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Digital payment adoption: the antecedent of habit and behavioral intention

Ali Mohamad Rezza¹, Suci Fika Widyana², Angga Dewi Anggraeni³, Achmad Andriyanto¹

¹ Administrasi Logistik, Universitas Logistik dan Bisnis Internasional, Bandung, Indonesia

² Manajemen Pemasaran, Universitas Logistik dan Bisnis Internasional, Bandung, Indonesia

³ Manajemen Perusahaan, Universitas Logistik dan Bisnis Internasional, Bandung, Indonesia

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ABSTRACT

Despite the advancement in digital payment systems and banking in Indonesia, the adoption of this technology among service users is far from guaranteed. Recent data infers that the usage of digital payment systems and digital banking technology in Indonesia is still developing. A mere 55.80% of users have embraced electronic money for less than a year. This indicates ample room for growth and improvement in the country's digital finance industry. This study aims to explore and understand the factors that predict the adoption and behavioural intention of e-wallets in Indonesia. By utilizing hedonic motivation, habit, self-efficacy, and trust as critical predictors, the research model sheds light on the drivers of customer adoption of e-wallets. Data from a survey of 217 Indonesian customers were analyzed using Structural Equation Modeling (SEM) with Partial Least Square to examine the structural model. The research findings suggest that trust and habit greatly influence the intention to use e-wallets. However, an interesting discovery is that while previous literature indicated that behavioural intention was a key driver of technology usage, habit plays a more crucial role in adopting digital payment technology in this research.



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Corresponding Author:

Ali Mohamad Rezza,
Universitas Logistik dan Bisnis Internasional
Email: ali@ulbi.ac.id

Introduction

The advancement of internet technology has transformed many aspects of human life. With the widespread use of the internet and mobile devices, consumers have changed their habits and preferences regarding sharing their information online, shopping through digital platforms, and embracing new digital services. (Alkhowaiter, 2020; A. Baabdullah, Dwivedi, Williams, & Kumar, 2015; Pappas et al., 2019). The rapid development of technology and the internet has brought about significant changes in human behaviour, particularly in conducting financial transactions. The payment system and digital banking sectors have adapted to these changes and continue to evolve to meet the needs of consumers. The development of payment systems in business transactions has undergone many changes, which previously only used cash; now, they have started using digital payments. Banking transaction activities are now changing from being done conventionally to being online using applications. The shift in payments from cash to non-cash and digital banking is considered more efficient and economical (Tarantang, Awwaliyah, Astuti, & Munawaroh, 2019).

Digital payments are all types of payments using digital instruments (Alkhowaiter, 2020), including mobile payments, mobile (e) wallets, cryptocurrencies, and electronic payments. The utilization of digital payments in Indonesia is on the rise due to several factors. These include the expanding internet access throughout the country, the growth of e-commerce, a growing trust in online transactions, and the impact of the COVID-19 pandemic. According to CNBC Indonesia (2020), there has been a significant surge in digital banking and payment activities during the pandemic. For instance, PT. Bank Rakyat Indonesia's mobile banking transaction service experienced a 100% increase in May 2020 compared to pre-pandemic levels, with an average of 6 million transactions daily. Similarly, OVO, a fintech-based payment company, saw a 267% increase in new users during the pandemic.

There has been an increase in the number of new users of several e-wallet companies in the past year, but when viewed from the perspective of digital payment activities, it can be said that their use is still low. Kumparan (2018) reported a report by Google and Temasek that although digital service adoption in Indonesia reached 46% when viewed from the total transactions, this was still in the low category. It can be said that the adoption rate of digital payment systems and digital banking in Indonesia is still in its early stages; for example, only 55.80% of users have had electronic money for less than a year. Despite extensive research on the determinants of digital payment usage, a significant gap remains in understanding the specific, context-dependent factors influencing continuous intention to use these systems. Existing studies often rely on broad frameworks like Technology Acceptance Model (TAM), Unified Theory of Acceptance and Use of Technology (UTAUT), and Theory of Planned Behavior (TPB), focusing on general determinants such as perceived ease of use and social influence. However, these models frequently overlook emerging factors like trust in technology, perceived security, personalisation, and user experience, particularly in diverse cultural and socio-economic contexts. This gap in the literature underscores the need for a comprehensive model that integrates both traditional and emerging factors to better predict consumer behaviour in digital payments. Further empirical research is required to explore these variables and provide a holistic understanding of what drives ongoing adoption and usage in different market conditions.

