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Original Article

# Exploring Customer Technology Adoption Behavior for the Usage of E-Money in Indonesia: Mediating Role of Agent Credibility in the New Normal Era

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## Abstract

People are increasingly experiencing changes due to technological developments, such as those in payment methods using e-money. However, technological uncertainty still remains for users. The credibility of e-money agents could help convince users and increase the intention to use e-money. This research used survey questionnaires to collect data from 510 e-money user residents of Central Java and the special region of Yogyakarta, Indonesia. Structural equation modeling technique was used to analyze data. The results showed a model fit for the study: $\chi 2/(df) = 2.87$, GFI = .95, AGFI = .92, NFI = .97, CFI = .98, and RMSEA = .06. Results showed perceived technological uncertainty (PTU) has a direct significant positive effect ($\beta = .24$, $p = .00$) on the agent credibility (AC) of e-money. The mediation test showed PTU has a significant effect ($\beta = .52$, $p = .00$) on customer technology adoption behavior (CTAB) through AC. Knowledge of technology (KT) has a direct significant positive effect ($\beta = .29$, $p = .00$) on AC. However, mediating effect between KT and CTAB has an insignificant effect through AC ($\beta = .32$, $p = .07$). Also there is direct significant positive effect between AC and CTAB ($\beta = 1.12$, $p = .00$), and between CTAB and continuance usage intention ($\beta = .68$, $p = .00$). These results show that the influence of agency credibility is indispensable as a mediating factor that can encourage and influence the use of e-money usage by people.

The spread of the COVID-19 virus in 2020 became problematic because it has a wide impact not only on the health aspect but also on the economic aspect, especially the business sector (Papadopoulos et al., 2020). Business sustainability cannot be separated from technology. However, during the pandemic COVID-19, it was recommended to reduce activities related to direct financial transactions, so efforts are made related to financial transaction activities to replace transaction habits by adopting technology (Kleis et al., 2011) as one form of support to break the chain of virus spread.

One of the efforts made by the government to prevent the spread of the virus is to recommend cashless transactions in the payment system, especially now that we are in the fintech era. This is in line with the study which also raises the question of whether cash payments are still relevant (Faith, 2018). Reinartz et al. (2019) identify and discuss five main sources of digital technology such as automation, individualization, ambient engagement, interaction and transparency, and also control. Furthermore, innovation strategies and concepts began to emerge by offering various conveniences for customers in this era (Sunarjo et al., 2020), as well as creating these sources of value at affordable prices at a higher level,

such as convenience, relevance, experience, empowerment, and perceived monetary and ecological savings to the customer level.

One of the most widely used transaction innovations today is electronic money (e-money), which many consumers and traders are starting to adopt because of its ease of use (Utami & Kusumawati, 2017). One of the things that can decide them to use e-money is social influence, the more familiar E-money is in today's transaction world, the more new users follow this trend (Aritonang & Arisman, 2017). The concept of e-money has been applied to customer database security, according to research by Baseri et al. (2013) proposing untraceable electronic cash schemes and claiming that their schemes were able to protect customer names, protect detect the identity of multiple shoppers, and protect the data, protect the attachment of the coin's ability to manage bank databases. E-Money is also often referred to as electronic money, digital money, digital money, electronic currency, and digital currency (Rotman, 2014).

Bank Indonesia has proclaimed 2014 and is proven by the national non-cash movement (GNNT) which makes use of e-money in Indonesia to develop and the number is increasing. It is proven by the more people use it, the more new users follow the trend (Aritonang & Arisman, 2017). Through the support from the government by providing public facilities (transportation, toll roads, parking) that are directly integrated with e-money, the interest of e-money users has significantly increased (Ulurrosyad & Jayanto, 2020).

Users are motivated to use e-money because of its convenience, speed, and efficiency (Putra et al., 2020). Perception of benefits is one of the factors that influence Indonesian consumers to use e-money. When consumers in Indonesia feel that e-money makes their activities easy, does not waste time, offers discounts or promotions, tends to be efficient compared to using cash, debit/credit cards, refills are easy to find, and almost all places accept their use, then they will adopt it (Miliani et al., 2013).

The number of e-money instruments used experienced a spike during the implementation of Indonesian large-scale social restrictions (Siregar, 2021). In April 2020, the number reached 412.1 million, an increase from the previous month's 330.4 million. But in the following month, it fell again to 346.9 million. In June 2020, the use of e-money slightly increased by 353.6 million. The Indonesian Fintech Association assesses that financial technology companies have the potential to support national economic recovery. During the pandemic, digital payments have helped more individuals and MSMEs in transacting.

The main concern that can change the customers' interest in using e-money is that there is an intermediary agent. These agents are merchants who have collaborated with e-money card issuers who are used by users. These agents are to bridge in conveying important information about the advantages and benefits of using server-based electronic money in various payment transactions (Nugroho et al., 2018), especially at this time, as we know a lot of transactions or shopping are done from home due to activity and mobility restrictions to reduce the spread of COVID -19. Another example is when taking public or private transportation, we can use e-money as a cashless payment tool, for example for toll payments, when we are going to shop at the mall or buy food, as we know that many shopping places and restaurants provide payments using e-money, without need to give physical money.

Furthermore, now that we have entered a new normal era condition, where we are side by side with the COVID-19 virus, people must start getting used to changing habits (Setyanto & Sunarjo, 2021). Regarding the willingness to adopt or use e-money, the role of agents is needed. Consumer decisions are a manifestation of the success of agents who optimally provide their ability to change consumers' mindsets to build trust in the use of technology (Tamargo et al., 2014). E-money makes cash handling easier and saves rupiah money management costs, getting discounts and cashback, easier to track transactions, safer from theft, and can be used to buy many necessities (Chew et al., 2021). Based on the above explanation, the use of e-money during the pandemic and the new normal era needs to be deeper examined especially

regarding the intensity of its use on its effect on perceived technological uncertainty, knowledge of technology through agent credibility, and customer technology adoption behavior.

E-money cards are also seen as one that is dynamically continuo innovative because it does not dramatically change an individual or as a non-revolutionary evolution of behavior (Chayanon et al., 2020). Although there are still many Indonesian consumers who are not interested in adopting it (Hasyim, 2022). Apart from peer-to-peer payments, the e-money system also relies on agents/merchants, which remains an important and main asset of service providers (Ranyali, 2019). In this study, these agents represent commercially established individuals and outlets that function as connecting points, where mobile money users can make cash-in and cash-out and are usually scattered in various locations to help handle logistics challenge (Odoom & Kosiba, 2020). Gupta et al. (2019) attempted to expand the UTAUT model using perceived credibility as a mediating variable. Credibility refers to a perceived quality and examples such as "trusting the information" or "trusting the results" (Kulms & Kopp, 2016; Odoom & Kosiba, 2020). Accordingly the aim of this study will contribute to behavioral science, which is in line with the research objective of empirically testing a hypothesized model based on the theory of acceptance and use of technology to test Indonesian people's intention to use electronic money in a sustainable manner by measuring the service success of agent credibility and for examining behavior continuance usage intention.

## Literature Review

This section will describe the relevant literature, theories, concepts, and previous studies to support the relationship between perceived technological uncertainty, knowledge of technology, agent credibility, customer technology adoption behavior, continuance usage intention, and research hypotheses. Detailed information is described in the following explanation.

