

Sustainability on Adoption of Mobile Payment During Covid19: The Role of Domain Specific Innovativeness (DSI)

Geetha Muthusamy, Amizatul Hawariah Awang, Hazalinda Harun, Rohaiza Kamis, Azlin Zanariah Bahtar, Zarinah Abu Yazid, Shahreena Daud

Faculty of Business and Management, Universiti Teknologi MARA Cawangan Melaka,
Kampus Bandaraya Melaka, 110 Off Jalan Hang Tuah, 75300 Melaka, Malaysia
Email: geethamuthusamy@uitm.edu.my

To Link this Article: <http://dx.doi.org/10.6007/IJARBSS/v13-i8/18226> DOI:10.6007/IJARBSS/v13-i8/18226

Published Date: 20 August 2023

Abstract

Mobile payments (M-payment) refer to the use of mobile technology to conduct transactions. Developments in information technology in the business world have paved the way for the ubiquitous usage of m-payments. The adoption of m-payment has seen a sharp uptake during Covid-19 pandemic in Malaysia. However, some of the m-payment methods relatively show low adoption rates. While the government believed that it benefits both customers and business operations, this technology is also linked to several weaknesses resulting in lower efficiency as well as customer acceptance. There is still a lot of education and innovation that needs to be done on the benefits of m-payments among Malaysians to increase the use and adoption rate. Marketing practitioners thus seek methods that will not only enhance the m-payment service process but also update their marketing approaches by emphasizing consumers' propensity to embrace and use new technologies based on their specific innovativeness. Integrating new attributes like domain specific innovativeness (DSI) is known to facilitate innovation and fulfill the functional needs of customers. The purpose of this concept paper is to show the positive effect of these attributes on the adoption of m-payment via the activation of customers' socially driven need to perceive themselves as unique, as per the Technology Acceptance Model (TAM).

Keywords: Mobile Payment, Technology Acceptance Model, Covid19, Domain Specific Innovativeness.

Introduction

Undoubtedly, the rapid growth of technological integration and mobile payments (m-payments) is evident worldwide (Kathuria et al., 2020). M-payments refer to the use of mobile devices to process payments. It involves employing mobile devices and Internet connections to conduct payment transactions in product or service purchases (Di Pietro et al., 2015). For a

long time, cash, debit cards, and credit cards were the only methods of payment. However, the proliferation of smartphone usage has led to the ability to pay with just a wave or tap of one's phone on a reader device, which is a form of m-payment called Near Field Communication (NFC). Some popular examples of this payment method are Apple Pay, Android Pay, and Samsung Pay. There are five categories of m-payments, namely mobile device networks, action bills, applications, contactless, and SMS-based. Overall, m-payments are projected to constitute the payment systems of the future. In line with this, continuous advancements in information and communication technology and the corresponding transformations in the corporate environment offer significant opportunities for the expansive adoption of m-payment systems. Adoption of m-payment such as e-wallets has seen a sharp uptake during Covid-19 pandemic in Malaysia. However, the pandemic has made digitalization of selling and purchasing something that is important and must be implemented immediately to remain competitive and sustain customers' satisfaction and loyalty (Isa et al., 2020; Khan et al., 2020; Prasetyo & Fuente, 2020; Saadah & Ying, 2020). In fact, some of the m-payment methods relatively show low adoption rates. There is still a lot of education that needs to be done on the benefits of m-payments among Malaysians to increase the use and adoption rate.

