

# Understanding of Digital Payment Usage During COVID-19 Pandemic: A Study of UTAUT Extension Model in Indonesia

Ayatulloh Michael MUSYAFFI<sup>1</sup>, Dewi Agustin Pratama SARI<sup>2</sup>, Dwi Kismayanti RESPATI<sup>3</sup>

Received: February 20, 2021 Revised: April 20, 2021 Accepted: May 02, 2021

## Abstract

The COVID-19 pandemic has fundamentally changed the world as we know it, especially consumer behavior. Users turn to digital transactions for fear of making physical contact when transacting. However, security issues and user convenience are obstacles to making users adopt digital payments. So, this research was made to solve the problem of adopting digital payments through the UTAUT extension model with perceived security and personal innovativeness as the main issues in the COVID-19 pandemic. This research focuses on digital payment users in Indonesia. A total of 457 users were used as research samples. The questionnaires were distributed online using a google form, after which they were processed and analyzed using SEM-PLS. This evaluation shows that performance expectancy, effort expectancy, and personal innovativeness have a significant positive effect on behavioral intention to use digital banking. However, perceived security has a significant negative effect on behavioral intention. Moreover, social influence does not have a significant influence on behavioral intention. Meanwhile, Facilitating Conditions and behavioral intention have a significant positive impact on digital payment usage. This study's findings indicate that the use of technological and personal mental factors impacts the adoption of digital payments, especially in the COVID-19 pandemic.

**Keywords:** Digital Payment, Perceived Security, Personal Innovativeness, UTAUT

**JEL Classification Code:** E32, M15, M21, O33

## 1. Introduction

Covid-19 pandemic carried out limited conventional community activities due to maintaining distance, recommendations to stay at home, and carrying out activities virtually by utilizing various technologies. Advances in

technology and information systems affect the individual's internal information and the entire business organization (Davis et al., 2020). Based on research by (Ha et al., 2021; Musyaffi & Muna, 2020; Sudarsono et al., 2020), Internet users in South East Asia are increasing rapidly. New users in 2020 increased by 40 million users. In addition to new online users, Covid-19 caused an acceleration of digital consumption as users tried new digital services for the first time. Indonesia's Internet economy today reported that it is still growing at a healthy 11% yearly, driven by E-commerce and Online Media. Indonesia's Internet economy is now at a substantial \$44B in 2020 and is expected to grow to \$124B by 2025. Indonesia's Internet users are recorded to reach 197 million (Rosnidah et al., 2019; Zhao & Bacao, 2021).

The rapid growth of information technology, also supported by an extensive internet network, makes it easy for people to carry out activities using smartphones. One of the many activities carried out is payment through a digital payment application. Amid the decline in economic activity during the social restriction, the public's use of

<sup>1</sup>First Author and Corresponding Author. Lecturer, Accounting Department, Faculty of Economics, Universitas Negeri Jakarta, Indonesia [Postal Address: Rawamangun Muka Street, Rawamangun, Jakarta, 13220, Indonesia]  
Email: musyaffi@unj.ac.id

<sup>2</sup>Lecturer, Marketing Department, Faculty of Economics, Universitas Negeri Jakarta, Indonesia. Email: dewiagustin@unj.ac.id

<sup>3</sup>Lecturer, Education Accounting Department, Faculty of Economics, Universitas Negeri Jakarta, Indonesia.  
Email: dwikisrespati@unj.ac.id