### Theory of Acceptance and Use of Technology (UTAUT)

UTAUT works as a comprehensive model that can be applied across a wide range of applications and has proven to be a valid tool for predicting adoption behavior in various technology-based systems (Alvi, 2021). It is undeniable that economic activity is very relatable to the electronic sector. This is the condition in which buying and selling transactions in Indonesia are increasing with the existence of e-commerce services and other institutions that offer payments or transactions using electronic money. Furthermore, in understanding the intended adoption of various forms of Information technology (IT) or Information systems (IS) at the individual level, the strength and explanatory power of this model varies, especially against the background of advancing IT / IS.

One of the notable technology among them is the technology acceptance model (TAM) (Davis, 1989). Two prominent additional frameworks have been developed TAM (Venkatesh & Davis, 2000) and the unified UTAUT (Venkatesh et al., 2003; Venkatesh et al., 2012) to improve the predictive ability to understand adoption intentions related to contemporary IT / IS. This research showed the main management implications and identified certain strategies to strengthen new businesses in the context of the latest technology (Monoz-Leiva et al., 2017).

### Perceived Technological Uncertainty

Considering perceived uncertainty as a sub-dimensional construct, we investigate the dimensions of perceived uncertainty identified by Yang et al. (2015), i.e., perceived technology uncertainty, perceived regulatory uncertainty, perceived service intangibility (descriptive uncertainty), and information asymmetry (information uncertainty) (Khan et al., 2020).

The perceived uncertainty in research (Gao & Waechter, 2015) was defined as the extent to which potential users believed that using digital cash included possible security and privacy threats. In line with the research by Hong and Thong (2013) in the survey, evidenced by as many as 92% of respondents based

on the survey that they do not trust private companies to keep personal information, even when the company promises to do so. As a result, with this study, researchers proposed an agent as a mediator, in line with one of the explanations that underlie the expansion of the technology acceptance model (TAM) in consumer studies with information systems (IS) which were several other constructs that mediated the influence of external variables on technology adoption intentions (Gu et al., 2009). Other than peer-to-peer payments, the digital cash system also relies on agents, who remain an important and major asset as a service provider.

Compatibility has the strongest effect on behavioral intentions, and other hand, credibility, performance expectations, business expectations, and social influence, sorted by effect size significantly influence cashless usage attitudes, which in turn affect behavior (Rilling, 2015). Furthermore, social identification and approach significantly influence users' intention to adopt it (Hsu & Lin, 2016).

Mikkelsen and Johnsen (2018) with a high level of technological uncertainty, had an impact on the company's sourcing strategy and its challenges which had an impact on the intention to adopt a product. Meanwhile, other research results showed that although the impact direction was the same, as a function of product category characteristics that affected the uncertainty of potential consumers and consumer sensitivity to that uncertainty (Erdem et al., 2002; Linder & Williander, 2017). Based on the literature reviewed, the proposed hypothesis is:

H1: Perceived technological uncertainty has a direct positive effect on agent credibility.

Credibility refers to perceived quality and instances like “trusting in information” or “believing the output” (Fogg & Tseng, 1999). While the relationship with UTAUT agent credibility is important for the success of mobile money services. In the research by Gupta et al. (2019); Odoom and Kosiba (2020) it seeks to expand the UTAUT model using perceived credibility as a mediating in explaining the antecedents, motivations, and continuance intention. Further, beyond their direct effects, the UTAUT conditions have indirect effects on the continuance intention through their effect on perceived agent credibility. Based on the literature reviewed, the proposed hypothesis is:

H2: Agent credibility mediates the relationship between perceived technological uncertainty and customer technology adoption behavior.

**Knowledge of Technology**

Knowledge of Technology in this study is the level of consumer knowledge of technological developments. Technology is a powerful tool in influencing and changing consumer behavior, the researchers refer to similar research on similar matters related to knowledge and technology adoption, Voogt and McKenny (2017) it was explained that the low integration of technology in Indonesia could be caused by several obstacles. The main obstacle included the facts of limitations in terms of knowledge and a low level of competence in the field of technology and/or technology potential. In addition, there was a lack of time to integrate technology.

The potential of technological knowledge is predicted by the method of link prediction in a directed network (Park & Yoon, 2018), which was suggested in this paper to represent the direction of predicted technology by adapting the concepts of reference and centralized concept. In addition, potential technology directions and themes were predicted to be provided as technological opportunities for convergence. New technologies that appear all the time will have an impact on consumer behavior through more knowledge of technology, then for companies to survive and win those who can meet consumer needs first (Jose, 2017), over a certain period of time can be fully influenced by headlines there are processed.

Zhou et al. (2010) considered ways to facilitate the intermediate condition wins; the user's knowledge, abilities, and resources. From a digital money perspective, it was said that the skills needed to configure and operate technology were the conditions of the facilities needed to engage in services. Furthermore, Odoom and Kosiba (2020) revealed that agent credibility was an indispensable requirement to assist in the operation of technology and at the same time, to maintain the relationship between cellular service providers and customers. Based on the literature reviewed, the proposed hypothesis is:

H3: Knowledge of technology has a direct effect on agent credibility.

Wang (2020) found different results, it was said that the effect of customer interest in adopting technology was higher for customers with low levels of knowledge than customers who were loyal to using technology products, towards it. Based on the literature reviewed, the proposed hypothesis is:

H4: Agent credibility mediates the relationship between knowledge of technology and customer technology adoption behavior

**Agent Credibility**

In this study, the agent is an e-money merchant. The role of agents is needed so that more and more consumers adopt e-money (Alfansi & Daulay, 2021). Regarding the role of agent credibility, other constructs affect mediating external variables (Gu et al., 2009), as the system also relies on agents/traders, who remain an important asset and key service e-money agents/merchants became the motivation for advance services, that are contingent actors between service providers and mobile money users (Odoom & Kosiba, 2020). The UTAUT model could be expanded to include not only the organizational and technological environment (Venkatesh et al., 2003) but also user capabilities, resources, and factors. Another third-party security-related enabling IS service control. The researchers reinforced the proposition to expand the UTAUT model (Khalilzadeh et al., 2017) because the current research stream using UTAUT was largely based on a context that did not require a mediator (such as an agent/merchants), as well as digital money services. Hence, through a conceptual model, it seeks to advance insights into mediating the role of agent credibility on the correlation between UTAUT and the continuance usage intentions for the e-money payment system.

**Customer Technology Adoption Behavior**

Customer technology adoption behavior in this study is defined as a process of accepting and implementing IT to deliver payment. Tamargo et al. (2014) defined an epistemic model in which the object of credibility included not only information but also informant sources by maintaining a partially representative credibility base for the agent along with the information source so that with the existence of new information regarding its credibility, the agent will be able to revise partial orders on the user. Furthermore, it is very important for the sustainability of the mediation test results, and users' perceptions of the credibility of mobile money agents (Luarn & Lin, 2005).

These results were in line with the findings of Odoom and Kosiba (2020) explained that the UTAUT principle affected user intentions and behavior, but was conditional and better transmitted through e-money agents. In particular, beyond its direct effect, the UTAUT condition had an indirect effect on the intention to continue through an effect on the perceived credibility of the agent (Gupta et al., 2019). E-money has become the focus of agents in the competition for market share. Therefore, the pre and post-adoption phases of e-money are important to know, what motivations and reasons encourage users to want to adopt it (Sunarjo et al., 2021). Based on the literature reviewed, the proposed hypothesis is:

H5: Agent credibility has a direct effect on customer technology adoption behavior.

**Continuance Usage Intention**

Early adoption is the first step that can determine the success of an application, but continuance use intention is essential for long-term success (Balis & Harden, 2021). Abbasi et al. (2022) when using the IS success model and flow theory concluded that the quality factor of technology could affect user satisfaction and trust in continuing to use an application but not explaining the security factor.