Customers' adoption experience of a service greatly affects a technology's success, which suggests that the adoption of m-payment services may only spread if customers form favorable perceptions of these services (Oliver 1994; Sun et al. 2009) especially during this Covid-19 pandemic. Considering these circumstances, organizations are striving to build and expand their services on these platforms; meanwhile, marketing practitioners are seeking ways to capitalize on m-payment processes and update their marketing efforts by focusing on consumers' growing propensity to embrace new technologies based on their specific innovativeness. For these reasons, m-payment services must be positioned accurately and effectively to achieve organizations' digital transformation. Although a great deal of consideration has given on m-payment activities, there is a lack of adequate quality in m-payment services since the emergence of new technologies and development in the overall online presence, that it might influence customers' emotion which will affect their level of adoption towards mobile payments (Khan et al., 2020; Saadah & Ying, 2020). The continuous changes in preferences of customers, will develop a need for innovation to gratify the customers' demands.

A product's domain and its perceived innovativeness have drawn scholarly interest over the past two decades, particularly following the construct's development. In regard to this, it is crucial to integrate consumer innovativeness in this study. Therefore domain-specific innovativeness (DSI) has been integrated in the Technology Acceptance Model (TAM) as a moderating factor to demonstrate user adoption on m-payments.

Literature Review

Technology Acceptance Model

The TAM explains customer's attitudes towards different technological innovations which influence user motivation thus determine their intentions to use the information system (Davis, 1989). This theory has been developed from Theory of Reasoned Action (TRA). TRA depicts user behavior from the perspective of social psychology. TRA is very general, and person's behavioral intention is predicted by his/her attitude and subjective norms. TAM has been found consistently in explaining user intention and behavior and TAM is also more

favorable compared to other models like the TRA and the Theory of Planned Behavior (TPB) (Venkatesh & Davis, 2000). While TAM adoption behavior or attitude towards technology use is determined by the perceived usefulness (PU) and perceived ease of use (PEOU) of the technology. PU explains the level of a person's belief that the usage of a technology can enhance their productivity and performance. Meanwhile, PEOU reflects how strongly a person perceives that the usage of a technology requires minimal effort (Davis, 1989).

TAM has been widely adopted to explain various computer and information technologies such as mobile banking as in (Purohit & Arora, 2021), internet banking as in (Chauhan et al., 2019a), e-wallet as in (Teo et al., 2020), mobile payment system as in (Liébana-Cabanillas et al., 2017), e-government as in (Warkentin et al., 2018) and mobile financial service as in (Abdinoor & Mbamba, 2017).

However, according to (Leong et al., 2021), the original TAM may not be sufficient in explaining consumer behaviour in digital era. Therefore, they extend this model with other variable such as perceived security, perceived compatibility, user mobility and personal innovativeness in predicting the behavioural intention in using m-payment. Similar research by (Matemba & Li, 2018) also state that TAM is lacks factor to describe individual's behavioral intention to use complex technology such as mobile wallet.

Behavioral Intention (Intention to Adopt)

Technology adoption is described as the acceptance, integration, and utilization of a new technology into an environment. It has been a major academic topic since the mid-nineteenth century. Previous research has been useful in determining whether new products and services will succeed or fail. Consumer acceptance of technology has been shown to be influenced by individual expectations and attitudes (Alwi et al., 2019). Consumers' willingness to accept a particular technology is determined by their understanding of and behaviour with modern technologies. As a result, consumer acceptance is defined as a user's willingness to receive mobile wallet information from other users. Customers' acceptance is not proven solely by their claim that the technology is being used for an unintended purpose; rather, consumers' acceptance must be demonstrated by actual use of the technology (Alwi et al., 2021). As a result, the level of acceptance for mobile payments may decrease, and cashless nations may be impossible to achieve if the Malaysian government, in particular, does not begin to address the problems that exist (Kumar & Yukita, 2021). This is in addition to the fact that the main drivers of the intention to use m-payment are crucially significant. It should be noted that, due to the rapid growth in mobile payment, particularly during the Covid-19 pandemic, the factors influencing intention to adopt mobile payment must be thoroughly understood.