Habit

Habit is “the extent to which people tend to perform behaviours automatically because of learning” (Venkatesh, Thong, & Xu, 2012). Habit is recognized as an alternative determinant of technology usage and behavioural intention. Habits can be formed by accumulating knowledge, experience, and skill over time (Venkatesh et al., 2012). Venkatesh et al. (2012) also suggested a relationship between habit, behavioural intention, and actual usage. Accordingly, this study proposes the following hypotheses: 1) H1: Habit will positively influence behavioural intention to adopt digital payment; 2) H2: Habit will positively influence the adoption of digital payment

Hedonic Motivation

Hedonic motivation is the feeling of cheerfulness, joy, and enjoyment stimulated by technology (Venkatesh et al., 2012). In the customer context, it has been broadly understood that intrinsic utilities are significant in shaping consumers' perceptions and intentions to adopt new systems (Davis, Bagozzi, & Warshaw, 1989, 1992). Therefore, the modernness of digital payment technology could attract novelty-seeking and raise intrinsic motivation to the customer. Furthermore, customers who perceive using technology as fun and entertaining are more likely to use and trust such a channel (Alalwan, Dwivedi, Rana, Lal, & Williams, 2015). Therefore, the following hypotheses are: 1) H3: Hedonic motivation will positively influence the intention to adopt digital payment; 2) H4: Hedonic motivation will positively influence trust in using digital payment

Trust

Trust is conceptualized as the willingness of an individual to depend based on beliefs in ability, benevolence, and integrity (Gefen, Karahanna, & Straub, 2003). Trust is widely recognized as an critical determinant of human behavior (Alshibly, 2014; Gefen et al., 2003; Koschate-Fischer & Gärtner, 2015; Morgan & Hunt, 1994). Trust is also an essential determinant of customer intention and technology adoption (A. M. Baabdullah, Alalwan, Rana, Patil, & Dwivedi, 2019). Amid high uncertainty, intangibility, heterogeneity, and vagueness, trust can be a determinant factor that can form customer's intention and adoption of technology. Hence, this study postulates the following hypothesis: H5: Trust will positively influence intention to adopt digital payment

Self-efficacy

Self-efficacy is defined as people's judgments of their capabilities to organize and execute courses of action required to attain designated types of performances (Alalwan et al., 2015). If the customer believes in their ability to apply and use digital payment services, they are likelier to adopt technology (Venkatesh, Morris, Davis, & Davis, 2003). Thus, self-efficacy can likely indirectly contribute to behaviour intention via customer beliefs and perception of the targeted technology (Alkhowaiter, 2020; Compeau & Higgins, 1995). Positive perception and judgment in customers' self-capability to perform digital payment transactions could form trust in digital

payment. Thus, this study proposes the subsequent hypotheses: 1) H6: Self-efficacy will positively influence the intention to adopt digital payment; 2) H7: Self-efficacy will positively influence trust in using digital payment

Behavioural Intention

Behavioural intention is widely known as a key determinant of individual behaviour over the technology acceptance stream (Chang, 2012; Dwivedi, Rana, Jeyaraj, Clement, & Williams, 2019; Tamilmani, Rana, & Dwivedi, 2020). Behavioural intention is the degree to which a person has formulated conscious plans regarding whether to perform a specified future behaviour (Venkatesh et al., 2003). Accordingly, this study develops the following hypothesis: H8: Customer behaviour intention will positively influence the adoption of digital payment

Adoption

Adoption is a customer's decision to fully use and apply technology (Venkatesh et al., 2003). The problem that must be resolved is attracting customers to accept digital payment systems as a complete alternative (Curran & Meuter, 2007). Thus, there is a need to understand and study factors that contribute to customers' intentions and behavior toward such technology. The main objective of this study is to understand the significant factors that influence individuals' intentions and adoption behaviour in using digital payments in Indonesia. There are many benefits for both consumers and business people by using digital payments, so research is needed to examine further the factors that can influence consumer intentions and behaviour towards the technology. The technology adoption model can be used to predict what factors can lead to the formation of consumer adoption behaviour towards digital payments. This knowledge is needed to formulate strategies to help increase the adoption and service quality of digital payment.