digital payments has increased. This can change people's habits in using payment instruments, from cash to non-cash. One of the digital payment systems such as OVO recorded a 267% increase in its transactions during the pandemic. Furthermore, DANA recorded an increase in its transactions by 50%. Next is Gopay, Gojek's e-wallet recorded an increase in transactions during the pandemic, up to 103% (Raza et al., 2021). With the presence of new technology, people adjust their daily behavior. Besides, there are several facts that many people do not use the digital payment system due to difficulties in use, security, benefits, and various other internal and external factors. The phenomenon of using digital payments and how people adjust their behavior encourages researchers to conduct more profound research on both. For this reason, researchers adopted the *Unified Theory of Acceptance and Use of Technology* (UTAUT) to explain how users behave towards information technology. Behavioral intention (BI) refers to the motivational factors that influence a given behavior where the stronger the intention to perform the behavior, the more likely the behavior will be performed. BI is a measure of the strength of a person's intention to perform certain behaviors. In other words, behavioral intention is how much someone intends to use technology to support their performance. Behavioral intention can measure that consumers will act in a certain way in the future, such as reuse or repurchase a product and recommend it to others (Qian et al., 2021). Qian et al. (2021) through the UTAUT model, found that behavioral intention (BI) and innovation resistance (IR) influenced the use of digital payment systems. Besides, the research found that performance expectancy (PE) and effort expectancy (EE) had no significant effect on behavioral intention. Still, social influence (SI) and facilitating conditions (FC) influenced behavioral intention in mobile applications. Unlike the other research, all UTAUT variables except social influence have a significant positive effect on the intention to use mobile banking (Mützel, 2021; Sivathanu, 2019). The gap results of this study also motivate researchers to conduct the research.

One of the biggest challenges and most important aspects when it comes to digital payments is security. The number of personal data theft cases, account breaches, and fraud under online sellers' guise on social media makes people hesitate to use digital payment technology. Besides, internal factors such as difficulty using digital technology, forgetting passwords, not knowing about digital payment services, and various other. In the context of digital payment services, there is perceived security which refers to how users believe that transactions on digital payment platforms are safe in terms of financial and personal (Sivathanu, 2019) also found that perceived security is a strong predictor of the continuous use of digital payment. Amid the Covid-19 pandemic, people follow the government's call to carry out most activities from home. Daily activities such as transacting, working, studying

at home make people must adapt to the use of technology in everyday life.

One of the crucial issues arising from home quarantine is learning to use online technology or learning to use it to communicate online as they have never done before. Personal innovativeness shows individuals' tendency to try new products and. The need to use online technology, supported by Internet services and an increasing number of online transaction service providers, motivates individuals to use new technology, namely digital payment. In this study, researchers adopt the UTAUT model and two other variables, perceived security, and personal innovativeness, to see the effect on behavioral intention and behavioral use in digital payments usage.

## 2. Literature Review

Digital payment is a way of payment that is made through digital modes. In digital payments, payer and payee both use digital modes to send and receive money. It is also called electronic payment. Digital payment is an electronic service for storing payment instrument data as payment tools, which can also save funds, speed up payments, ease of use, efficiency, effectiveness, transparency, and accessibility (Wu et al., 2016). The advantage of using digital payment, according to Sharma et al. (2020) and Venkatesh et al. (2012), is convenience because users can make payment transactions through smartphones with an Internet connection and no need to carry cash. The unified theory of acceptance and use of technology (UTAUT) model by Venkatesh et al. (2012) is a technology acceptance model that aims to explain user intentions to use an information system and subsequent usage behavior. UTAUT model aims to determine user acceptance of new information technology, acceptance behavior of new information technology shown by users, and the effect of new information technology on most (Sivathanu, 2019). One of that factors is Performance expectancy. Performance Expectancy (PE) is described as the extent to which an individual believes that the use of a system will help them achieve work (Patil et al., 2020; Raza et al., 2021; Venkatesh et al., 2012). Previous research has found that performance expectancy significantly influences respondents' intentions to use digital payments (Venkatesh et al., 2012). Someone will use a system if the system is able to provide benefits so that it can cause an intention to use the system or technology (Chayomchai et al., 2020; Rosnidah et al., 2019; Sivathanu, 2019).

According to (Chopdar et al., 2018), Effort Expectancy (EE) is the level of easiness related while using any system. This means that effort expectancy refers to the effort needed to use the system, whether it is simple. The results of previous studies indicate that effort expectancy affects user intentions in using digital payment (Chopdar et al., 2018;

