

Analysis of Factors Influencing the Use of Contactless Credit Card Transactions in Indonesia using the UTAUT2 Model

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ABSTRACT: This paper looks at how people in Indonesia have started using contactless credit card payments, using the UTAUT2 theory as a guide. The study examines important factors like how useful people think it is (Performance Expectancy), how easy it is to use (Effort Expectancy), what others think (Social Influence), what makes it easier to use (Facilitating Conditions), how enjoyable it is (Hedonic Motivation), how affordable it is (Price Value), how routine it is (Habit), whether people intend to use it (Behavioral Intention), and how often they actually use it (Use Behavior). Information was gathered from 100 people using a set of questions, and it was analyzed using SmartPLS software. The way the data was measured was checked to make sure it was accurate and consistent, and its reliability was tested using Cronbach's alpha and composite reliability methods. The relationships between the different factors were tested using a method called bootstrapping, which showed that there were significant connections between the factors that predicted behavior and the results. The R-square and Q-square results showed that the model was good at explaining and predicting what would happen. The results help us understand why people use contactless payment methods and give banks and financial technology companies ideas for making digital payment services better.

KEYWORDS: Contactless Transaction, Credit Card Adoption, UTAUT2, Behavioral Intention, SmartPLS

I. INTRODUCTION

Contactless payment is a transaction method that enables users to make payments without physical contact with payment devices such as Electronic Data Capture (EDC) machines or terminals. This method typically utilizes Near Field Communication (NFC) technology, allowing devices such as credit cards, smartphones, or wearable gadgets to interact with payment terminals by simply being held within a few centimeters of the reader (Alayli, 2024; Trütsch, 2020).

The contactless payment system offers various advantages, including speed and convenience. Users are no longer required to enter a PIN or sign a receipt, resulting in faster transactions. This benefit is especially critical in contexts where transaction speed is essential, such as retail stores or public transportation (Fung et al., 2014). Additionally, contactless payment is considered more hygienic, particularly during the COVID-19 pandemic, where minimizing physical contact became a public health priority (Trütsch, 2020).

Despite its advantages, contactless payment also poses challenges, especially in terms of security. Although designed with safety protocols, research indicates potential risks such as relay attacks, where malicious actors may steal data from unsecured cards (Kılınç & Vaudenay, 2018). As a result, it is imperative for service providers to continually enhance security measures and foster user trust in this payment method (Alayli, 2024).

Overall, contactless payment represents an innovative shift in transaction systems and has gained global popularity. Its ease of use and transaction efficiency are expected to reduce reliance on cash payments (Bounie & Camara, 2020; Fung et al., 2014). However, the penetration rate of contactless transactions in Indonesia remains relatively low. The following section presents a comparative dataset of contactless debit and credit card usage in Indonesia and other countries, based on the Visa Consumer Payment Attitudes Study 2021.

The Unified Theory of Acceptance and Use of Technology 2 (UTAUT2) is a theory used to study what makes people accept and use technology. It is based on the first UTAUT model by Venkatesh et al. in 2003, but UTAUT2 is made for looking at consumers. It adds three new ideas: hedonic motivation, price value, and habit. These are meant to help us better understand why people use technology (Venkatesh et al., 2012b).

The main ideas in UTAUT2 are performance expectancy, which is when users think technology will help them do things better, and effort expectancy, which is how easy it seems to use. There is also social influence, which is how others affect a person's choices, and facilitating conditions, which are the resources and help available for using the technology. UTAUT2 also looks at hedonic motivation (how much fun it is to use the technology), price value (how good users think the technology is for the cost),

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and habit (how much using the technology becomes a routine). Together, these ideas help us fully understand why people accept technology (Domingueti et al., 2022).

UTAUT2 has proven effective across various domains, including education, healthcare, and commerce. For example, a study by Hidayah and Putri utilized the model to analyze factors affecting users' interest in online shopping platforms (Hidayah & Putri, 2021). Another study by Vinerean et al. applied UTAUT2 to explore m-commerce adoption during the COVID-19 pandemic, highlighting its relevance in dynamic and shifting conditions (Vinerean et al., 2022).