Consumers usually have the intention not only to adopt the system and innovation but also to continue use after adopting a product (Setyanto & Sunarjo, 2021). However, from the latest literature, for example, it seemed that in empirical magnitude compared to the first or pioneer products, similar products that were marketed tended to be less attractive to consumers, given that most behavioral intention studies were focused on the adoption of innovative pioneering products (Zhou, 2013). Behavioral intention studies were focused on adoption (Zhou, 2013). So, continuity theory relied on experienced users and the desire for continuance usage, not solely on newcomers who would continue to use it continually, so keeping consumers to continue to trust and be loyal to our products must be a priority (Chanpariyavatevong, 2021; Bhattacherjee, 2001).

Meanwhile, continuance usage intention was usually seen through the use of post-adoption and post-purchase intention/behavior and was often a measure of the success of IS satisfaction (Wang et al., 2019). In addition, experts considered that behavioral intention in the original TAM was equated to continuing IS, and therefore, it was suitable for exploring IS continuation (Liao et al., 2009).

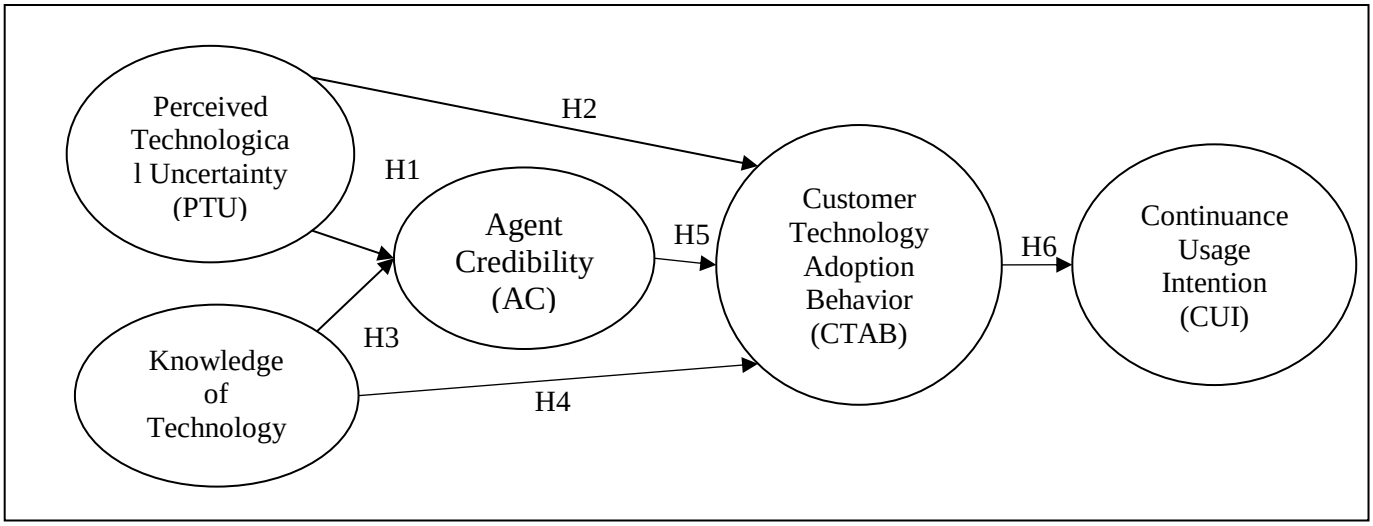
A similar example had been presented by Liou et al. (2015) regarding the intention of continuity toward product use had a significant effect (Oluwajana et al., 2021). As with empirical research, the focus on continuance usage did not appear to apply to research related to e-money (Madan & Yadav, 2016). According to Zhou (2013) in its use of continuance usage intentions and the theory that underlies it also agreed with the results. Based on the literature reviewed, the proposed hypothesis is:

H6: Customer technological adoption behavior has a direct positive effect on continuance usage intention.

Through an overview of the basic theories and the proposed hypotheses about the relationship between, perceived technological uncertainty, knowledge of technology, agent credibility, customer technology adoption behavior, and continuance usage intention, the authors propose the conceptual research model shown in Figure 1.

**Figure 1**

*Proposed Conceptual Framework*



## Method

### Participants

The research population consisted of residents of Central Java and the Special Region of Yogyakarta and Central Java, Indonesia, who have used e-money. Furthermore, a random sampling technique was carried out on e-money users at that location. Random sampling is used because the population is not known with certainty and all populations have the same opportunity as sample candidates.

### Instruments

This study used a questionnaire for data collection and to analyze hypotheses using structural equation modeling (SEM) with 14 question items. The research model consisted of five constructs. Perceived technological uncertainty was measured using three items of indicators (Chiou & Shen, 2012). Knowledge of technology was measured using three items of indicators (Taylor & Todd, 1995; Thompson et al., 1991). Agent credibility was measured using two items of indicators (Luarn & Lin, 2005). Customer technology adoption behavior was measured using three items of indicators (Gao & Waechter, 2015). Continuous usage intention was measured using three items of indicators (Beldad & Kusumadewi, 2015). See Table 3.

### Procedure

All items using a Likert scale were then measured on a seven-point (Leung et al., 2015). Each construct was measured to ensure validity, and all measurement items were adapted from the previous literature and only slightly modified to fit the research context.

### Ethical Considerations

Ethical Considerations This study has been carefully approved by the Research Ethics Commission Team for the Faculty of Economics and Business, Universitas Pekalongan, Indonesia, reference number 482/J.01.03/KOMTI-FEB/XI/2022, date 25 November 2022.

## Results

### Sample Description

The sample of this study consisted of 510 respondents. The majority of them were females (50.59%), almost half of participants with a median were males (49.41%). with a median age age 17-34 years old (53.90%) followed by 35-50 years old (40.00%). A majority of them (45.30%) had education bachelor's degree and with majority job as a lecturer (22.40%).

### The Measurement Model

Overall, the results show that the measurement model has met the appropriate statistical criteria after testing the validity of the measurement model with data using confirmation factor analysis (CFA). The results of the CFA show that all factor loadings were above .50 for all 14 items, thus indicating convergent validity for all latent variables.

Furthermore, the composite reliability (CR) value of perceived technological uncertainty has a value of (CR= .94), knowledge of technology (CR= .92), agent credibility (CR= .92), customer technology adoption behavior (CR= .95), and continuance usage intention (CR= .90). By following the requirements of an adequate level of indicator reliability (Bagozzi & Yi, 1988) that the average value of variance extract (AVE) for each variable is above (AVE= .50) and the factor loading value is also above .50 with a significance level of 5%. The results are in accordance with an adequate increase in indicators (Gaskin & Lim, 2016). See Table 3.