Perceived Usefulness

In the TAM, essential variables are PEOU, PU, and behavioral intention. TAM posits that a person's behavioral intention to adopt a technology is shaped by his/her perceptions of whether the technology will improve his/her work performance, i.e., PU (Venkatesh & Davis, 2000). TAM presents a theory to investigate and understand how users perceive and use information systems, with the concepts of PU, PEOU, behavioral intention, and actual usage (Davis, 1989). The extent of a user's belief that a technology will heighten their performance is referred to as PU. In the context of financial transactions, the PU of an m-payment app is determined by how well the technology can enhance the transaction's performance (Munthali, George & Xuelian, 2020). PU has consistently been found to be a strong predictor of

behavioral intention to use a technology in various TAM studies, with standardised regression co-efficient often around 0.6. Because PU is such an essential antecedent of usage intention, it is crucial to learn the factors that influence it and how their influence evolves over time as users become more experienced with the technology (Venkatesh & Davis, 2000).

The influence of Perceived Usefulness on Intention to Adopt M-payment

Many studies from various viewpoints have demonstrated the effect of usefulness on mobile payment acceptance. A survey was distributed through online channels in a study by (Liébana-Cabanillas et al., 2018) to evaluate the determinants of behavioral intention to utilize m-payment services in Spain. Second, (Shankar & Datta, 2018) investigate the elements that influence m-payment adoption intentions in India. Koenig-Lewis et al (2015), meanwhile, used an online survey to examine the factors that affect business school students' adoption of mobile payment in France. Furthermore, in Malaysia, (Ooi & Tan, 2016) revealed that usefulness is strongly and positively connected to behavioural intention to utilise mobile payment. m-payment systems' PU has a considerable impact on consumers' adoption behaviour, according to all four research.

Perceived Ease of Use

Meanwhile, PEOU refers to a user's perception that utilizing a certain technology will be effortless. In the context of financial transactions, PEOU is determined by an m-payment app's low cost (e.g., free to download) and simplicity to use anywhere at any time (Davis, 1989). Venkatesh and Davis (2000) described PEOU as users' belief in the accessibility of a technology, wherein they trust that it is effortless to use and operate. Users' level of interaction and intensity with the system may also be translated into PEOU. Meanwhile, the TAM figure illustrates that PU and PEOU of a technology affects adoption of technology and the mobile payment platform. This means that an individual's willingness to adopt new technology, such as a form of payment based on financial technology, is determined by their acceptance of the technology's benefits and ease of use (Widayat et al., 2020). A study by (Karsen et al., 2019) demonstrated that PEOU is among the top ten variables cited most often to predict the adoption of MP systems in a literature study.

The influence of Perceived Ease of Use on Intention to Adopt M-payment

PEOU is a fundamental driver of users' attitude and behavioral intention to adopt a technology and it has been proven that PEOU has a significant influence on a customer's decision to buy as affected by past purchase experiences (Yang et al., 2021). PEOU also is known to be a critical determinant of adoption intention in numerous m-commerce and m-banking studies (Shankar & Datta, 2018). Online users derive more benefits from technology; in other words, whenever a technology is easier to use, it will become the preferred payment method for customers to do transactions. A study by (Yang et al., 2021) found that PEOU significantly increases users' intention to adopt e-wallet technology. PEOU also appears to be significant in determining customers' intention to use mobile payment for customers at US local bank (Albashrawi, 2017). PEOU further was found to enhance mobile payment adoption intention and was identified as the strongest predictor of mobile payment adoption intention in India (Shankar & Datta, 2018).

