent of explanatory power, are thoughtfully delineated in the tabulated data presented in Table 4 below, whereby, in this specific instance, the R-square attains a value of 0.679. This signifies that constructs such as Performance Expectancy, Effort Expectancy, Social Influence, Hedonic Motivation, Habit, Price Value, Facilitating Condition, Self-Efficacy, Trust, Information Quality, System Quality, and Service Quality collectively account for approximately 67.9 percent of the

variance in Consumer Behavioral Intention toward adopting m-commerce within the context of Semarang. The residual 32.1 percent, not accounted for by these constructs, represents the contribution of unexamined factors external to the scope of this study. Consequently, it is noteworthy that when the R-square value surpasses the threshold of 0.50, as recommended by (Hair et al., 2011), SEM models are considered to exhibit a level of acceptability and moderate-to-strong explanatory power.

Q2 Predictive Relevance

The examination of the structural model's predictive relevance hinges on the determination of the Q2 value, a pivotal metric in this evaluation. According to the criteria elucidated by (Hair et al., 2011), a Q2 value that exceeds the threshold of 0 signifies the model's reliability and effectiveness in predictive capabilities. The mathematical formula employed for calculating Q2 is as follows:

$$Q^2 = 1 - (1 - R1^2)$$

$$Q^2 = 1 - (1 - 0,679)$$

$$Q^2 = 1 - 0,321$$

$$Q^2 = 0,679$$

The computation of the Q2 value, which in this particular analysis stands at 0.679, serves as a critical measure. This Q2 value assumes significance as it allows for an evaluation of the model's efficacy in conjunction with the estimating parameters and their ability to accurately generate the observed values, aligning with the guidelines outlined by (Hair et al., 2011).

Hypothesis Testing

A hypothesis is deemed to exhibit a positive correlation when the path coefficient exceeds the threshold of 0.1 and demonstrates statistical significance, typically indicated by a P-value less than 0.05 or a T-value exceeding 1.96, as stipulated by (Hair et al., 2011). To provide a comprehensive insight into the outcomes of the hypothesis testing, the results are meticulously presented in Table 5 below.

Table 4. R-Square Test (Source: research result)

No	Variable	R-Square
1	Y1	0,679

Table 5. Hypothesis Testing Results (Source: research result)

Hypothesis	Path Coefficient	T-Value	P-Value	Result
X1->Y1	0,248	2,173	0,005	Positive & Significant
X2->Y1	0,529	6,483	0,000	Positive & Significant
X3->Y1	0,128	26,730	0,008	Positive & Significant
X4->Y1	0,640	2,588	0,000	Positive & Significant
X5->Y1	0,176	3,079	0,002	Positive & Significant
X6->Y1	0,163	2,245	0,024	Positive & Significant
X7->Y1	0,437	12,708	0,000	Positive & Significant
X8->Y1	0,565	4,597	0,000	Positive & Significant
X9->Y1	0,425	3,118	0,014	Positive & Significant
X10->Y1	0,559	6,591	0,000	Positive & Significant
X11->Y1	0,225	2,122	0,000	Positive & Significant
X12->Y1	0,297	3,712	0,011	Positive & Significant

As shown in Table 5, performance expectancy (X1) influences behavioural intention (Y1) to use m-commerce in Semarang. A possible explanation for this finding is that m-commerce emphasises easy access to products and services. Mobile devices allow consumers to browse a wide range of items and services online (Ghazali et al., 2018). They no longer need storefronts or computers to shop. Their interest in m-commerce grows because they believe it will make internet shopping easier. In addition to accessibility, consumers value affordability. They expect m-commerce to offer cheaper bargains and discounts not found in stores. This excitement for cheaper rates or unique offers can motivate consumers to use m-commerce platforms. Thus, m-commerce adoption is driven by consumers' positive expectations of its performance and benefits (Mollick et al., 2023). All these elements fuel m-commerce growth and adoption in the ever-changing online buying landscape.

The second hypothesis test in Table 5 shows that effort expectancy (X2) affects behavioural intention (Y1) to adopt m-commerce in Semarang. In m-commerce, effort expectancy refers to how consumers' views of the platform's ease of use affect their attitudes towards it. Many factors determine m-commerce utilisation. Users' perception that m-commerce is simple and easy is important. Consumers will be more likely to use m-commerce if they think it's easy (Dakduk et al., 2020). This means that m-commerce platform simplicity of use while shopping or transactions increases user adoption. Navigation simplicity is also important. Rodríguez-Torrico et al. (2020) found that consumers seek a smooth and easy experience when accessing m-commerce's numerous products and services. Users demand a well-designed, easy-to-use interface that simplifies platform use. If clients perceive m-commerce as easy to use and interactive, they are more likely to use it. Firms and developers must prioritise these traits into the platform's architecture to increase m-commerce adoption. Customers are more likely to use m-commerce if it is simple and straightforward. This factor affects users' m-commerce adoption and expands the mobile internet shopping ecosystem.