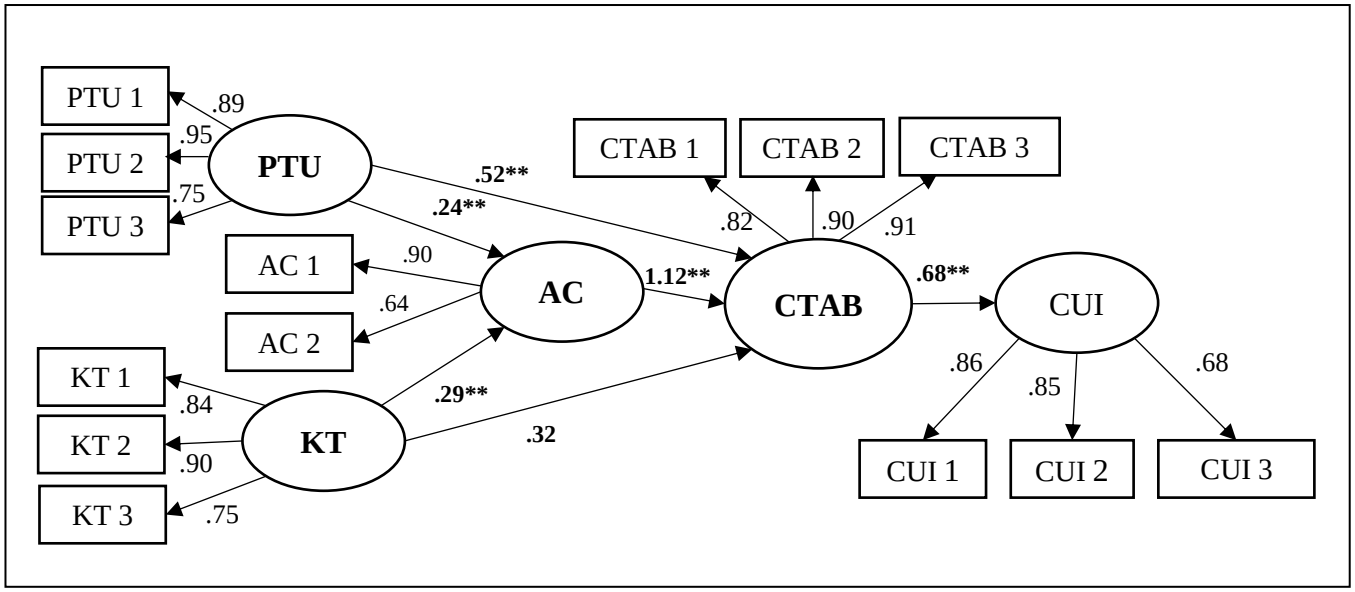
Confirmatory factor analysis was conducted to test the validity which includes convergent and discriminant validity. Convergent validity measures whether an item can effectively reflect the appropriate factor, whereas discriminant validity measures whether two factors are statistically different. On standard

items, mean-variance extraction (AVE), and composite reliability (CR), (as listed in Table 1), most of the item loads are greater than .70. Each AVE exceeds .50 and CR exceeds .70 so that all components meet convergent validity (Gefen et al., 2000). In addition, it has been shown that conditions with good reliability through the yield of all loading factors are greater than .70 (Nunnally, 1978).

**Table 1**
*Comparisons of Measurement Model*

| Fit Indices | Recommended value | Author source | Measurement model | Interpretation |
|---|---|---|---|---|
| $\chi 2/(df)$ | $\leqslant 3$ | Hayduck (1987) | 2.87 | Good Fit |
| Goodness of fit index (GFI) | $\geqslant .80$ | Scott (1994) | .95 | Good Fit |
| Adjusted for degrees of freedom (AGFI) | $\geqslant .80$ | Scott (1994) | .92 | Good Fit |
| Normed fit index (NFI) | $\geqslant .80$ | Hair et al. (1998) | .97 | Good Fit |
| Comparative fit index (CFI) | $\geqslant .90$ | Bagozzi and Yi (1988) | .98 | Good Fit |
| Root mean square error of approximation (RMSEA) | $\leqslant .06$ | Bagozzi and Yi (1988) | .06 | Good Fit |

**Figure 2**
*Structural Equation Modelling Analysis*




*Note.*$p < 0.05$, **$p < 0.01$, PTU = perceived technological uncertainty. KT = knowledge of technology, AC = agent credibility, CTAB = customer technology adoption behavior, CUI = continuance usage intention

**Hypotheses Testing**

Hypotheses testing was carried out using SEM analysis and results are shown in Figure 2. It can be concluded that the research model is a fit, as shown in Table 2, $\chi 2/(df) = 2.80$, probability= .00, AGFI = .92, GFI = .95, NFI = .97, CFI = .98, and RMSEA = .06. As shown in Table 2, 6 components and 14 indicators were discover through explanatory on the results, perceived technological uncertainty has a direct significant positive effect ($\beta = .24$, $p = .00$) on agent credibility and shows a significant p value. Therefore, H1 is supported that perceived technological uncertainty has a positive influence on the agent credibility of e-money is accepted. H2 is supported that perceived technological uncertainty has a significant effect on customer technology adoption behavior through agent credibility e-money is accepted. Furthermore, knowledge of technology has a direct significant positive effect ($\beta = .52$, $p = .00$) on agent credibility.

**Table 2**
*Measurement, Reliability, and Validity*

| Construct and Indicator | Mean | *SD* | Factor Loading | Composite Reliability | AVE |
|---|---|---|---|---|---|
| Perceived Technological Uncertainty (PTU) (Chiou & Shen, 2012) | | .34 | | .94 | .84 |
| 1. I am worried about using e-money because other people may be able to access my account. | 3.80 | | .89 | | |
| 2. I feel that when using e-money there is a risk of sensitivity because of the digital transmission of information. | 3.80 | | .95 | | |
| 3. I do not believe that my account can be securely protected through the online transaction process. | 3.80 | | .75 | | |
| Knowledge of Technology (KT) (Taylor & Todd, 1995; Thompson et al., 1991) | | .61 | | .92 | .80 |
| 1. I have enough knowledge in using e-money technology. | 3.80 | | .84 | | |
| 2. I can complete transactions on time when using e-money. | 3.90 | | .90 | | |
| 3. My knowledge of e-money can help other people when they have difficulty using it. | 3.80 | | .78 | | |
| Agent Credibility (AC) (Luarn & Lin, 2005) | | .33 | | .92 | .85 |
| 1. Nowadays, I find it easy to do a transaction using e-money provided by various merchants. | 3.80 | | .90 | | |
| 2. Currently, I feel the benefit when doing transactions using e-money provided by various merchants. | 3.8 | | .84 | | |
| Customers' Technology Adoption Behavior (CTAB) (Gao & Waechter, 2015) | | .49 | | .95 | .86 |
| 1. I will happily continue to use e-money. | 3.6 | | .82 | | |
| 2. I will inform anyone about the convenience of using e-money. | 3.6 | | .90 | | |
| 3. I will inform anyone about the advantages of using e-money. | 3.6 | | .91 | | |
| Continuance Usage Intention (CUI) (Beldad & Kusumadewi, 2015) | | .78 | | .90 | .76 |
| 1. I intend to continue using cashless payments even after the pandemic is over. | 3.7 | | .86 | | |
| 2. I am sure my decision to use e-money during the COVID-19 pandemic until the New Normal Era. Is because of the convenience when using e-money, so I will continue to do so. | 3.8 | | .85 | | |
| 3. For security reasons, I will continue to use cashless payments even for small transactions from now on and in the future. | 3.5 | | .68 | | |

The H3 is supported that knowledge of technology has a positive influence on agent credibility e-money is accepted. The regression coefficient of the relationship between knowledge of technology and agent credibility is significant positive effect ($\beta = .29$, $p = .00$). The H4 is not supported that knowledge of

technology has a positive influence on customer technology adoption behavior through agent credibility e-money was rejected. Regression coefficient the relationship between knowledge of technology on customer technology adoption behavior an insignificant through agent credibility. The mediation test an insignificant (β = .32, *p* = .07) between knowledge of technology and customer technology adoption behavior.

Therefore, H5 is supported that agent credibility has a significant positive influence on customer technology adoption behavior of e-money accepted. Agent credibility has a direct significant positive effect (β = 1.12, *p* = .00). Finally, H6, customer technology adoption behavior has a direct significant positive effect (β = .68, *p* = .00) on the continuance usage intention of e-money and showed a significant p-value. It was concluded that H6 is supported as customer technology adoption behavior is directly and significant positively correlated with the continuance usage intention of accepted e-money, see Table 3.