Sivathanu, 2019; Wu et al., 2016). The digital payment system was designed to make it easier for users to use technology to make financial transactions. When someone finds it easy to use technology, they tend to increase the intensity of using that technology. Behavioral intentions to use mobile apps are likely to be influenced by friends, family, past users, and public figures (Venkatesh et al., 2012). Previous research has found that social influence has a significant effect on the intention to use digital payment (Sivathanu, 2019). People will feel more accepted in their interactions when using trending technology. According to Wu et al. (2016), facilitating condition is a person's perception of resources' availability to support behavior. Using various technologies, facilitating conditions are the guidance, assistance, and training provided to use these technologies (Sivathanu, 2019). The actual use of using mobile payment services is supported by adequate infrastructure and technicalities such as Android-based smartphones, data pulses, and Internet networks. Recent research has found that facilitating conditions affect behavioral intention (Mukherjee & Nath, 2007). Similarly, (Singh & Srivastava, 2018) showed that providing resources and support to consumers in terms of guidance, assistance, and training can increase the use of digital payment systems. Based on this explanation, the hypotheses of this study are

**H1:** Performance expectancy has a significant positive effect on behavioral intention.

**H2:** Effort expectancy has a significant positive effect on behavioral intention.

**H3:** Social Influence has a significant positive effect on behavioral intention.

**H4:** Facilitating condition has a significant positive effect on use behavioral Intention.

Perceived Security is defined as the degree to which the mobile payment user believes that transaction on mobile payment platforms is secure in both financial and personal information aspects. Perceived security is a factor that is important and considered by someone when faced with new technology (Singh & Srivastava, 2018). According to other research, perceived security is an important factor in electronic financial transactions (Lu et al., 2005; Mahat et al., 2012; Patil et al., 2020). Based on prior research, it is known that the perceived security of new technology will have a positive effect on one's intention to use the technology (Agarwal & Prasad, 1998). Therefore, in this study, it is explained that the hypothesis regarding perceived security has a positive effect on the intention to use digital payment. In an innovation diffusion study, it is explained that innovative individuals will usually actively come up with new ideas. Personal innovativeness can be defined as an individual's willingness to try new things, including

new technology (Klöckner, 2013). This is reinforced by the existence of previous research related to the impact of e-commerce acceptance which explains that, if someone has a level of innovation in their daily lives, that person will tend to accept new things more efficiently, including influencing the person's intention to adopt new technology. Other research also explains that when an individual has a higher level of innovation, this will strengthen the individual's intention to use something new (Fang & Zhang, 2019). Based on this explanation, the sixth and seventh hypotheses of this study are:

**H5:** Perceived Security has a significant positive effect on behavioral intention.

**H6:** Personal Innovativeness has a significant positive effect on behavioral intention.

Meta-analysis studies explain that several psychology theories have confirmed that one's intention is the most influential predictor of a person's behavior to be willing to do something (Venkatesh et al., 2012). Behavior intention is the essential factor in assessing that person's subsequent behavior (Singh & Srivastava, 2018). Therefore, this study's hypothesis explains that behavioral intention to use digital payments has a significant effect on user behavior.

**H7:** Behavioral Intention to Use Digital Payment has a significant positive effect on Use Behavior.

### 3. Research Methods and Materials

The data used in this study is primary data. The data was obtained by carrying out a field survey, namely a questionnaire distributed online. The existing questionnaire consists of two parts. The first part is multiple choice which contains descriptive data about the respondent. Furthermore, the second part is in the form of a statement that indicates the research variables. This study uses quantitative data analysis. Furthermore, the Structural Equation Model (SEM) was used for data analysis. SEM is carried out because, in this study, it is necessary to simultaneously test the new model, which is an extension of the existing UTAUT model with two extension variables. Using SEM information, the suitability of the model with the data can be obtained. Furthermore, this study uses a Likert scale of 1–5, which consists of strongly disagree, disagree, doubt, agree, and strongly agree. The research instrument was adopted from several previous articles. For the UTAUT instrument, which consists of performance expectancy, effort expectancy, social influence, facilitating conditions, it was adopted from Agarwal and Prasad (1998), whereas for perceived security, it was adopted from Singh and Srivastava (2018), personal innovation was adopted from Chopdar et al. (2018),

the behavioral intention and use behavior were adopted from Hair et al. (2019).