The third hypothesis test in Table 5 shows that social impact (X3) can influence Semarang's m-commerce intention (Y1). Consumers often consult others before using m-commerce, or mobile commerce. This is normal because consumers ask friends, relatives, and m-commerce veterans for advice. Success stories or positive recommendations from trusted sources about m-commerce can increase their propensity to explore the platform (Cho et al., 2007). Consumers' impressions of m-commerce's utilisation in their social groupings also matter. If many people in their social circle use m-commerce, customers may feel obliged to join. M-commerce may seem socially acceptable to them. Customer feedback and m-commerce reviews also impact consumer intentions. M-commerce is a good choice based on user ratings and success stories (Dwivedi et al., 2021). Social impact makes consumers think m-commerce is normal and acceptable. This can help them want to utilise the technology because they don't feel alone and have references to make better judgements. Thus, social impact is crucial to understanding m-commerce users' behaviour.

Table 5 shows that Hedonic motivation (X4) affects Behavioural intention (Y1) to adopt m-commerce in Semarang. Hedonic motivation in m-commerce allows for a better shopping experience. When m-commerce can make shopping more exciting, interesting, or entertaining, consumers are more likely to adopt it (Vinerean et al., 2022). Browse products, participate in promotions, and use well-designed apps. As well, hedonic m-commerce provides emotional satisfaction. These platforms can make shoppers happy, satisfied, or excited. Emotional satisfaction may influence their m-commerce usage. Another factor is the enjoyment of browsing

m-commerce products and services. Visually and by preference, consumers can enjoy searching for interesting products and find appealing offers. The intention to use m-commerce may increase. When m-commerce is designed and managed to entertain and satisfy users, they are more likely to adopt and use the platform (Ye, Ping-Hao 2017). Therefore, hedonic motivation affects consumers' m-commerce behaviour.

The fifth hypothesis test in Table 5 shows that Habit (X5) affects m-commerce behavioural intention in Semarang (Y1). M-commerce is popular with consumers for many reasons (Khaskheli et al., 2017). Main reason: M-commerce's convenience. Phone shopping and transactions are convenient for consumers. Because m-commerce is convenient, this practise emerged. Transaction repetition forms habits. After using m-commerce successfully and conveniently, consumers are more likely to use it again (L. Han et al., 2023). Routine conduct creates m-commerce habits. M-commerce is used daily or weekly by some. Due to efficiency, they can order their daily meals or goods through m-commerce apps. This shows that people utilise m-commerce without thinking, creating a virtuous cycle (Setiyani et al., 2023). Their opinion of m-commerce as a convenient and efficient shopping and transaction technique changes. Habit favourably and significantly affects m-commerce customers' behaviour.

The sixth hypothesis test in Table 5 shows that price value (X6) affects Semarang's m-commerce intention (Y1). Financial rewards may be one of the key reasons consumers adopt m-commerce. Consumers are more likely to use this platform if they see financial benefits. These perks may include discounts, special offers, or lower costs than in-store buying. If m-commerce adds pricing value, consumers will use it (Susanto et al., 2023). M-commerce also lets customers compare prices between storefronts and online sellers (Omar et al., 2021). The option to compare costs provides consumers confidence that m-commerce offers the greatest deals. Their good intention to use the platform is affected by this. M-commerce promotions, discounts, and cashback also boost sales. Consumers believe m-commerce saves and benefits them financially (Alaskar & Alsadi, 2023). This affects whether they use the platform again. Thus, financial rewards, price comparison, promotions, cost efficiency, price transparency, convenience of payment, and product or service quality confidence enhance consumers' favourable desire to utilise m-commerce. Price value positively and significantly affects consumers' m-commerce behaviour.

In Semarang, facilitating conditions (X7) affect behavioural intention (Y1) to use m-commerce, according to the seventh hypothesis test in Table 5. It makes sense that technology availability and accessibility drive consumers' m-commerce adoption. Consumers using mobile devices and reliable internet connections are more likely to engage in m-commerce (Puiu et al., 2022). Facilitating conditions is key to m-commerce adoption. The user-friendliness of the app or website also affects m-commerce adoption. Consumers must find their interface easy to use. An intuitive interface, fast navigation, and explicit user help are included. Consumers should have easy access to m-commerce product and service information (Ping-hao & Li-qiong, 2017). They should easily access product details, prices, and customer reviews. Ensuring this information is accessible and organised helps facilitate circumstances. Companies and m-commerce providers can boost consumers' m-commerce adoption by ensuring these criteria are favourable (Zhang et al., 2012). Facilitating settings make m-commerce seem convenient, safe, and efficient, which increases consumers' favourable inclination to utilise it.