In summary, UTAUT2 offers a holistic approach to understanding technology adoption by accounting for multiple psychological and contextual factors. As such, it serves as a valuable tool for researchers and practitioners in developing effective strategies to foster technological adoption across various sectors (Venkatesh et al., 2012a).

II. METHOD

This study used a quantitative research method with a descriptive and explanatory setup. The main information was gathered through a set questionnaire given to 100 people in Indonesia who knew about or had used contactless credit cards. People were chosen using purposive sampling to represent consumer behavior related to the study.

The questionnaire was based on the UTAUT2 theory, which has nine parts that aren't directly seen: Performance Expectancy, Effort Expectancy, Social Influence, Facilitating Conditions, Hedonic Motivation, Price Value, Habit, Behavioral Intention, and Use Behavior. Each part was measured with things that showed it, taken from past trustworthy studies and rated on a Likert scale.

The study's guesses were made to check the direct links between the parts in the UTAUT2 model. The study especially wants to find out if each earlier part strongly affects users' plan to use contactless credit cards, and if that plan changes how they really use them. These guesses came from ideas and were backed up by earlier studies about technology use and how people act as customers.

Data was looked at using Partial Least Squares Structural Equation Modeling (PLS-SEM) with SmartPLS version 3.2.9. The check had two main steps: looking at the measurement model (outer model) and the structural model (inner model). The outer model was checked to see if things matched up (using loading factors and Average Variance Extracted), if things were different enough (using cross-loading values), and if things were reliable (using Cronbach's alpha and composite reliability).

To test the guesses, bootstrapping methods were used with 100 subsamples. Something was seen as important if its t-statistics were compared to the t-table value of 1.987, based on a 0.05 importance level and degrees of freedom ($df = n - k = 91$). The predictive relevance (Q^2) and coefficient of determination (R^2) were also figured out to see how well the model explained and guessed things. Path coefficients and t-values were used to find important links between parts in the UTAUT2 framework.

III. RESULTS

The table below presents the model fit indices generated from SmartPLS for the estimated structural model.

Table 1. Model fit

	<i>Estimated model</i>
SRMR	0.039
NFI	0.854

Based on the model fit output from SmartPLS, the estimated model demonstrates strong statistical validity with an SRMR value of 0.039 and an NFI of 0.854. The SRMR falls well below the acceptable threshold of 0.08, indicating minimal residual discrepancies between observed and predicted correlations, while the NFI suggests a reasonably good fit despite being slightly below the ideal benchmark of 0.90. Together, these metrics confirm that the structural model adequately represents the underlying data and is appropriate for further hypothesis testing. This supports the robustness of the behavioral framework used to analyze factors influencing contactless payment adoption in Indonesia, lending credibility to subsequent path coefficient interpretations and reinforcing the model's empirical relevance within a developing digital economy context.

The Bootstrapping results in the PLS-SEM analysis using SmartPLS are presented in the following table.

Table 2. The Bootstrapping results in the PLS-SEM analysis

<i>Variabel</i>	<i>Original sample (O)</i>	<i>Sample mean (M)</i>	<i>Standard deviation (STDEV)</i>	<i>T statistics (O/STDEV)</i>	<i>T-table</i>	<i>P values</i>	<i>Results</i>
PE -> BI	0,099	0,108	0,113	0,877	1,987	0,381	Rejected
EE -> BI	0,093	0,090	0,131	0,711	1,987	0,477	Rejected
SI -> BI	0,200	0,199	0,115	1,745	1,987	0,081	Rejected
FC -> BI	0,345	0,336	0,124	2,775	1,987	0,006	Accepted

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HM -> BI	0,282	0,289	0,097	2,906	1,987	0,004	Accepted
PV -> BI	-0,144	-0,145	0,127	1,136	1,987	0,256	Rejected