Method

This study follows a quantitative approach and uses an explanatory survey as a research strategy. The population of this research are users of digital payments in Indonesia. To achieve a power of 0.95, the minimum sample size required was calculated using GPower 3.1 (Erdfelder, FAul, Buchner, & Lang, 2009), which suggested a sample size of 129. The online data collection was done using online surveys, and the sampling technique used was random sampling. After removing outliers, the total number of respondents in this study was 219, equal to and surpassing the suggested minimum sample size. Most of the sample size comprised women (66.8%) compared to men (42.8%). Most respondents (41.5%) were between 25 and 36 years of age, and the majority of respondents were teachers and lecturers (27.6%) followed by students (26.7%).

Table 1. Sample Demographic Characteristics

Item	Frequency	
	n	%
Age		
13-24	45	20.7
25-36	90	41.5
37-48	63	29.0
49+	19	8.8
Gender		
Male	93	42.8
Female	145	66.8
Job		
Teacher/Lecturer	60	27.6
Student	58	26.7
Entrepreneur	16	7.4
Private Sector Employees	34	15.7
Public Servant	16	7.4
Other	33	15.2

The variables in the research model were measured using 32 items adapted from established scales of several research on technology adoption. Questions in the study were measured using a seven-point Likert scale, ranging from strongly disagree (1) to strongly agree (7).

The Partial Least Square (PLS) path modelling technique (Joseph F. Hair, Hult, Ringle, & Sarstedt, 2017) was used to test the hypotheses, and SmartPLS software version 3.0 was used to process the data (Ringle, Wende, & Becker, 2015).

Table 2. Construct and Items

Construct	Cronbach Alpha	Example Item
Habit (Venkatesh et al., 2012)	0.873	The use of digital payment has become a habit for me
Hedonic Motivation (Venkatesh et al., 2012)	0.826	Using digital payment is enjoyable
Trust (Gefen et al., 2003)	0.921	I feel assured that legal and technological structures adequately protect me from problems on digital payment
Self-efficacy (Compeau & Higgins, 1995)	0.863	I could complete a transaction using digital payment if I had a lot of time to complete the job I started
Behavior intention (Venkatesh et al., 2012)	0.921	I plan to use digital payment in future
Adoption (Curran & Meuter, 2007)	0.873	Paying bills

PLS path models are defined in terms of the inner and outer models. The inner model specifies the relationship between unobserved variables, and the outer model shows the relationship between the latent variable and the observed or manifest variable (Joseph F. Hair et al., 2017). The PLS analysis and reporting follow the systematic procedure for applying PLS-SEM (Joseph F. Hair et al., 2017).

Results and Discussions

Measurement Model

The first step in analyzing the measurement model involves the estimation of reliability, convergent validity, and discriminant validity of constructs, which indicate the strength measures used to test the proposed model (Joe F. Hair, Ringle, & Sarstedt, 2011). The reliability of all constructs was examined using Cronbach's Alpha (CA) and Composite Reliability (CR). As shown in Table 2, the CA and CR values of all measures included in the study are above the cut-off value of 0.70 (J.F Hair, Black, Babin, & Anderson, 2014). This result unequivocally demonstrates a very high level of internal consistency reliability. All construct AVE are > 0.50, and indicator loadings are > 0.70. These indicated that discriminant validity is established. Discriminant validity was examined using Heterotrait-monotrait (HTMT) confidence interval, and the result shows that all values are significantly different from 1 (Henseler, Ringle, & Sarstedt, 2014).

Table 3. Measurement Model Analysis

Variable	Indicator	Loadings (>0,70)	AVE (0,50)	Composite Reliability (0,60 - 0,95)	Cronbach's Alpha (0.60-0.95)	HTMT (Confidence Interval doesn't include 1)
Habit	ha1	0.820	0.724	0.913	0.873	Yes
	ha2	0.860				
	ha3	0.887				
	ha4	0.836				
Hedonic motivation	hedon1	0.922	0.745	0.897	0.826	Yes
	hedon2	0.887				
	hedon3	0.773				
Trust	trust1	0.883	0.723	0.939	0.921	Yes
	trust2	0.918				
	trust3	0.832				
	trust4	0.884				
	trust5	0.675				
Self-efficacy	Selfeffi1	0.885	0.591	0.896	0.863	Yes
	Selfeffi2	0.730				
	Selfeffi3	0.681				
	Selfeffi4	0.755				
	Selfeffi5	0.796				
Behaveintent	Selfeffi6	0.816	0.863	0.950	0.921	Yes
	bint1	0.823				
		0.939				