In processing the data in this study, the research instrument was tested. Hence, the researcher tested each statement item from the research variable. Validity and reliability were tested to check each instrument item before testing the relationship between variables. The data collected was 457 respondents. Most respondents in this study were women, namely 58.86% with an average age of 20–30 years (49.02%) and age 30–40 years (28.01%). In terms of education level, most respondents had an undergraduate degree (68.05%) and were workers in the private sector (45.08%) and the public sector (21.01%). Based on the frequency with which digital payments are used, most respondents use digital payments once a week (45.95%) and once or more a week (35.01%).

## 4. Results and Discussion

### 4.1. Results

The measurement model analyzes the level of validity and reliability through analysis of outer loading, Average Variance Extracted, Composite Reliability, and Discriminant Validity. The first step is to perform outer loading analysis by evaluating each indicator where the recommended value is 0.7 (Hair et al., 2019). Based on Table 1, the outer loading value for each indicator exceeds 0.7. So, it can be concluded that this research has acceptable item reliability. The second step is to assess the internal consistency reliability with a recommended value of more than 0.7 (Hair et al., 2019). Based on Table 1, the values for all indicators per item have an outer loading value above 0.7. This shows that each indicator item has a good internal consistency. The third step is to assess convergent validity by evaluating the Average Variance Extracted value (AVE) with a recommended value of more than 0.5 (Hair et al., 2019). Based on Table 1, all variables have an AVE value above 0.5. Another way to assess validity is to evaluate Cronbach's Alpha value with a recommended value of more than 0.7. Based on Table 1, the value of CA for all variables is above 0.7. Thus, based on the analysis of CA and AVE it can be concluded that the constructs in this study are valid. The fourth step is to perform an analytical test using Composite Reliability (CR) with a recommended value of more than 0.7 (Subawa et al., 2021). Based on Table 1, the evaluation results on the processing results show that the CR value for all variables has a value above 0.7. Thus, it can be concluded that all variables in this study are reliable.

After the measurement model is carried out, the next step is to evaluate the structural model. The structural model analysis shows the relationship between the construct and the significance value. However, before evaluating and analyzing the structural model, we must first check each

of these constructs' multicollinearity using Collinearity Statistics (VIF). A research model must not have problems regarding collinearity. The recommended value for the VIF value must be above 5 (Rosnidah et al., 2019; Zhao & Bacao, 2021). Table 1 above shows the VIF values for each variable in each indicator. If the VIF value is more than 5, then each indicator's items have a multicollinearity problem. Based on Table 1, the VIF value for all construct items is below 5. This shows that the construct items have no problems regarding collinearity. Based on the various trials conducted above, the next step is to test the hypothesis based on data processing through SmartPLS software. To test the hypothesis that has been built, the step that must be done is to compare the  $T$  statistic value with the  $t$  value. If the  $T$  statistical value is greater than the  $t$  value, then the built hypothesis is accepted. Likewise, vice versa, if the  $t$  statistical value is smaller than the  $t$  value, the hypothesis is rejected. Apart from comparing the  $t$  statistic with the  $t$  value, another way to determine the hypothesis is to compare the  $p$ -value with a predetermined error rate. In this study, the predetermined error rate is 5%. Table 2 shows the results of the values used to determine the hypothesis that was built.

Table 2 shows the results and conclusions of the hypotheses that have been built. All UTAUT variables in this study have a significant positive effect such as performance expectancy ( $T$  statistic 6.4627,  $p$ -value = 0.000), effort expectancy ( $T$  statistic 2.6451,  $p$ -value = 0.0042), facilitating condition ( $T$  statistic 4.3311,  $p$ -value = 0.000) and behavioral intention ( $T$  statistic 9.1148,  $p$ -value = 0.000) except for social influence ( $T$  statistic 0.1541,  $p$ -value = 0.4388). Meanwhile, other variables such as perceived security ( $T$  statistic 2.0611,  $p$ -value = 0.0199) and personal innovativeness ( $T$  statistic 4.3479,  $p$ -value = 0.000) have an impact on behavior intention variables. Thus, of the 7 proposed hypotheses, there is 1 hypothesis that does not have a good impact, namely social influence.