**Table 3**
*Hypotheses Results*

| Paths | β | *t*-value | Estimate | S.E. | C.R. | *p* | Hypothesis |
|---|---|---|---|---|---|---|---|
| PTU → AC | .24 | 7.87 | .26 | .05 | 5.17 | .00 | Supported |
| PTU → AC → CTAB | .52 | 12.54 | .36 | .04 | 7.75 | .00 | Supported |
| KT → AC | .29 | 11.28 | .77 | .07 | 10.65 | .00 | Supported |
| KT → AC → CTAB | .32 | 7.54 | .17 | .09 | 1.80 | .07 | Unsupported |
| AC → CTAB | 1.12 | 24.29 | .35 | .09 | 3.60 | .00 | Supported |
| CTAB → CUI | .68 | 21.80 | .93 | .07 | 13.60 | .00 | Supported |

## Discussion and Conclusion

This study aimed to empirically examine a hypothesized model based on the theory acceptance and use of technology for examining behavior continuance usage intention of e-money. The author tested the research model which was hypothesized to investigate the effect of perceived technological uncertainty and knowledge of technology on customer's technology adoption behavior with agent credibility as mediation and the effect of customer's technology adoption behavior on continuance usage intention. There are six research findings.

The first result is the perceived technological uncertainty has a positive influence on the agent credibility of e-money (H1 supported). This means that the higher the perceived technological uncertainty of e-money, the higher the credibility of the agent. In line with the perceived uncertainty in research (Gao & Waechter, 2015) it was defined as the extent to which potential users believed that using digital cash included possible security and privacy threats. This was in line with research (Hong & Thong, 2013) showing that consumers did not trust private companies to keep their information even when companies promised to do so, in line with one explanation underlying the expansion of TAM in consumer studies with IS where several other constructs that mediated the influence of external variables on the intention to adopt technology (Gu et al., 2009). Finally, it could be said that in the peer-to-peer payment system, the digital cash system, e-money, also depended on the credibility of the agent, which remained an important and main asset as a service and information provider.

The second finding shows that perceived technological uncertainty has a positive effect on customer technology adoption behavior through e-money credibility agents (H2 supported). It means the higher the perception of technological uncertainty, the stronger customer technology adoption behavior through the role of agent credibility of e-money. In this case, to extend the UTAUT model (Khalilzadeh et al., 2017), because the current research stream using UTAUT was largely based on a context that did not require a

mediator (such as agents/traders), the same as the digital money services case. Therefore, in the electronic money payment system, there is a relationship between UTAUT and sustainability intentions with the role of agent credibility as mediation through a conceptual model that leads to sustainability insights.

The third finding shows that knowledge of technology has no effect influence on customer technology adoption behavior through e-money credibility agents (H3 not supported). Odoom and Kosiba (2020) reveal that agent credibility is only a necessary condition to assist the operation of technology and at the same time maintain the relationship between cellular service providers and customers which does not affect the customer's knowledge of technology. This means that the credibility of the agent is only a necessary condition to assist the operation of technology while maintaining the relationship between the cellular service provider and the customer which does not affect the customer's technological knowledge. Even though a person's level of knowledge is high, he will not necessarily adopt the technology, if the agent is less able to promote the technology properly.

The fourth finding shows that knowledge of technology has a positive influence on agent credibility in e-money (H4 supported). Our findings were in line with research conducted by Zhou et al. (2010) which considered how to facilitate the condition of knowledge from a digital money perspective, it was said that the knowledge (skills) needed to configure and operate technology was required for facility conditions to engage in services. Furthermore, according to Odoom and Kosiba (2020), it was also revealed that agent credibility was indispensable facilitation to assist technology operations and at the same time maintained relationships between cellular service providers and customers. It means that the stronger consumer knowledge of technology, the lower technology adoption behavior even though it has been supported by the agent's credibility in influencing these customers. Our findings were in line with the results of research (Wang, 2020), which stated that the effect of customer interest in adopting technology was higher for customers who have low knowledge levels than for customers who were already loyal to using technology products. It could be said that for customers who adopted e-money instead of customers who had high knowledge of technology, they did not have to be customers with a sufficient or high level of knowledge who would eventually adopt technology, many other considerations from consumers were the determining factors for such behavior in adopting technology, namely e-money.

The fifth finding agent credibility has a positive influence on customer technology adoption behavior of e-money (H5 supported). The stronger the influence of agent credibility, the stronger the customer technology adoption behavior. These results were in line with the findings (Odoom & Kosiba, 2020) which stated that the UTAUT principle affected user intentions and behavior, but it was conditional and better transmitted through e-money agents. It means in particular, beyond its direct effect, the UTAUT condition had an indirect effect on the intention to continue through an effect on the perceived credibility of the agent in which the credibility of the agent was able to influence consumers to adopt e-money behavior.

The sixth finding customer technology adoption behavior is directly and positively correlated with the continuance usage intention of e-money (H6 supported). The higher the customer technology adoption behavior, the higher the continuance usage intention. It means that users who adopted e-money would indirectly use it in the future. Our research was supported by previous research, on behavioral intention focused on adoption (Zhou, 2013) in which continuity theory relied on experience.

In summary, the results confirmed that the model had an acceptable fit with $\chi^2/(df) = 2.87$, GFI = .95, AGFI = .92, NFI = .97, CFI = .98, and RMSEA = .06. As a result, the increasing use of technology is how they will continue their usage intentions. Agency credibility is an indispensable mediating factor that can encourage and influence the use of technology e-money in Indonesia.

**Limitations and Future Research Directions**

This study has the following limitations. First, this study relies on the main information collected through an online random survey of 510 Indonesian respondents who were the study's sample without being limited by the sample binding criteria so that the obtained results were not specific to the sample with certain criteria. As a result, user's technological knowledge needs to be aligned so that they are willing to adopt e-money with additional information needed as a form of a user behavior technology upgrade (Jose, 2017). Consequently, it may experience a bias in the election results. Moreover, the respondents were considered for this study to fall into the demographic category with different levels of education, so these differences can be disproportionate to the research sample data and can affect the results of the study.

Furthermore, the researchers did not focus on the type of e-money and did not propose specific e-money which could cause respondents to randomly answer questions on several types of e-money in Indonesia so that the expected results could be an expansion of respondents' answers. Thus, future research can focus on the type of e-money that will be the research object, so that respondents are more focused. Our findings need to be generalized to other countries that have developed mobile internet and adopted e-money.

Third, further research needs to consider including other variables that influence the adoption and continuance use of e-money, such as; moral norms, merchant proactiveness, and other mediator variables such as regulations or environmental factors. Adoption barrier factors still limit user adoption even though it has many benefits associated with this service. Future researchers may use other types of research designs such as longitudinal examination, experimental and other designs.

**Implications**

This research has theoretical and practical implications. The findings of this study provide empirical support for the theory of acceptance and use of technology (UTAUT). This theory is used to understand user behavior towards technology. The UTAT aimed to explain user intention to use an information system (IS). The results of this study have provided evidence that knowledge of technology is not the main thing in the intention to adopt technology, to this context could be viewed as a valuable addition to the existing frameworks on technology adoption.