Variable	Indicator	Loadings (>0,70)	AVE (0,50)	Composite Reliability (0,60 - 0,95)	Cronbach's Alpha (0.60- 0.95)	HTMT (Confidence Interval doesn't include 1)
Adoption	bint2	0.926	0.580	0.896	0.873	Yes
	bint3	0.923				
	adoption1	0.712				
	adoption4	0.718				
	adoption5	0.755				
	adoption6	0.801				
	adoption7	0.682				
	adoption8	0.679				
	adoption9	0.677				

Structural Model and Hypothesis Testing

Standard assessment criteria that should be considered include the coefficients of determinations (R^2), the blindfolding-based cross-validated redundancy measures (Q^2), collinearity examination (VIF), and structural model coefficients (Joseph F. Hair et al., 2017; Shmueli et al., 2019). The first thing that needs analysis is the construct's collinearity. Results show that the VIF value for each construct in the model is below 5 (Joseph F. Hair et al., 2017), indicating no collinearity issue among constructs.

Table 4. Collinearity Statistic (VIF)

VIF	adoption	behaveintent	habit	hedon	selfeffi	trust
adoption						
behaveintent	2.921					
habit	2.921	2.647				
hedon		1.858				1.346
selfeffi		2.117				1.346
trust		2.529				

The second analysis is the coefficient of determination (R^2). The R^2 value represents the amount of variance in the endogenous constructs. The rule of thumb is 0.75, 0.50 and 0.25, described as substantial, moderate and weak, respectively (Joseph F. Hair et al., 2017; Henseler, Ringle, & Sinkovics, 2009). This research indicates that the R^2 values for trust, behavioural intention, and adoption are moderate and acceptable: 0.543, 0.743, and 0.299, respectively. The next analysis is the size and significance of the path coefficients that represent the examined derived hypotheses. Estimated path coefficients close to +1 or -1 indicate strong positive or negative relationships accordingly. Table 4 presents the result, and Fig. 1 displays the complete structure.

Table 5. Result of Structural Model Assessment

Path	Path Coefficients	t value	p-value	Significance (p <0.05)
Behaveintent -> adoption	0.170	2.120	0.000	yes
Habit -> adoption	0.399	3.962	0.000	yes
Habit -> behaveintent	0.504	7.162	0.000	yes
Hedon -> behaveintent	0.036	0.700	0.484	no
Hedon -> trust	0.293	3.796	0.000	yes
Selfeffi -> behaveintent	-0.005	0.076	0.939	no
Selfeffi -> trust	0.544	7.417	0.000	yes
Trust -> behaveintent	0.406	6.710	0.000	yes

Hedonic motivation ($\beta=0.06$, $t=0.07$) and self-efficacy ($\beta=-0.05$, $t=0.076$) were insignificant predictors of behavioural intention; therefore hypotheses H3 and H6 are not confirmed. Only two predictors were significant: habit ($\beta=0.504$, $t=7.162$) and trust ($\beta=0.406$; $t=6.170$), this confirms hypotheses H2 and H5. Hedonic motivation and self-efficacy were significant predictors of trust, confirming hypotheses H4 and H7. The study results indicate that habit and behavioural intention significantly predict the adoption of digital payment ($\beta=0.399$, $t=3.962$, H8 and $\beta=0.170$, $t=2.120$, H1, respectively).

Q^2 value larger than zero indicates the predictive relevance of the endogenous construct. This standard procedure investigates whether the model can predict the reflective indicators (Joseph F. Hair

et al., 2017; Shmueli et al., 2019). The Stone-Geisser's Q2 examines the models' out-of-sample predictive power.