Table 2. The Bootstrapping results in the PLS-SEM analysis (advanced)

<i>Variabel</i>	<i>Original sample (O)</i>	<i>Sample mean (M)</i>	<i>Standard deviation (STDEV)</i>	<i>T statistics (O/STDEV)</i>	<i>T-table</i>	<i>P values</i>	<i>Results</i>
HT -> BI	0,101	0,101	0,120	0,838	1,987	0,402	Rejected
BI -> UB	0,830	0,831	0,023	36,226	1,987	0,000	Accepted

In this study, we used the bootstrapping method with SmartPLS software version 4 to test our hypotheses. We looked at the t-statistic value to see if there was a significant relationship between the variables in our model. We compared the t-statistic to the t-table value to make our decisions: if the t-statistic was greater than the t-table, we accepted the hypothesis, and if it was less, we rejected the hypothesis. In this study, hypothesis testing was conducted using the bootstrapping method with the assistance of SmartPLS version 4 software.

IV. DISCUSSIONS

Based on the statistical calculations, we can say that performance expectancy does not significantly affect behavioral intention directly. We can tell this because the T-statistic is less than 1.987 (0.877), and the Path Coefficient is >0 (0.099), which means performance expectancy has a positive, but not significant, effect on behavioral intention. Therefore, we reject hypothesis H1 in this study.

Based on the statistical calculations, we can say that effort expectancy does not significantly affect behavioral intention directly. We can tell this because the T-statistic is less than 1.987 (0.711), and the Path Coefficient is >0 (0.093), which means effort expectancy has a positive, but not significant, effect on behavioral intention. Therefore, we reject hypothesis H2 in this study.

Based on the statistical calculations, we can say that social influence does not significantly affect behavioral intention directly. We can tell this because the T-statistic is smaller than 1.987 (1.745), and the Path Coefficient is >0 (0.200), which means social influence has a positive, but not significant, influence on behavioral intention. Therefore, we reject hypothesis H3 in this study.

Based on the statistical calculations, we can say that facilitating conditions have a direct, positive, and significant effect on behavioral intention. We can tell this because the T-statistic is greater than 1.987 (2.775), and the Path Coefficient is >0 (0.345), which means facilitating conditions positively influence behavioral intention. If facilitating conditions increase by one unit, behavioral intention increases by 34.5%. Therefore, we accept hypothesis H4 in this study.

Based on the statistical calculations, we can say that hedonic motivation has a direct, positive, and significant effect on behavioral intention. We can tell this because the T-statistic value is greater than 1.987 (2.906), and the Path Coefficient value is >0 (0.282), which means hedonic motivation positively influences behavioral intention. If hedonic motivation increases by one unit, behavioral intention increases by 28.2%. Therefore, we accept hypothesis H5 in this study.

Based on the statistical calculations, we can say that price value does not have a direct significant effect on behavioral intention. We can tell this because the T-statistic value is less than 1.987 (1.136), and the Path Coefficient value is <0 (-0.144), which means price value has a negative, but not significant, influence on behavioral intention. Therefore, we reject hypothesis H6 in this study.

Based on the statistical calculations, we can say that habit does not have a direct significant effect on behavioral intention. We can tell this because the T-statistic is smaller than 1.987 (0.838), and the Path Coefficient is >0 (0.101), which means habit has a positive, but not significant, influence on behavioral intention. Therefore, we reject hypothesis H7 in this study.

The statistical calculations show that wanting to do something directly and positively affects how people use it. We know this because the T-statistic is much bigger than 1.987 (36.226), and the Path Coefficient is more than 0 (0.830), which means wanting to do something has a positive effect on using it. If we increase the desire to use contactless transactions by one unit, the use of these transactions goes up by 83.0%. So, we accept hypothesis H8 in this study.