Table 5 shows that self-efficacy (X8) affects behavioural intention (Y1) to use m-commerce in Semarang. This discovery is due to Self-efficacy gives consumers confidence that they can handle m-commerce technology. They feel confident exploring m-commerce apps or websites without worry of making mistakes or having problems. High-self-efficacy consumers find m-

commerce easy to use (Thakur, 2018). They are more inclined to examine products and services since they are not frightened by buttons, menus, or alternatives. M.-H. Hsu & Chiu (2004) also define self-efficacy as the belief that consumers can overcome m-commerce challenges. They believe they can overcome technical or transaction issues. Self-efficacy positively and significantly affects consumers' behavioural intention to adopt and actively utilise m-commerce. High technology self-efficacy and the ability to overcome technical or psychological hurdles impact consumers' adoption of m-commerce as a dependable purchasing and transaction alternative.

Table 5 reveals that Semarang m-commerce adoption is affected by Trust (X9). Security is important for consumer trust in m-commerce platforms. M-commerce shoppers need confidence in transaction security, data protection, and payment information misuse. Consumers are more inclined to use m-commerce platforms with strong security (Susanto et al., 2023). Consumer trust in m-commerce requires integrity. (Lee & Jin, 2019) say consumers expect the platform to act responsibly and not lie or manipulate. Platform users want accurate product descriptions and price (Sutrisno, 2023). Trust in the m-commerce platform affects consumers' positive intentions. Consumers expect products and services to satisfy expectations. Respondent and effective client service builds trust. Creating effective consumer-m-commerce platform connections requires trust (Siau & Shen, 2003). Online shopping and transactions will increase if users trust the platform's security, integrity, service quality, and other factors. Thus, m-commerce companies must actively build and maintain consumer trust to grow and adopt their platform.

Information quality (X10) affects Semarang m-commerce behavioural intention (Y1) in Table 5's tenth hypothesis test. M-commerce buyers require good information to evaluate items and services. Consumers want clear, accurate, comprehensive info. Quality information can boost consumer confidence and purchases. Information quality depends on accuracy (Sutrisno et al., 2023). Customers expect accurate pricing and availability. False information can quickly erode consumer trust and m-commerce transactions (Che et al., 2017). Client testimonials impact product and service quality. Positive feedback from previous buyers might build confidence. Comparing easiness affects results. Consumers must quickly evaluate product quality, cost, and reviews to make personalised decisions. Mobile commerce platforms with good comparison capabilities should boost consumer intent (Dachyar & Banjarnahor, 2017). Relevance matters. With proper knowledge, consumers' positive intentions grow. Mobile commerce solutions that learn and suggest client preferences build trust. Information quality depends on readability and clarity. Customers understand simple, structured information (Luzak et al., 2023). This series examines how good information boosts customer confidence and informed purchasing. Customers' confidence in their ability to make informed, tailored decisions boosts m-commerce. Thus, information quality improves m-commerce client behaviour.

Table 5's eleventh hypothesis test shows that system quality (X11) affects Semarang's m-commerce adoption intention (Y1). To explain this result, several points must be made. "Availability and Reliability" is crucial to system quality. Consumers want the m-commerce platform to be always available. A reliable m-commerce platform gives users a sense of ease and encourages them to use it (Ngubelanga & Duffett, 2021). Additionally, "Fast Performance" is vital to system quality. Users dislike long wait times because they want fast website loading and function access. An m-commerce platform's flawless experience and fast response times may boost users' good intentions. In a time of fast social change, user engagement depends on good performance. Data security ranks third in system quality (Subagja et al., 2023). Users of m-commerce platforms must trust that their data is safe. Data encryption on these sites will make users feel safer when transacting. Positive intentions depend on security trust. In essence, system

quality is the technological foundation that must be met for customers to feel comfortable, trustworthy, and optimistic about m-commerce. High system quality improves m-commerce users' experiences, which boosts consumers' trust and incentive to use the platform (Pipitwanichakarn & Wongtada, 2021). Thus, m-commerce enterprises must improve system quality to boost platform growth and adoption.

Table 5's last hypothesis test shows that service quality (X12) affects Semarang's m-commerce adoption intention (Y1). An m-commerce platform that responds swiftly to consumer inquiries, requests, or difficulties gives the appearance that consumers are prioritised. They value every platform engagement and give it enough attention. This helps create consumer trust. Also important to service quality is reliability. Consumers demand guarantees that the m-commerce platform will be available without disruptions or outages (Khan, 2019). So, consumers can plan and rely on the platform for m-commerce, this stability gives them confidence that the service will always be available. Consumers also generate good opinions of m-commerce platforms based on their attractiveness (Jeannot et al., 2022). Consumers form positive opinions of platforms with appealing, professional interfaces and user-friendly designs. Smooth usage and nice aesthetics also improve buyers' intent to return. To drive growth and user adoption of the platform, m-commerce enterprises must focus on enhancing service quality (Zariman et al., 2022). They may establish long-term success in the competitive m-commerce market by delivering excellent customer service.