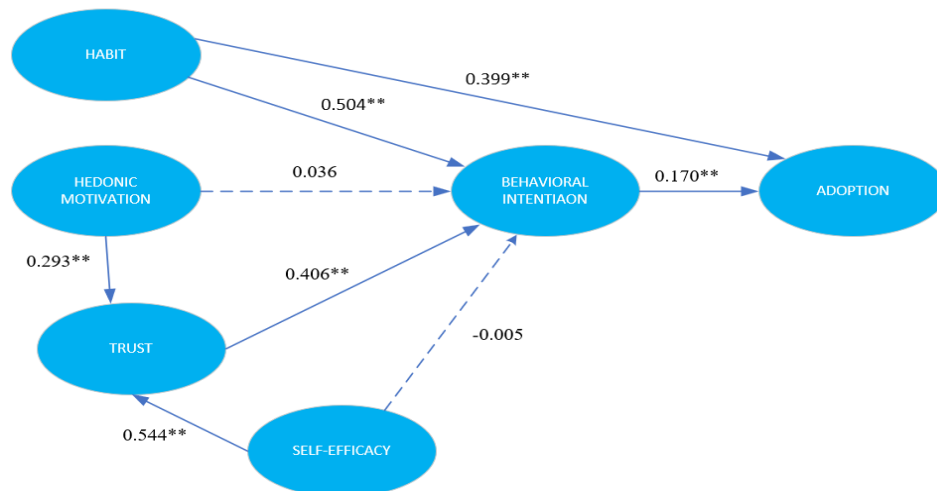


Figure 1. Structural Model of Research

Q2 values higher than 0, 0.25, and 0.50 depict the PLS-path model's small, medium and large predictive relevance (Joseph F. Hair et al., 2017). The path model predictive relevance Q2 for adoption, behavior intention, and trust have a value of 0.132, 0.628, and 0.369, respectively. These values indicate the model has a medium to large predictive relevance for the construct.

The research findings clearly indicate that habit is the primary driver of customer behavioral intentions and the adoption of digital payments in Indonesia. The model demonstrates that habit significantly influences both behavioral intention ($\beta = 0.504$, $p < 0.01$) and adoption ($\beta = 0.399$, $p < 0.01$), overshadowing the effects of trust, self-efficacy, and hedonic motivation. This aligns with existing literature which highlights the pivotal role of habit in technology adoption (Alkhowaiter, 2020; Frank & Milković, 2018). Venkatesh et al. (2012) describe habit as automatic behavior cultivated through repeated experience and skill acquisition over time. The reinforcement of usage intention and adoption through habitual behavior has been corroborated by previous studies (Alalwan et al., 2015; A. M. Baabdullah et al., 2019). This suggests that fostering habitual use of digital payments through consistent and frequent engagement for financial service companies can significantly enhance adoption rates.

In contrast, the study finds that self-efficacy and hedonic motivation do not directly influence behavioral intention, a result that diverges from some previous research (Frank & Milković, 2018; Tak & Panwar, 2013). Hedonic motivation, which is associated with the pleasure and ease of using technology, appears to have a minimal direct effect on behavioral intention in this context. This could be attributed to the perception among many consumers that digital payment systems are still cumbersome and complex, reducing their appeal despite potential hedonic benefits. This finding suggests that, while improving user enjoyment and ease of use is important, it may not be sufficient to drive adoption unless these improvements lead to habitual use.

Moreover, while important, trust primarily affects behavioral intention indirectly through habit. This is consistent with Gefen, Karahanna, and Straub's (2003) findings that trust is crucial for initial acceptance but less critical for continued use once a habit is established. This study's results indicate that the habitual use of digital payments can mitigate some barriers posed by lower levels of trust and hedonic motivation. Consequently, financial service providers should focus on strategies that encourage repeated use and integrate digital payments into consumers' daily routines. By doing so, they can create a foundation of habitual behavior that will drive long-term adoption and overcome initial resistance or complexity perceptions associated with digital payment technologies.

Despite providing valuable insights into the role of habit in adopting digital payments in Indonesia, this study has several limitations. Firstly, the cross-sectional design limits the ability to establish causality between habit, behavioral intention, and adoption. Future research employing longitudinal designs could better capture the dynamic nature of these relationships over time. Secondly, the study's focus on Indonesian consumers may limit the generalizability of the findings to other cultural or economic contexts. Replicating this research in diverse geographic regions would help validate the model across different populations. The study did not delve deeply into the specific mechanisms of habit formation in digital payments. Future studies should explore how user interface design, reward systems, and marketing strategies contribute to or hinder habit development.

Furthermore, while the study explored trust, self-efficacy, and hedonic motivation, it overlooked other potentially influential factors like social norms, perceived risk, and financial literacy. Future research should encompass a broader spectrum of variables to comprehensively understand the drivers behind digital payment adoption. Addressing these limitations would provide deeper insights for academia and industry, enhancing strategies to promote digital payment usage.

Conclusions

This study extends the previous study on how consumers adopt a technology, in this case, digital payment technology. The main point of the result is that habit and trust can affect behavioural intention, leading to the adoption of digital payment in Indonesia. This research also showed that hedonic motivation and self-efficacy could only affect intention through trust; this indicates that building trust in digital payment services is important. This research also shows that habit can affect adoption directly and indirectly through behavioural intention, thus increasing consumer knowledge about digital payment and creating a memorable experience in using digital payment is considered very important to form habit. Future research should focus on demographic differences like age group or gender and how these characteristics influence the adoption of digital payment in Indonesia.

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