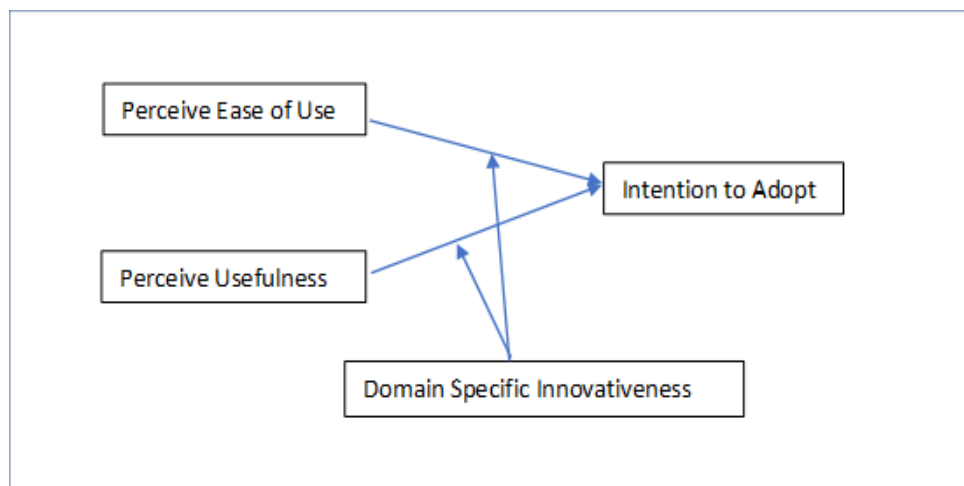
Domain Specific Innovativeness (DSI)

Consumer innovativeness is widely recognized by marketers as critical for better business profits and competitive advantage via the effective diffusion of innovation. DSI is one of the approaches to measure innovativeness and refers to the propensity to build knowledge and embrace new product innovations in one's domain of interest (Goldsmith & Hofacker, 1991). DSI can influence a range of innovative behaviors, including purchase intention, product attitude, new product adoption, and new product ownership (Roehrich, 2004). In addition, DSI encourages consumers to make good product-related evaluations. Several researchers apply DSI in various product and services such as (Chauhan et al., 2019b) applied DSI in internet banking context and identify DSI is among the strongest determinants of adoption intention. Furthermore, according to (Aharony, 2014) those who are more innovative have a higher behavioural intention to use cloud computing because these people recognise the importance of technical innovations and are willing to participate in technological advancements. Next, (Hirunyawipada & Paswan, 2006) applied DSI in high technology product and revealed its significant role in increasing consumers' adoption intention. A study by (Citrin et al., n.d.) examine the DSI for consumer adoption of the internet for online shopping. They found the DSI have direct influence on consumers adoption on internet shopping. (Chao et al., 2012) applied DSI on new product context and identified consumers with high level of DSI are more likely to have a higher adoption intention of new products and to own new products before others.

DSI is divided into two categories: Product-possessing innovativeness (PPI) and Information-possessing innovativeness (IPI). PPI focuses on the current adoption dimension of DSI and IPI refers to the assessment of the information-seeking aspect of DSI, such as interest in learning new IT developments. The PPI represents consumers' tendency to adopt and purchase a specific product earlier compared to others. According to (Jeong et al., 2017) innovative consumers have a heightened sensitivity to the benefits of new technology. When a new product is released, they are the first ones realize benefits of new technology and adopt product. The study by (Ulo et al., 2020) have identified direct relationship between PPI and intention of purchasing new smartphone. IPI explains how consumers may gather information about their preferred product area, but do not always own new products. This learning process leads to consumers to adopt or purchase new product (Al-Jundi et al., 2019). Jeong et al. (2017) revealed that high levels of IPI among consumers indicate their willingness to learn about new products and their desire to gain confidence in the product's usage despite not possessing the product itself. They will try to seek information by utilizing from variety of sources such as social media, magazines, news, the internet and so on, analyze and learn about new products before accruing the products. However, a study by (Ulo et al., 2020) showed that IPI is not significant to influence intention of purchasing new smartphone. Greater knowledge about the new smartphone failed to offer any added advantage in its use.

