The current issue and full text archive of this journal is available on Emerald Insight at: https://www.emerald.com/insight/1744-0084.htm

Factors influencing the adoption of mobile payment systems in Indonesia

Adoption of mobile payment systems

Lisana Lisana

Vincent Mary School of Science and Technology, Assumption University, Bangkok, Thailand and Department of Informatics Engineering, Faculty of Engineering, University of Surabaya, Surabaya, Indonesia

Received 15 January 2021 Revised 14 February 2021 Accepted 14 February 2021

Abstract

Purpose — This empirical study aims to determine factors that influence an individual's intention to use mobile payment (MP) systems. The study investigates direct, indirect and total effects as well as factors that mediate or moderate effects on intention.

Design/methodology/approach – A theoretical model is derived from previous studies and combines factors from technology acceptance model and unified theory of acceptance and use of technology (perceived usefulness, perceived ease of use, social influence, facilitating conditions, behavioral intention) with factors relevant to MP (perceived security, uncertainty avoidance, trust, network externalities and self-efficacy). Gender, age, MP experience and income are included as moderators of direct effects on behavioral intention. The sample includes 736 participants from the four large cities in Indonesia. Structural equation modeling is used to analyze and develop the theoretical model.

Findings – Self-efficacy has the greatest total effect on behavioral intention, followed in decreasing order of importance by perceived usefulness, perceived ease of use, social influence, trust, network externalities and uncertainty Avoidance. only gender and MP experience have significant moderating effects whereby the direct effects of self-efficacy and network externalities on behavioral intention are influenced by gender and MP experience, respectively. Trust, perceived usefulness and perceived ease of use have important mediation effects.

Originality/value – This study fills the gap in the limited theoretical understanding of MP adoption in Indonesia. New theoretical findings related to mediating and moderating effects, direct, indirect, and total effects are used to discuss important practical implications of the findings.

Keywords Mobile Payment, Mediators, Moderators

Paper type Research paper

1. Introduction

Nowadays, mobile phones are not only used for communication purposes but also for mobile payment (MP) systems, which use mobile devices to enable users to initiate, authorize and complete financial transactions through mobile networks or wireless communication technologies (Qasim and Abu-Shanab, 2016). MP is efficient and convenient for consumers avoiding the need to carry debit or credit cards or cash. Rolfe (2019) reported that in 2019 there were 2.07 billion MP consumers worldwide, representing an increase of 30% from 2017. The value of the global MP system market reached US\$1139.43bn in 2019 and was estimated to increase to US\$4690.65bn by 2025 (MarketWatch, 2020).

In 2019, there were 355.5 million mobile subscriptions in Indonesia, and the number of mobile internet connections was higher than the total population (Tomato Digital Indonesia, 2020). By 2025, the number of Indonesian smartphone users is predicted to be 410 million,



International Journal of Web Information Systems © Emerald Publishing Limited 1744-0084 DOI 10.1108/IJWIS-01-2021-0004

with Indonesia having the third-largest number of smartphone users in the world (*The Jakarta Post*, 2019a). Despite global growth in MP systems, Indonesia is still at an early stage of MP adoption and the 47% of consumers using MP in 2019 represented an increase of only 11% from 2018 (Rolfe, 2019). In 2019, MDI and Mandiri Sekuritas (2019) reported that the value of MP transactions in Indonesia was US\$16.4bn which is equivalent to only 2% of Indonesia's GDP (US\$888.6bn), and they estimated that by 2020, this volume would increase to US\$30bn, 3% of Indonesia's GDP. Nevertheless, due to a large population and the rapid growth of smartphones and mobile internet technologies, Indonesia has a huge potential for developing the use of MP systems. Marginingsih *et al.* (2019) reported that about 43% of the organizations investing in financial technology in Indonesia were focused on significant increases in MP systems for 2020. The Central Bank of Indonesia officially registered about 38 e-wallet mobile applications in 2019 (*The Jakarta Post*, 2019b). The top four were GO-PAY, OVO, DANA and LINKAJA (CNBC Indonesia, 2019).

Many studies of MP are based on the technology acceptance model (TAM, Davis, 1989) and the unified theory of acceptance and use of technology (UTAUT, Venkatesh *et al.*, 2003). However, TAM and UTAUT may not fully address the unique features of MP systems. There are a limited number of studies on the adoption of MP in Indonesia (Rosnidah, 2019). For example, Al-Saedi *et al.* (2019) claimed that from 2008 to 2017, only one study of MP in Indonesia had been published in a reputable journal. This study aims to address this gap in the literature. Particular contributions of the study include the following:

- an evaluation of not only direct effects but also indirect effects and total effects among constructs in the model;
- an investigation of the moderating effects of gender, age, income and MP experience on direct influences on a user's intentions to use MP; and
- discussion of the practical implications of the findings.