### 4.2. Discussion

The existence of the UTAUT model explains the acceptance of technology adoption, especially during a pandemic. The result is that performance expectancy has a significant positive impact on behavioral intention to use digital payment. The easier it is for someone to use technology; the more behavior will continue using the technology (Sivathanu, 2019). This research supports the results of various researchers where performance expectancy has a significant role in influencing someone to continue to use technology (Patil et al., 2020; Raza et al., 2021; Rosnidah et al., 2019; Venkatesh et al., 2012). The intention to use digital payments at the time of Covid 19 lead to an increase in the number of cashless transactions. This is due to social restrictions and the nature of Covid 19, which spreads

**Table 1:** Validity and Reliability

Variables	Indicator	Outer Loading	VIF	CR	AVE	CA	VIF
Performance Expectancy (X1)	X1.1	0.7945	1.7331	0.8741	0.6349	0.8080	1.7331
	X1.2	0.8120	1.8971				1.8971
	X1.3	0.7488	1.4218				1.4218
	X1.4	0.8296	1.7838				1.7838
Effort Expectancy (X2)	X2.1	0.8155	1.3879	0.8658	0.6827	0.7704	1.3879
	X2.2	0.8016	1.7425				1.7425
	X2.3	0.8606	1.8418				1.8418
Social Influence (X3)	X3.1	0.8760	1.2971	0.8405	0.6389	0.7628	1.2971
	X3.2	0.7093	1.9530				1.9530
	X3.3	0.8039	1.9155				1.9155
Facilitating Condition (X4)	X4.1	0.8046	1.4130	0.8477	0.6499	0.7306	1.4130
	X4.2	0.8259	1.5171				1.5171
	X4.3	0.7875	1.4144				1.4144
Perceived Security (X5)	X5.1	0.8337	1.9706	0.8965	0.7429	0.8297	1.9706
	X5.2	0.8811	2.0224				2.0224
	X5.3	0.8703	1.7638				1.7638
Personal Innovativeness (X6)	X6.1	0.8514	2.0778	0.92	0.796	0.7628	2.0778
	X6.2	0.8977	2.8201				2.8201
	X6.3	0.9258	2.4900				2.4900
Behavioral Intention to use Digital Payment (Y)	Y1	0.8405	1.5986	0.8514	0.6583	0.7394	1.5986
	Y2	0.8816	1.8354				1.8354
	Y3	0.7010	1.3281				1.3281
Digital Payment Usage (Z)	Z1	0.8481	1.6143	0.8505	0.6567	0.7393	1.6143
	Z2	0.8706	1.6657				1.6657
	Z3	0.7022	1.3086				1.3086

**Table 2:** Hypothesis Testing

	Original Sample	T Statistic	P-values	Result
Performance Expectancy (X1) → Behavior Intention (Y)	0.2956	6.4627	0.0000	Accepted
Effort Expectancy (X2) → Behavior Intention (Y)	0.1492	2.6451	0.0042	Accepted
Social Influence (X3) → Behavior Intention (Y)	0.0075	0.1541	0.4388	Rejected
Facilitating Condition (X4) → Digital Payment Usage (Z)	0.2161	4.3311	0.0000	Accepted
Perceived Security (X5) → Behavior Intention (Y)	-0.1246	2.0611	0.0199	Accepted
Personal Innovativeness (X6) → Behavior Intention (Y)	0.2153	4.3479	0.0000	Accepted
Behavioral Intention (Y) → Digital Payment Usage (Z)	0.4533	9.1148	0.0000	Accepted

through physical touch, including banknotes. The existence of a digital payment helps users to make purchases for daily needs more efficiently. Users select the desired item, and then the transaction can be made online via digital payment. After that, the goods will be delivered by the transportation service provider to the destination address. Based on the field survey results, most users use digital payments as payment tools because they have speed and accuracy.

Besides, another factor that influences the high behavior of using digital payments is the Effort Expectancy factor. When someone has a high level of convenience related to digital payments, that person will tend to have the intention to use the digital payment (Alexandrou & Chen, 2019). When someone has a perception regarding the ease of using technology, they will immediately perceive that they do not need more energy to use this technology (Undale et al., 2020) so that this can encourage the intention to use these technologies. This is in line with the current pandemic situation. The pandemic period has led to the increasing use of the Internet as a medium for online transactions, of course, this has prompted people to become more familiar with the Internet and various new technologies that have emerged, including the existence of digital payments to support online shopping transactions.