The moderating effect of DSI towards adoption of m-payment technology can be expected. Having said that a person with high innovativeness have positive attitude towards mobile banking adoption (Elhajjar & Ouaida, 2020). A study by (Chauhan et al., 2019b) used the TAM to analyse consumers' adoption intention towards internet banking in India, with DSI as a moderator variable. The findings show that DSI significantly and positively influences PEOU, indicating that highly innovative individuals is more likely to adopt innovative products and services as they can learn how to use technology with less perceived effort. Similar to this study, it can be postulated that integration of DSI will strengthen the relationship of this study.

Research by (Bigné-Alcaiz et al., 2008) showed that innovativeness had significant positive effect on consumer's future intention to adopt products or services using internet.



Research Framework

Figure 1: Theoretical framework. Source: TAM model (Davis, 1989)

The TAM model (Davis, 1986) will be applied in this study. The originality of the framework will be maintained. However, Domain Specific Innovativeness (DSI) construct will be integrated this study as a moderating factor to identify the enrichment of the model by the factors. Previous studies of different domains have postulated the significant of DSI in their work. In seeking to better understand the M-payment sustainability, the contribution of the moderator is vital to deliver a visible innovation. Refer Figure 1 for the theoretical framework of the study.

Contribution and Conclusion

The findings from this study may benefit service providers from various industries which are using the M-payment services as a transaction method. From the academic standpoint, findings produced will nourish existing literature on TAM components relating to M-payments. Likewise, the study may benefit the marketers gain an understanding on consumer adoption regarding m-payment services. Notably, a key recommendation of this paper for service providers is that they must focus on innovations that support the sustainability of m-payment technology. This finding might feed the current arguments on the role of DSI in product usefulness and the adoption of innovation. It is in line with the works of previous scholars (Walters and Lancaster, 1999; Zeithaml, 1988; Carpenter et al., 1994) who have established that that supplementing a product with new attributes enhances its perceived value. The study has vital practical implications and underscores the significance of this construct for service providers. For example, it creates a future path for m-payment methods, whereby determining the predictors of consumers' stronger m-payment adoption is imperative. Although this study may not be fully generalizable, it indisputably offers important insights for organizations, particularly on the innovative attributes that can contribute to the m-payment services' functional performance.

References

- Abdinoor, A., & Mbamba, U. O. L. (2017). Factors influencing consumers' adoption of mobile financial services in Tanzania. *Cogent Business and Management*, 4(1). <https://doi.org/10.1080/23311975.2017.1392273>
- Aharony, N. (2014). Cloud computing: Information professionals' and educational technology experts' perspectives. *Library Hi Tech*, 32(4), 645–666. <https://doi.org/10.1108/LHT-02-2014-0024>
- Albashrawi, M. (2017). Privacy and Personalization in Continued Usage Intention of Mobile Banking : An Integrative Perspective. *Journal Information Systems Frontiers*, <https://doi.org/10.1007/s10796-017-9814-7>.
- Al-Jundi, S. A., Shuhaiber, A., & Augustine, R. (2019). Effect of consumer innovativeness on new product purchase intentions through learning process and perceived value. *Cogent Business and Management*, 6(1). <https://doi.org/10.1080/23311975.2019.1698849>
- Alwi, S., Alpandi, R. M., Salleh, M. N., Basir, I. N., & Ariff, F. F. M. (2019). An empirical study on the customers' satisfaction on fintech mobile payment services in malaysia. *International Journal of Advanced Science and Technology*, 28(16), 390–400.
- Alwi, S., Nadia, M., Salleh, M., Alpandi, R. M., Ya'acob, F., Mariam, S., & Abdullah, M. (2021). Fintech As Financial Inclusion: Factors Affecting Behavioral Intention To Accept Mobile E-Wallet During Covid-19 Outbreak. *Turkish Journal of Computer and Mathematics Education*, 12(7), 2130–2141. <https://turcomat.org/index.php/turkbilmart/article/view/3356>
- Bigne-Alcaiz, E., Ruiz-Mafe, C., Aldas-Manzano, J., & Sanz-Blas, S. (2008). Influence of online shopping information dependency and innovativeness on internet shopping adoption. *Online Information Review*, 32(5), 648–667. <https://doi.org/10.1108/14684520810914025>
- Chauhan, V., Yadav, R., & Choudhary, V. (2019a). Analyzing the impact of consumer innovativeness and perceived risk in internet banking adoption: A study of Indian consumers. *International Journal of Bank Marketing*, 37(1), 323–339. <https://doi.org/10.1108/IJBM-02-2018-0028>
- Citrin, A. V., Sprott, D. E., Silverman, S. N., & Stem, D. E. (n.d.). *Adoption of Internet shopping: the role of consumer innovativeness*. <http://www.emerald-library.com>
- Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly: Management Information Systems*, 13(3), 319–339. <https://doi.org/10.2307/249008>
- Elhajjar, S., & Ouaida, F. (2020). An analysis of factors affecting mobile banking adoption. *International Journal of Bank Marketing*, 38(2), 352–367. <https://doi.org/10.1108/IJBM-02-2019-0055>
- Fagan, M., Kilmon, C., & Pandey, V. (2012). Exploring the adoption of a virtual reality simulation: The role of perceived ease of use, perceived usefulness and personal innovativeness. *Campus-Wide Information Systems*, 29(2), 117–127. <https://doi.org/10.1108/10650741211212368>
- Goldsmith, R. E., & Hofacker, C. F. (1991). Measuring consumer innovativeness. *Journal of the Academy of Marketing Science*, 19(3), 209–221. <https://doi.org/10.1007/BF02726497>
- Hirunyawipada, T., & Paswan, A. K. (2006). Consumer innovativeness and perceived risk: Implications for high technology product adoption. *Journal of Consumer Marketing*, 23(4), 182–198. <https://doi.org/10.1108/07363760610674310>