After considering the justifications provided above, the author attempts to refine the theory chosen as an integrated model for this study. The aforementioned information unequivocally demonstrates that the UTAUT theory is a comprehensive framework that analyses the determinants that impact the adoption and utilisation of technology by individuals. Within the realm of mobile commerce (m-commerce), the Unified Theory of Acceptance and Use of Technology (UTAUT) elucidates that consumers who see m-commerce platforms as effortless and beneficial, and receive social reinforcement such as referrals from friends, are inclined to possess favourable intentions to utilise them. Perceived ease of use, perceived usefulness, and social influence can positively impact consumers' behavioural intention to use m-commerce. When examining the particular situation in Semarang, it is essential to establish a connection between these discoveries and the local infrastructure and the educational attainment within the community. The adoption of m-commerce may be influenced by the availability of technology and the level of digital literacy among the people. Robust infrastructure, encompassing dependable internet connectivity, along with a highly educated community, can significantly enhance the perceived convenience and utility of m-commerce platforms.

Additionally, the SERVQUAL model, which assesses service quality from the consumer's viewpoint, also influences consumers' inclination to utilise m-commerce. Consumers are more inclined to continue using the m-commerce platform when they perceive it to offer high-quality services, such as dependable order processing, prompt responses to customer inquiries, and a strong sense of transaction security. High service quality, as assessed by SERVQUAL, has the potential to enhance consumer confidence and contentment, thereby influencing their inclination to consistently engage in m-commerce. To summarise, the UTAUT and SERVQUAL theories are useful for comprehending the aspects that impact customers' behavioural intention towards m-commerce. However, their efficacy in Semarang may be affected by the local infrastructure and the educational background of the community. Utilising principles derived from these two theories in company strategies can effectively enhance consumer adoption and utilisation of m-commerce, hence promoting business expansion and customer contentment, particularly when

tailored to the distinct attributes and requirements of the Semarang people.

CONCLUSION

Based on the explanation that has been conveyed, it can be concluded that Performance Expectancy, Effort Expectancy, Social Influence, Hedonic Motivation, Habit, Price Value, Facilitating Conditions, Self-Efficacy, Trust, Information Quality, System Quality, and Service Quality have a positive and significant influence on consumer Behavioural Intention to adopt m-commerce in Semarang. By understanding these factors and integrating them into business strategies, m-commerce companies can increase their adoption and business growth in Semarang. In addition, this study has successfully proven that UTAUT and SERVQUAL theories as an integrated model, can explain technology adoption at a strategic and maximum level. As a result, by combining these two frameworks, researchers and practitioners can gain a more comprehensive understanding of how consumers respond to m-commerce and what influences their intention to use it. The integration of UTAUT Theory and the assessment of service quality using SERVQUAL can offer useful insights for enhancing the user experience in m-commerce and augmenting the platform's adoption rate.

The provided explanation indicates that Performance Expectancy, Effort Expectancy, Social Influence, Hedonic Motivation, Habit, Price Value, Facilitating Conditions, Self-Efficacy, Trust, Information Quality, System Quality, and Service Quality all have a positive and significant impact on consumer Behavioural Intention to adopt m-commerce in Semarang. To enhance their acceptance and commercial success in Semarang, m-commerce enterprises can achieve this by comprehending these aspects and incorporating them into their business strategy. For m-commerce organisers, this means that by prioritising the improvement of these elements, they may more efficiently attract and keep users. The favourable impact of these elements on users' Behavioural Intention indicates that embracing m-commerce can result in a more gratifying and streamlined buying experience. The amalgamation of UTAUT Theory and the evaluation of service quality using SERVQUAL not only presents a strong framework for organisations to comprehend and enhance their services but also furnishes users with a dependable and credible platform. Consequently, consumers can experience enhanced system quality, service quality, and overall happiness when participating in m-commerce activities in Semarang. Hence, the amalgamation of these ideas not only aids m-commerce suppliers in augmenting their strategies but also has a good influence on users by establishing a more advantageous and trustworthy atmosphere for their online transactions.

Further study of this study's twelve latent constructs may improve our understanding. Increasing the sample size could help extend the results to a larger population. The possibility to expand this study to various areas offers new perspectives and enhances current scholarship. There are also opportunities to improve research methods, sample size, and fields of investigation. Interviews are used with other data collection methods in one example. Interviews can improve data dependability and credibility, providing better measures for assessing study findings. Thus, studying these twelve latent traits could greatly improve academic knowledge and comprehension in the topic. These actions may improve academic references, allowing future research to explore more complex and varied directions.

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