Furthermore, on the practical implications, this study proposes supports the existence of agent credibility as a mediator of the relationship between perceived technological uncertainty and knowledge of technology. The influence of agency credibility is indispensable as a mediating, where someone who has the knowledge and adequate technology does not necessarily continuance usage intention without the role of good agency credibility which can encourage and influence someone to use transactions technology such as e-money, especially during the COVID-19 pandemic and the new normal era.

## References

Abbasi, G. A., Sandran, T., Ganesan, Y., & Iranmanesh, M. (2022). Go cashless! Determinants of continuance intention to use e-wallet apps: A hybrid approach using PLS-SEM and fsQCA. *Technology in Society, 68*, 101937

Acker, A., & Murthy, D. (2018). Venmo: Understanding mobile payments as social media. *International Conference on Social. Copenhagen, Denmark: SMSociety*. https://doi.org/10.1145/3217804.3217892

Akinnuwesi, B. A., Uzoka, F. M. E., Fashoto, S. G., Mbunge, E., Odumabo, A., Amusa, O. O., Okpeku, M., & Owolabi, O. (2022). A modified UTAUT model for the acceptance and use of digital technology for tackling COVID-19. *Sustainable Operations and Computers, 3*, 118-135. https://doi.org/10.1016/j.susoc.2021.12.001

Alfansi, L., & Daulay, M. Y. I. (2021). Factor affecting the use of e-money in millennial generation: Research model UTAUT 2. *Jurnal Manajemen Dan Pemasaran Jasa, 14*(1), 109-122. https://doi.org/10.25105/jmpj.v14i1.8212

Alvi, I. (2021). College students' reception of social networking tools for learning in India: An extended UTAUT model. *Smart Learning Environments, 8*(1), 1-18. https://doi.org/10.1186/s40561-021-00164-9

Aritonang, Y. A. L., & Arisman, A. (2017). *Pengaruh persepsi kemudahan dan persepsi manfaat terhadap minat menggunakan E-Money (Studi Kasus Pada Pengguna Go-Pay)* [Effect of perceived convenience and perceived benefits on interest in using E-Money (Case Study on Go-Pay Users)]. https://core.ac.uk/download/pdf/153523739.pdf [in Indonesian]

Bagozzi, R. P., & Yi, Y. (1988). On the evaluation of structural equation models. *Journal of Academy of Marking Science, 16*(1), 74-94. https://doi.org/10.1007/BF02723327

Balis, L. E., & Harden, S. M. (2021). "Replanning" a statewide walking program through the iterative use of the reach, effectiveness, adoption, implementation, and maintenance framework. *Journal of Physical Activity and Health, 18*(10), 1310-1317. https://doi.org/10.1123/jpah.2021-0034

Baseri, Y., Takhtaei, B., & Mohajeri, J. (2013). Secure untraceable off-line electronic cash system. *Scientia Iranica, 20*(3), 637-646.

Bhattacherjee, A. (2001). Understanding information systems continuance: An expectation-confirmation model. *MIS Quarterly, 25*(3), 351-370. https://doi.org/10.2307/3250921

Beldad, A., & Kusumadewi, M. (2015). Here's my location, for your information: The impact of trust, benefits, and social influence on location sharing application use among Indonesian university students. *Computers in Human Behavior, 49*, 102-110. https://doi.org/10.1016/j.chb.2015.02.047

Brown, E. E., Kumar, S., Rajji, T. K., Pollock, B. G., & Mulsant, B. H. (2020). Anticipating and mitigating the impact of the COVID-19 Pandemic on Alzheimer's disease and related. *American Journal of Geriatric Psychiatry, 28*(7), 712-721. https://doi.org/10.1016/j.jagp.2020.04.010

Chan, J., Yuan, S., Kok, K., To, K. K. W., Chu, H., Yang, J., Xing, F., Liu, J., Yip, C. C. Y., Poon, R. W. S., Tsoi, H. W., Lo, S. K. F., Chan, K. H., Poon, V. K. M., Chan, W. M., Ip, J. D., Cai, J. P., Cheng, V. C. C., Chen, H., Hui, C. K. M., & Yuen, K. Y. (2020). A familiar cluster of pneumonia associated with the 2019 novel coronavirus indicating person-to-person transmission: A study of family cluster. *Lancet, 395*, 514-523. https://doi.org/10.1016/S0140-6736(20)30154-9

Chanpariyavatevong, K., Wipulanusat, W., Champahom, T., Jomnonkwao, S., Chonsalasin, D., & Ratanavaraha, V. (2021). Predicting airline customer loyalty by integrating structural equation modeling and Bayesian networks. *Sustainability, 13*(13), Article ID 7046. https://doi.org/10.3390/su13137046

Chayanon, S., Srisorn, W., & Punluekdej, T. (2020). The innovation of e-money via ssru smart purse in purchasing products, food and beverages of students at Suan Sunandha Rajabhat University. *International Journal for Quality Research, 14*(1), 5-20. https://doi.org/10.24874/IJQR14.01-01

Chew, J. W., Parveen Kaur, A. S., Siew, X. Y., Tan, H. Y., & Tan, Y. Z. (2021). *Factors influencing the intention to use digital wallets in Malaysia* (Final Year Project, Bachelor of Marketing (Honours). UTAR Institutional Repository. http://eprints.utar.edu.my/id/eprint/4331

Chiou, J., & Shen, C. C. (2012). The antecedents of online financial service adoption: The impact of physical banking services on Internet banking acceptance. *Behaviour & Information Technology, 31*(9), 859-871. https://doi.org/10.1080/0144929X.2010.549509

Clement, J. (2019). *Mobile payments worldwide - statistics & facts*. Statista. https://www.statista.com/topics/779/mobile-internet/

Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly, 13*(3), 319-340.

Erdem, T., Swait, J., & Louvierre, J. (2002). The impact of brand credibility on consumer price sensitivity. *International Journal of Research in Marketing, 19*(1), 1-19. https://doi.org/10.1016/S0167-8116(01)00048-9

Faith, D. O., & Edwin, A. M. (2018). A review of the effect of pricing strategies on the purchase of consumer goods. *International Journal of Research in Management, Science & Technology, 2*(2), 88-102. https://ssrn.com/abstract=3122351

Fogg, B. J., & Tseng, H. (1999). The elements of computer credibility. In *Proceedings of the SIGCHI conference on human factors in computing systems, ACM* (pp. 80-87). https://doi.org/10.1145/302979.303001

Gaskin, J., & Lim, J. (2016). Model fit measures. *Gaskination's StatWiki, 37*(3), 814-822.

Gao, L., & Waechter, K. (2015). Examining the role of initial trust in user adoption of mobile payment services: An empirical investigation. *Information Systems Frontiers, 19*(3), 525-548. https://doi.org/10.1007/s10796-015-9611-0

Gefen, D., Straub, D. W. D., & Boudreau, M. (2000). Structural equation modeling and regression: guidelines for research practice. *Communications of the Association for Information Systems, 4*(7), 1-70. https://doi.org/10.17705/1CAIS.00407

Gu, J., Lee, S., & Suh, Y. (2009). Determinants of behavioral intention to mobile banking. *Expert Systems with Applications, 36*(9), 11605-11616. https://doi.org/10.1016/j.eswa.2009.03.024

Gupta, K., Manrai, R., & Goel, U. (2019). Factors influencing adoption of payments banks by Indian customers: Extending UTAUT with perceived credibility. *Journal of Asia Business Studies, 13*(2), 173-195. https://doi.org/10.1108/JABS-07-2017-0111

Hair, J. F., Anderson, R. E., Tatham, R. L., & Black, W. C. (1998). *Multivariate Data Analysis*. Prentice Hall.