- Jeong, S. C., Kim, S. H., Park, J. Y., & Choi, B. (2017). Domain-specific innovativeness and new product adoption: A case of wearable devices. *Telematics and Informatics*, 34(5), 399–412. <https://doi.org/10.1016/j.tele.2016.09.001>
- Karsen, M., Chandra, Y. U., & Juwitasary, H. (2019). Technological factors of mobile payment: A systematic literature review. *Procedia Computer Science*, 157, 489–498. <https://doi.org/10.1016/j.procs.2019.09.004>
- Kim, C., Mirusmonov, M., & Lee, I. (2010). An empirical examination of factors influencing the intention to use mobile payment. *Computers in Human Behavior*, 26(3), 310–322. <https://doi.org/10.1016/j.chb.2009.10.013>
- Koenig-Lewis, N., Marquet, M., Palmer, A., & Zhao, A. L. (2015). Enjoyment and social influence: predicting mobile payment adoption. *Service Industries Journal*, 35(10), 537–554. <https://doi.org/10.1080/02642069.2015.1043278>
- Krey, N., Chuah, S. H. W., Ramayah, T., & Rauschnabel, P. A. (2019). How functional and emotional ads drive smartwatch adoption: The moderating role of consumer innovativeness and extraversion. *Internet Research*, 29(3), 578–602. <https://doi.org/10.1108/IntR-12-2017-0534>
- Kumar, S., & Yukita, A. L. K. (2021). Millennials Behavioral Intention in Using Mobile Banking: Integrating Perceived Risk and Trust into TAM (A Survey in Jawa Barat). *Proceedings of the International Conference on Business and Engineering Management (ICONBEM 2021)*, 177, 210–217. <https://doi.org/10.2991/aebmr.k.210522.028>
- Leong, C. M., Tan, K. L., Puah, C. H., & Chong, S. M. (2021). Predicting mobile network operators users m-payment intention. *European Business Review*, 33(1). <https://doi.org/10.1108/EBR-10-2019-0263>
- Liébana-Cabanillas, F., de Luna, I. R., & Montoro-Ríosa, F. (2017). Intention to use new mobile payment systems: A comparative analysis of SMS and NFC payments. *Economic Research-Ekonomska Istrazivanja*, 30(1), 892–910. <https://doi.org/10.1080/1331677X.2017.1305784>
- Liebana-Cabanillas, F., Marinkovic, V., Ramos de Luna, I., & Kalinic, Z. (2018). Predicting the determinants of mobile payment acceptance: A hybrid SEM-neural network approach. *Technological Forecasting and Social Change*, 129(February 2017), 117–130. <https://doi.org/10.1016/j.techfore.2017.12.015>
- Matemba, E. D., & Li, G. (2018). Consumers' willingness to adopt and use WeChat wallet: An empirical study in South Africa. *Technology in Society*, 53, 55–68. <https://doi.org/10.1016/j.techsoc.2017.12.001>
- Munthali, George, N. C., & Xuelian, W. (2020). A new decade for social changes. *Technium Social Sciences Journal*, 6.
- Ooi, K. B., & Tan, G. W. H. (2016). Mobile technology acceptance model: An investigation using mobile users to explore smartphone credit card. *Expert Systems with Applications*, 59, 33–46. <https://doi.org/10.1016/j.eswa.2016.04.015>
- Purohit, S., & Arora, R. (2021). Adoption of mobile banking at the bottom of the pyramid: an emerging market perspective. *International Journal of Emerging Markets*. <https://doi.org/10.1108/IJOEM-07-2020-0821>
- Roehrich, G. (2004). Consumer innovativeness - Concepts and measurements. *Journal of Business Research*, 57(6), 671–677. [https://doi.org/10.1016/S0148-2963\(02\)00311-9](https://doi.org/10.1016/S0148-2963(02)00311-9)
- Shankar, A., & Datta, B. (2018). Factors Affecting Mobile Payment Adoption Intention: An Indian