Furthermore, another variable that has a negative effect on the intention to use digital payment is perceived security. Users who feel that there are many obstacles in using digital payments tend to refuse digital payments. The results of this research have something in common with the research where perceived security has a significant negative impact on the intention to use digital payments. This is supported by some previous research showing that perceived security negatively impacts digital payment intention (Pesare et al., 2016). The safety factor is mainly the data that can be leaked and has a high probability of being misused. The use of digital payments during the COVID-19 pandemic has increased, as such, the safety factor cannot be ignored if goods and service providers do not want to lose users (Kwabena et al., 2021; Sivathanu, 2019; Wu et al., 2016). The pandemic condition that finally encourages people to adopt technology more quickly is in line with the perception of personal innovativeness in a person. Based on a survey, personal innovativeness has a significant positive impact on the intention to use digital payment. This study's results are in line with previous research on personal innovativeness by Jaiswal et al. (2018) who explained that personal innovativeness has a significant positive impact on a person's intention towards something new. Especially now is the pandemic era where people are finally encouraged to reduce activities in the form of using physical money and switch to online activities, which encourages people to have an intention of digital payments.

Besides, this study found that social influence has no significant effect on the intention to use digital payments.

Of course, because this is related to finance, it becomes more personal and sensitive so that the influence of other people does not increase one's intention to use digital payments. This is different from previous studies by Sivathanu (2019) who explained that social influence has a significant influence on the intention to use digital payments. After analyzing the predictors that affect the intention to use digital payments, this study also looks at how the intention to use digital payments affects the use of digital payments. Based on the survey that has been conducted, it is known that the intention to use digital payments has a significant positive effect on the behavioral use of digital payments. The results of this study are following previous research by Jaiswal et al. (2018) who explained that intention is the predictor with the most significant positive effect on behavioral use.

Furthermore, apart from looking at the intention to use digital payment as a predictor of the user behavior of digital payments, the research also examines the factors that influence the use of digital payments. Moreover, this study also sees the existence of a facilitating condition factor for the use of digital payments. The results of the tests carried out are that facilitating conditions have a significant positive impact on the behavioral use of digital payments. The results of this study are in line with previous research by Sivathanu (2019), who explained that the assistance or facilities provided to users will encourage users to use digital payments. Of course, the growth in the use of existing smartphones is one of the driving forces for increasing online transactions in society. This is reinforced by the research of Jaiswal et al. (2018) who explained that there are transaction characteristics in transactions, where one of the characteristics of the transaction is the communication process.

## 5. Conclusion

This research is a form of development of the UTAUT model by including perceived security and personal innovativeness in implementing digital payments in the COVID-19 pandemic. This research was conducted because of a pandemic and changing user behavior patterns so that it is considered very important to monitor and evaluate the level of user acceptance from the technology and personal side. The author found that the main factor for the high digital payment usage is the intention to use digital payments. One crucial factor is how digital payments during a pandemic can increase productivity even in conditions of social restrictions. Then the personal innovativeness of users, especially at the level and age of users in the 20–30 range, becomes very important. Because this type of user tends to try new technology. Overall, the areas deemed necessary to be improved are the service improvement factors, especially flexibility, convenience, and data security. Unstable psychological conditions during a pandemic

should be a matter of concern for digital payment service providers. Users tend to prioritize primary needs over social sentiments. This is proven by the absence of a significant impact between social influence and behavioral intention to use digital banking. So, the strategies and decisions of service providers and industry must consistently focus on personal needs, especially primary needs in this pandemic.