Hasyim, F. (2022). Modification of UTAUT2 in assessing the use of E-Money in Surakarta. *Islamic Economics and Finance Journal, 1*(2), 114-134. https://doi.org/10.55657/iefj.v1i2.41

Hayduck, L. A. (1987). *Structural Equation Modeling with LISREL*. Johns Hopkings.

Rilling, S. (2015). *Mobile banking acceptance among young consumers in germany: An empirical analysis* (Master's thesis). Universidade Católica Portuguesa and MSc in Business at the BI Norwegian Business School. https://repositorio.ucp.pt/bitstream/10400.14/19962/1/Master%20Thesis%20Catolica.pdf

Hoek, B. (2017). *Four factors contributing to slow mobile payment adoption rates in the U.S. retail touch points.* https://www.retailtouchpoints.com/features/executive-viewpoints/fourfactors-contributing-to-slow-mobile-payment-adoption-rates-in-the-u-s

Hong, W., & Thong, J. (2013). Internet privacy concerns: An integrated conceptualization and four empirical studies. *Management Information Systems Quarterly, 37*(1), 275–298. https://doi.org/10.25300/MISQ/2013/37.1.12

Hsu, C., & Lin, J. (2016). Effect of perceived value and social influences on mobile app stickiness and in-app purchase intention. *Tecnological Forecasting and Social Change, 108*, 42-53. https://doi.org/10.1016/j.techfore.2016.04.012

Iman, N. (2018). Is mobile payment still relevant in the fintech era? *Electronic Commerce Research and Applications, 30*, 72-82. https://doi.org/10.1016/j.elerap.2018.05.009

Jose, J. (2017). Impact of technology on consumer behaviour. *IRA-International Journal of Management & Social Sciences, 6*(2), 264-267. https://doi.org/10.21013/jmss.v6.n2.p10

Khalilzadeh, J., Ozturk, A., & Bilgihan. (2017). Security-related factors in extended UTAUT model for NFC based mobile payment in the restaurant industry. *Computers in Human Behavior, 70*, 460-474. https://doi.org/10.1016/j.chb.2017.01.001

Khan, S. U., Liu, X., Liu, C., Khan, I. U., & Hameed, Z. (2020). Understanding uncertainty dimensions and Internet stock trading service in China from a social cognitive perspective. *Information Technology & People, 34*(2), 812–834. https://doi.org/10.1108/ITP-02-2019-0062

Khando, K., Islam, M. S., & Gao, S. (2022). Factors shaping the cashless payment ecosystem: Understanding the role of participating actors. *In 35th Bled eConference-Digital Restructuring and Human (Re) action, Bled, Slovenia, June 26-29, 2022* (pp. 161-186). University of Maribor. https://doi.org/10.18690/um.fov.4.2022.10

Kleis, L., Chwelos, P., Ronald, V., Ramirez, I., Ramirez, R. V., & Cockburn, I. (2011). Information technology and intangible output: The Impact of IT investment on innovation productivity. *Information Systems Research, 23*(1), 42-59. https://doi.org/10.1287/isre.1100.0338

Kongaut, C., & Lis, P. (2017). Supply and demand sides of mobile payment: A comparative analysis of successful mobile payment adoption in developed and developing countries. In *28th European Regional Conference of the International Telecommunications Society (ITS): Competition and Regulation in the Information Age.* https://www.econstor.eu/handle/10419/169474

Kulms, P., & Kopp, S. (2016, September 20–23). The effect of embodiment and competence on trust and cooperation in human–agent interaction. In *Proceedings of Intelligent Virtual Agents: 16th International Conference, IVA 2016, Los Angeles, CA, USA* (pp. 75-84). Springer.

Leung, X., Bai, B., & Stahura, K. (2013). The marketing effectiveness of social media in the hotel industry: A comparison of Facebook and Twitter. *Journal of Hospitality Tourism Research, 39*(2), 147-169. https://doi.org/10.1177/1096348012471381

Liao, C., Palvia, P., & Chen, J. (2009). Information technology adoption behavior life cycle: Toward a technology continuance theory (TCT). *International Journal of Information Management, 29*(4), 309-320. https://doi.org/10.1016/j.ijinfomgt.2009.03.004

Lin, L., Shadiev, R., Hwang, W. Y., & Shen, S. (2020). From knowledge and skills to digital works: An application of design thinking in the information technology course. *Thinking Skills and Creativity, 36,* Article ID 100646. https://doi.org/10.1016/j.tsc.2020.100646

Linder, M., & Williander, M. (2017). Circular business model innovation: Inherent uncertainties. *Business strategy and the environment, 26*(2), 182-196. https://doi.org/10.1002/bse.1906

Liou, D., Hsu, L., & Chih, W. (2015). Understanding broadband television users' continuance intention to use. *Industrial Management and Data Systems, 115*(2), 210-234. https://doi.org/10.1108/IMDS-07-2014-0223

Luarn , P., & Lin, H. (2005). Toward an understanding of the behavioral intention to use mobile banking. *Computers in Human Behavior, 21*(6), 873-891. https://doi.org/10.1016/j.chb.2004.03.003

Madan, K., & Yadav, R. (2016). Behavioural intention to adopt mobile wallet: A developing country perspective. *Journal of Indian Business Research, 8*(3), 227-244. https://doi.org/10.1108/JIBR-10-2015-0112

Manchanda, M., & Deb, M. (2021). On m-commerce adoption and augmented reality: A study on apparel buying using m-commerce in Indian context. *Journal of Internet Commerce, 20*(1), 84-112. https://doi.org/10.1080/15332861.2020.1863023

Matthew, J., Beck, & Hensher, D. A. (2020). Insights into the impact of COVID-19 on household travel and activities in Australia – The early days of easing restrictions. *Transport Policy, 99*(2022), 95-119. https://doi.org/10.1016/j.tranpol.2020.08.004

Mikkelsen, O. S., & Johnsen, T. E. (2018). Purchasing involvement in technologically uncertain new product development projects: Challenges and implications. *Journal of Purchasing and Supply Management, 25*(3), Article ID 100496. https://doi.org/10.1016/j.pursup.2018.03.003

Miliani, L., & Indriani, M. T. D. (2013). Adoption behavior of e-money usage. *Information Management and Business Review, 5*(7), 369-378. https://doi.org/10.22610/imbr.v5i7.1064

Munoz-Leiva, F., Climent-Climent, S., & Liébana-Cabanillas, F. (2017). Determinants of intention to use the mobile banking apps: An extension of the classic TAM model. *Spanish Journal of Marketing-ESIC, 21*(1), 25-38. https://doi.org/10.1016/j.sjme.2016.12.001

Naidu, S. (2018). *Why mobile wallets are the future of money*. The Indian Express. https://www.financialexpress.com/opinion/why-mobile-wallets-are-the-future-of-money/1084027/

Nugroho, A., Najib, M., & Simanjuntak, M. (2018). Factors affecting consumer interest in electronic money usage with theory of planned behavior (TPB). *Journal of Consumer Sciences, 3*(1), 15-27. https://doi.org/10.29244/jcs.3.1.15-27

Nunnally, J. (1978). *Psychometric theory.* McGraw-Hill.