Perspective. *Global Business Review*, 19(3_suppl), S72–S89.

<https://doi.org/10.1177/0972150918757870>

Teo, S. C., Law, P. L., & Koo, A. C. (2020). FACTORS AFFECTING ADOPTION OF E-WALLETS AMONG YOUTHS IN MALAYSIA. *Journal of Information System and Technology Management*, 5(19), 39–50. <https://doi.org/10.35631/jistm.519004>

Ulo, K. L. M., Firmansyah, A., Dwi Rahmanisa, A., Michel, A., Putri, D. A., Zafirah, H. S., Hidayanto, A. N., & Pratama, F. A. (2020, November 3). Purchasing New Smartphones among University Students: The Role of Domain-Specific Innovativeness (DSI) and Technology Product Characteristics. *2020 5th International Conference on Informatics and Computing, ICIC 2020*. <https://doi.org/10.1109/ICIC50835.2020.9288608>

Venkatesh, V., & Davis, F. D. (2000). Theoretical extension of the Technology Acceptance Model: Four longitudinal field studies. *Management Science*, 46(2), 186–204. <https://doi.org/10.1287/mnsc.46.2.186.11926>

Warkentin, M., Sharma, S., Gefen, D., Rose, G. M., & Pavlou, P. (2018). Social identity and trust in internet-based voting adoption. *Government Information Quarterly*, 35(2), 195–209. <https://doi.org/10.1016/j.giq.2018.03.007>

Widayat, W., Masudin, I., & Satiti, N. R. (2020). E-Money payment: Customers' adopting factors and the implication for open innovation. *Journal of Open Innovation: Technology, Market, and Complexity*, 6(3). <https://doi.org/10.3390/JOITMC6030057>

Yang, M., Al Mamun, A., Mohiuddin, M., Nawi, N. C., & Zainol, N. R. (2021). Cashless transactions: A study on intention and adoption of e-wallets. *Sustainability (Switzerland)*, 13(2), 1–18. <https://doi.org/10.3390/su13020831>