## References

- Agarwal, R., & Prasad, J. (1998). A conceptual and operational definition of personal innovativeness in the domain of information technology. *Information Systems Research*, 9(2), 204–215. <https://doi.org/10.1287/isre.9.2.204>
- Alexandrou, A., & Chen, L. C. (2019). A security risk perception model for the adoption of mobile devices in the healthcare industry. *Security Journal*, 32(4), 410–434. <https://doi.org/10.1057/s41284-019-00170-0>
- Chayomchai, A., Phonsiri, W., Junjit, A., Boongapim, R., & Suwannaputit, U. (2020). Factors affecting acceptance and use of online technology in Thai people during COVID-19 quarantine time. *Management Science Letters*, 10(13), 3009–3016. <https://doi.org/10.5267/j.msl.2020.5.024>
- Chopdar, P. K., Korfiatis, N., Sivakumar, V. J., & Lytras, M. D. (2018). Mobile shopping apps adoption and perceived risks: A cross-country perspective utilizing the Unified Theory of Acceptance and Use of Technology. *Computers in Human Behavior*, 86, 109–128. <https://doi.org/10.1016/j.chb.2018.04.017>
- Davis, S., Sipahimalani, R., Baijal, A., Cannarsi, A., Neves, N. C., & Dhanuka, R. (2020). *Economy SEA 2020 at the full velocity: Resilient and racing ahead*. <https://www.thinkwithgoogle.com/intl/en-apac/consumer-insights/consumer-journey/e-conomy-sea-2020-resilient-and-racing-ahead-what-marketers-need-to-know-about-this-years-digital-shifts/>
- Fang, C., & Zhang, J. (2019). Users' continued participation behavior in social Q&A communities: A motivation perspective. *Computers in Human Behavior*, 92, 87–109. <https://doi.org/10.1016/j.chb.2018.10.036>
- Ha, N. T., Nguyen, T. L. H., Pham, T. van, & Nguyen, T. H. T. (2021). Factors influencing online shopping intention: An empirical study in Vietnam. *Journal of Asian Finance, Economics, and Business*, 8(3), 1257–1266. <https://doi.org/10.13106/jafeb.2021.vol8.no3.1257>
- Hair, J. F., Risher, J. J., Sarstedt, M., & Ringle, C. M. (2019). When to use and how to report the results of PLS-SEM. *European Business Review*, 31(1), 2–24. <https://doi.org/10.1108/EBR-11-2018-0203>
- Jaiswal, A. K., Niraj, R., Park, C. H., & Agarwal, M. K. (2018). The effect of relationship and transactional characteristics on customer retention in emerging online markets. *Journal of Business Research*, 92, 25–35. <https://doi.org/10.1016/j.jbusres.2018.07.007>
- Klößner, C. A. (2013). A comprehensive model of the psychology of environmental behaviour-A meta-analysis. *Global Environmental Change*, 23(5), 1028–1038. <https://doi.org/10.1016/j.gloenvcha.2013.05.014>
- Kwabena, G.-Y., Mei, Q., Ghumro, T. H., Li, W., & Erusalkina, D. (2021). Effects of a technological-organizational-environmental factor on the adoption of the mobile payment system. *The Journal of Asian Finance, Economics, and Business*, 8(2), 329–338. <https://doi.org/10.13106/jafeb.2021.vol8.no2.0329>
- Lu, J., Yao, J. E., & Yu, C. S. (2005). Personal innovativeness, social influences, and adoption of wireless Internet services via mobile technology. *Journal of Strategic Information Systems*, 14(3), 245–268. <https://doi.org/10.1016/j.jsis.2005.07.003>
- Mahat, J., Ayub, A. F. M., Luan, S., & Wong. (2012). An assessment of students' mobile self-efficacy, readiness, and personal innovativeness towards mobile learning in higher education in Malaysia. *Procedia - Social and Behavioral Sciences*, 64, 284–290. <https://doi.org/10.1016/j.sbspro.2012.11.033>
- Mukherjee, A., & Nath, P. (2007). Role of electronic trust in online retailing: A re-examination of the commitment-trust theory. *European Journal of Marketing*, 41(9–10), 1173–1202. <https://doi.org/10.1108/03090560710773390>
- Musyaffi, A. M., & Muna, A. (2020). Task Technology-Fit of a Village Financial System (Siskeudes) to Increase Officers' Performance. *KnE Social Sciences*, 720–730.
- Mützel, S. (2021). Unlocking the payment experience: Future imaginaries in the case of digital payments. *New Media & Society*, 23(2), 284–301. <https://doi.org/10.1177/1461444820929317>
- Patil, P., Tamilmani, K., Rana, N. P., & Raghavan, V. (2020). Understanding consumer adoption of mobile payment in India: Extending Meta-UTAUT model with personal innovativeness, anxiety, trust, and grievance redressal. *International Journal of Information Management*, 54, 102144. <https://doi.org/10.1016/j.ijinfomgt.2020.102144>
- Pesare, E., Roselli, T., Corriero, N., & Rossano, V. (2016). Game-based learning and gamification to promote engagement and motivation in medical learning contexts. *Smart Learning Environments*, 3(1), 1–21. <https://doi.org/10.1186/s40561-016-0028-0>
- Qian, J., Xing, B., Zhang, B., & Yang, H. (2021). Optimizing QR code readability for curved agro-food packages using response surface methodology to improve mobile phone-based traceability. *Food Packaging and Shelf Life*, 28, 100638. <https://doi.org/10.1016/j.fpsl.2021.100638>
- Raza, S. A., Qazi, W., Khan, K. A., & Salam, J. (2021). Social isolation and acceptance of the learning management system (LMS) in the time of COVID-19 pandemic: An expansion of the UTAUT model. *Journal of Educational Computing Research*, 59(2), 183–208. <https://doi.org/10.1177/0735633120960421>
- Rosnidah, I., Muna, A., Musyaffi, A. M., & Siregar, N. F. (2019). A critical factor of mobile payment acceptance in the millennial generation: Study on the UTAUT model. *International Symposium on Social Sciences, Education, and Humanities*