Nurohman, Y. A., & Qurniawati, R. S. (2021, December). The intention to use E-Money: An empirical study of halal food SMEs in Surakarta. In *Annual international conference on islamic economics and business* (Vol. 1, pp. 46-56). https://doi.org/10.18326/aicieb.v1i0.8

Odoom, R., & Kosiba, J. P. (2020). Mobile money usage and continuance intention among micro enterprises in an emerging market – the mediating role of agent credibility. *Journal of System and Information Technology, 22*(1), 97-117. https://doi.org/10.1108/JSIT-03-2019-0062

Oluwajana, D., Adeshola, I., & Olowu, G. (2021). Do the customer relationship benefits influence expectation of continuity? Adoption of social customer relationship management to promote eco-friendly products. *Journal of Public Affairs, 22*(51), Article ID e2701. https://doi.org/10.1002/pa.2701

Papadopoulos, T., Baltas, K., & Balta, M. E. (2020). The use of digital technologies by small and medium enterprises during COVID-19: Implications for theory and practice. *International Journal of Information Management, 55*(2022), Article ID 102192. https://doi.org/10.1016/j.ijinfomgt.2020.102192

Park, I., & Yoon, B. (2018). Technological opportunity discovery for technologicalconvergence based on the prediction of technology knowledge flow in a citation network. *Journal of Informetrics, 12*, 1199-1222. https://doi.org/10.1016/j.joi.2018.09.007

Permatasari, M. I., & Kartawinata, B. R. (2021, August 16-18). The effect of perceived ease, benefit, and security on interest in using Ovo Fintech application in Indonesia. In *Proceedings of the International Conference on Industrial Engineering and Operations Management Bangalore*, India.

Putra, H. D., Astuti, E. S., Kusumawati, A., & Abdillah, Y. (2020). Knowing the reasons of using E-money LinkAja in Indonesia. *Journal of Talent Development and Excellence, 12*(3s), 242-250.

Qasim, H., & Abu, S. E. (2016). Drivers of mobile payment acceptance: The impact of network externalities. *Information Systems Frontiers, 18*(5), 1021–1034. https://doi.org/10.1007/s10796-015-9598-6

Ranyali, N. (2019). *Conceptual framework for multi-factor authentication for mobile money systems in Lesotho* (Doctoral dissertation). Botho University. http://repository.bothouniversity.ac.bw:8080/buir/handle/123456789/116

Reinartz, W., WiegandMonika, N., & Imschloss, M. (2019). The impact of digital transformation on the retailing value chain. *International Journal of Research in Marketing, 36*(3), 350-366. https://doi.org/10.1016/j.ijresmar.2018.12.002

Rotman, S. (2014). *Bitcoin versus electronic money*. Open Knowledge Repository. https://openknowledge.worldbank.org/entities/publication/79b3935f-ba01-5e2a-9deb-31376bb85b8c

Schumaker, R. E., & Lomax, R. G. (2010). *A Beginner's Guide to Structural Equation Modeling* (3rd ed.). Roudledge.

Siregar, I. P. (2021). Digitalization of the economy for the Indonesian economy and its role during the Covid-19 pandemic. *Enrichment: Journal of Management*, *12*(1), 941-945. https://doi.org/10.35335/enrichment.v12i1.337

Setyanto, R. P., & Sunarjo, W. A. (2021). Will cashless payment become consumer's transaction habit in the new normal era ? *Trikonomika, 20*(1), 47–53. https://doi.org/10.23969/trikonomika.v20i1.3418

Sunarjo, W. A., Nurhayati, S., & Muhardono, A. (2021). Consumer behavior toward adoption of mobile payment: A case study in Indonesia during the COVID-19 pandemic. *Journal of Asian Finance, Economics and Business, 8*(4), 581–590. https://doi.org/10.13106/jafeb.2021.vol8.no4.0581

Sunarjo, W. A., Najmudin, R. P. S., & Setyanto, R. P. (2021, July 17-18). Building a PLS pathway model: A multivariate approach innovative marketing strategies facing the Covid-19 pandemic-case study of the Hotel Santika Pekalongan. In *Proceedings of the 1st international conference on economics engineering and social science, Bekasi, Indonesia* (p. 457), European Alliance for Innovation. https://doi.org/10.4108/eai.17-7-2020.2303004

Scott, J. E. (1995). The measurement of information systems effectiveness: Evaluating a measuring instrument. *ACM SIGMIS Database: The DATABASE for Advances in Information Systems, 26*(1), 43-61. https://doi.org/10.1145/206476.206484

Tamargo, L. H., Garcia, A. J., Falappa, M. A., & Simari, G. (2014). On the revision of informant credibility orders. *Artificial Intelligence*, *212*(2014), 36-58. https://doi.org/10.1016/j.artint.2014.03.006

Taylor, S., & Todd, P. (1995). Understanding information technology usage: A test of competing models. *Information Systems Research, Informs, 6*(2), 141-176. https://doi.org/10.1287/isre.6.2.144

Thompson, R., Higgins, C., & Howell, J. (1991). Personal computing: toward a conceptual model of utilization. *MIS Quarterly, 15*(1), 125-143. https://doi.org/10.2307/249443

Ulurrosyad, M. F., & Jayanto, P. Y. (2020). *Faktor-Faktor Dalam Menggunakan E-Money (Gopay) Pada Masyarakat Muslim di Kota Semarang* [Factors in Using E-Money (Gopay) in Muslim Communities in Semarang City]. *Moneter-Jurnal Akuntansi dan Keuangan, 7*(1), 105-112. https://doi.org/10.31294/moneter.v7i1.7634 [in Indonesian]

Utami, S. S., & Kusumawati, B. (2017). *Faktor-faktor yang memengaruhi minat penggunaan e-money (Studi pada mahasiswa STIE Ahmad Dahlan Jakarta)* [Factors influencing interest in using e-money (Study on STIE Ahmad Dahlan Jakarta students)]. *Balance: Economic, Business, Management and Accounting Journal, 14*(02). http://dx.doi.org/10.30651/blc.v14i02.1265 [in Indonesian]

Venkatesh, V., & Davis, F. D. (2000). A theoretical extension of the technology acceptance model: Four longitudinal field studies. *Management Science, 46*, 186-204. https://doi.org/10.1287/mnsc.46.2.186.11926

Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. *MIS Quarterly, 27*(3), 425-478. https://doi.org/10.2307/30036540

Venkatesh, V., Thong, J., & Xu, X. (2012). Consumer acceptance and use of information technology: Extending the unified theory of acceptance and use of technology. *MIS Quarterly, 36*(1), 157-178. https://doi.org/10.2307/41410412

Voogt, J., & McKenny, S. (2017). TPACK in teacher education: Are we preparing teachers to use technology for early literacy Technology. *Pedagogy and Education, 26*(1), 69-83. https://doi.org/10.1080/1475939X.2016.1174730

Wang R. J. (2020). Branded mobile application adoption and customer engagement behavior. *Computers in Human Behavior, 106(2020),* Article ID 106245. https://doi.org/10.1016/j.chb.2020.106245

Wang, W., Ou, W., & Chen, W. (2019). The impact of inertia and user satisfaction on the continuance intentions to use mobile communication applications: A mobile service quality perspective. *International Journal of Information Management, 44*(2019), 178-193. https://doi.org/10.1016/j.ijinfomgt.2018.10.011

Yang, Y., Liu, Y., Li, H., & Yu, B. (2015). Understanding perceived risks in mobile payment acceptance. *Industrial Management and Data Systems, 115(*2), 253-269. https://doi.org/10.1108/IMDS-08-2014-0243

Zhou, T. (2013). An empirical examination of continuance intention of mobile payment services. *Decision Support Systems, 54*(2), 1085-1091. https://doi.org/10.1016/j.dss.2012.10.034

Zhou, T., Lu, Y., & Wang, B. (2010). Integrating TTF and UTAUT to explain mobile banking user adoption. *Theory, 26*(4), 760-767. https://doi.org/10.1016/j.chb.2010.01.013