The results of this study indicate a shifting dynamic in consumer behavior toward contactless credit card transactions in Indonesia, where not all traditional predictors within the UTAUT2 model exhibit strong influence. Specifically, performance expectancy, effort expectancy, and social influence were found to have no significant direct effect on behavioral intention. This finding suggests that although consumers may perceive contactless payments as potentially useful and easy to use—and may even experience subtle social encouragement—their intention to adopt remains unaffected. In the Indonesian context, where digital transaction familiarity is growing but not yet uniform, such results underline the importance of reexamining which motivational factors are truly shaping adoption.

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Conversely, facilitating conditions and hedonic motivation emerged as meaningful drivers of behavioral intention. The availability of infrastructure and support systems—such as reliable internet, user-friendly payment terminals, and institutional backing—can greatly ease user concerns and enhance perceived readiness. Additionally, the pleasure and satisfaction derived from using contactless payments appears to play a pivotal role. In Indonesia's increasingly tech-savvy and mobile-first environment, engaging and enjoyable digital experiences are no longer just bonuses—they're central to technology adoption. These findings reinforce the idea that emotional and logistical ease are key to driving intention among users.

From an economic perspective, the study's findings suggest that the adoption of contactless payment technology in Indonesia is more influenced by infrastructure readiness and user experience satisfaction than by functional efficiency or price value. Macroeconomically, these findings suggest that financial technology development strategies need to shift from a rational, utilitarian approach to an ecosystem- and experience-based one. With aspects such as network reliability and ease of use becoming key factors shaping intention, budget allocations—by both the government and the private sector—should be focused on strengthening the supporting ecosystem and designing engaging services. By prioritizing emotional and logistical factors as key drivers of adoption, the growth of digital transactions can directly contribute to the more inclusive and sustainable expansion of Indonesia's digital economy.

Finally, the strong and significant impact of behavioral intention on actual usage behavior affirms the relevance of intention as a mediator in technology acceptance models. When Indonesian users feel motivated and supported, they are likely to translate that intention into real-world usage—evident from the sizable effect on contactless transaction behavior. However, the rejection of hypotheses around price value and habit suggests that affordability and routine are not yet dominant considerations in this space. For policymakers and financial service providers, this insight emphasizes the need to strengthen infrastructure and enhance the experiential appeal of contactless systems to further cultivate adoption across different consumer segments.

V. CONCLUSIONS

Based on the findings of this study, it can be concluded that not all constructs within the UTAUT2 model significantly influence behavioral intention toward using contactless credit card transactions in Indonesia. Performance expectancy, effort expectancy, social influence, price value, and habit—though often emphasized in technology adoption frameworks—did not show significant direct effects. These results suggest that Indonesian consumers may already perceive baseline usefulness and ease-of-use as standard, making them less influential in motivating adoption within the contactless payment context.

On the other hand, facilitating conditions and hedonic motivation emerged as key drivers of behavioral intention. The positive and significant effects of these constructs underscore the growing importance of support systems and enjoyable user experiences in digital transaction environments. Contactless payment users in Indonesia appear to value reliable infrastructure and seamless access alongside emotionally rewarding experiences, which contribute to stronger motivation to adopt and use the technology.

The relationship between behavioral intention and use behavior was particularly pronounced, with a one-unit increase in intention resulting in an 83.0% increase in actual usage. This confirms that behavioral intention is a crucial intermediary step in the adoption process. It also demonstrates that once users are convinced and motivated, they actively integrate contactless credit card usage into their transaction habits. These insights reinforce the role of behavioral intention as a central construct in technology acceptance and utilization.

Overall, the study highlights a shifting landscape of consumer priorities in Indonesia's digital finance ecosystem. To promote greater adoption of contactless payment systems, service providers and financial institutions should invest in enhancing support infrastructure, creating pleasurable user experiences, and targeting motivational touchpoints rather than relying solely on performance and efficiency messages. These strategies will likely foster stronger behavioral intentions, leading to increased usage and deeper market penetration across various demographic groups.

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