- (ISSEH 2018), Cirebon Indonesia, 19–20 November 2018 (pp. 123–127). <https://doi.org/10.2991/isseh-18.2019.30>
- Sharma, S., Singh, G., Pratt, S., & Narayan, J. (2020). Exploring consumer behavior to purchase travel online in Fiji and Solomon Islands? An extension of the UTAUT framework. *International Journal of Culture, Tourism, and Hospitality Research*. <https://doi.org/10.1108/IJCTHR-03-2020-0064>
- Singh, S., & Srivastava, R. K. (2018). Predicting the intention to use mobile banking in India. *International Journal of Bank Marketing*, 36(2), 357–378. <https://doi.org/10.1108/IJBM-12-2016-0186>
- Sivathanu, B. (2019). Adoption of digital payment systems in the era of demonetization in India: An empirical study. *Journal of Science and Technology Policy Management*, 10(1), 143–171. <https://doi.org/10.1108/JSTPM-07-2017-0033>
- Subawa, N. S., Dewi, N. K. A., & Gama, A. W. O. (2021). Differences of gender perception in adopting cashless transactions using technology acceptance model. *The Journal of Asian Finance, Economics, and Business*, 8(2), 617–624. <https://doi.org/10.13106/jafeb.2021.vol8.no2.0617>
- Sudarsono, H., Nugrohowati, R. N. I., & Tumewang, Y. K. (2020). The Effect of Covid-19 Pandemic on the Adoption of Internet Banking in Indonesia: Islamic Bank and Conventional Bank. *The Journal of Asian Finance, Economics, and Business*, 7(11), 789–800. <https://doi.org/10.13106/jafeb.2020.vol7.no11.789>
- Undale, S., Kulkarni, A., & Patil, H. (2020). Perceived eWallet security: impact of COVID-19 pandemic. *Vilakshan - XIMB Journal of Management*. <https://doi.org/10.1108/xjm-07-2020-0022>
- Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. *MIS Quarterly: Management Information Systems*, 27(3), 425–478. <https://doi.org/10.2307/30036540>
- Venkatesh, V., Thong, J. Y. L., & Xu, X. (2012). Consumer acceptance and use of information technology: Extending the unified theory of acceptance and use of technology. *MIS Quarterly: Management Information Systems*, 36(1), 157–178. <https://doi.org/10.2307/41410412>
- Wu, L. H., Wu, L. C., & Chang, S. C. (2016). Exploring consumers' intention to accept smartwatches. *Computers in Human Behavior*, 64, 383–392. <https://doi.org/10.1016/j.chb.2016.07.005>
- Zhao, Y., & Bacao, F. (2021). How does the pandemic facilitate mobile payment? An investigation on users' perspective under the COVID-19 pandemic. *International Journal of Environmental Research and Public Health*, 18(3), 1–22. <https://doi.org/10.3390/ijerph18031016>