These are important aspects that have not been adequately addressed in previous studies. For example:

- if indirect and total effects are not analyzed then the analysis is incomplete and mediation effects are not detected; and
- only a few prior studies have considered moderating factors that influence the relationships between a user's intention to adopt MP and its antecedents (Giovanis et al., 2019; Sobti, 2019).

Handarkho and Harjoseputro (2019) appears to be the only study of MP in Indonesia that has considered moderating factors.

Thus, the following research questions are proposed:

- Q1. Which factors have significant direct, indirect or total effects on an individual's intention to use MP?
- Q2. Does an individual's age, experience with MP, gender or income have a significant moderating effect on intentions?
- Q3. What are the theoretical and practical implications of the results for these two questions?

The findings are expected to contribute to the still limited theoretical understanding of MP adoption in Indonesia. The MP providers may use the findings to better understand the important factors for consumers who intend to adopt MP systems as new innovative

technologies. The factors investigated in the theoretical model provide valuable insights for MP providers to enhance the successful adoption of their MP systems.

The content is organized as follows. Section 2 presents a theoretical model and hypotheses derived from a review of related literature. Section 3 describes the research design and methods. Section 4 presents the results of data preparation and preliminary analyses. Section 5 presents the results of structural equation modeling (SEM) analyses. Section 6 discusses the findings and conclusions are in Section 7.

Adoption of mobile payment systems

2. Related literature and theoretical model

Studies of MP have been conducted in a variety of developed and developing nations: *India* (Sobti, 2019; Chauhan, 2015; Shankar and Datta, 2018); *Qatar* (Musa *et al.*, 2015); *Malaysia* (Teo *et al.*, 2015); *South Korea* (Lee *et al.*, 2019); *Pakistan* (Aslam *et al.*, 2017); *Spain* (Kalinić *et al.*, 2019; Liébana-Cabanillas *et al.*, 2018a; Liébana-Cabanillas *et al.*, 2015a); *Thailand* (Phonthanukitithaworn *et al.*, 2016); *Turkey* (Aydin and Burnaz, 2016); *USA* (Bailey *et al.*, 2017); *UK* (Slade *et al.*, 2015); *Brazil* (de Sena Abrahão *et al.*, 2016); *Portugal* (Oliveira *et al.*, 2016); and *Jordan* (Qasim and Abu-Shanab, 2016).

Most studies have included constructs from the TAM or UTAUT models and other constructs relevant to the context of MP, including *self-efficacy* (Shankar and Datta, 2018; Bailey *et al.*, 2017); *trust* (Liébana-Cabanillas *et al.*, 2018b; Shankar and Datta, 2018; Phonthanukitithaworn *et al.*, 2016; Qasim and Abu-Shanab, 2016; Chauhan, 2015; Liébana-Cabanillas *et al.*, 2015a; Slade *et al.*, 2015; Liébana-Cabanillas *et al.*, 2014a); *network externalities* (Qasim and Abu-Shanab, 2016; Arvidsson, 2014); and *perceived security* (Liébana-Cabanillas *et al.*, 2018a; Aslam *et al.*, 2017; Aydin and Burnaz, 2016; Oliveira *et al.*, 2016; Musa *et al.*, 2015).

A literature review conducted by Karsen et al. (2019) found that perceived ease of use, perceived usefulness, perceived security, trust, social influence and facilitating condition were in the list of the top ten factors used most often to describe the adoption of MP systems. Shankar and Datta (2018) argued that self-efficacy has a significant positive impact on consumer intention toward a MP. They also validated a strong relationship between selfefficacy and perceived ease of use. This finding is consistent with a study from Bailey et al. (2017) which concluded that self-efficacy has strong effects on both perceived usefulness and perceived ease of use. Qasim and Abu-Shanab (2016) argued strongly to include network externalities in future research on MP adoption. In addition, the main dimension of culture, uncertainty avoidance, was found to have a strong correlation with trust in the limited number of MP acceptance studies (Fan et al., 2018; Xin et al., 2015). Also, there were limited prior studies of MP that used moderating factors such as those introduced in the general UTAUT theoretical model of technology adoption, especially experience with MP and Income. Thus, this study includes all of these factors as the nine determinants of behavioral intention to use MP systems. Gender, age, experience with MP and income are introduced as the moderating factors that influence the direct effects of the nine determinants on behavioral intention.

2.1 Model variables and hypotheses

The following important variables and hypotheses were derived from a review of studies of MP.

Behavioral intention is defined as a measure of the strength of an individual's intention to perform a specified behavior (Ajzen, 1991) or to use products or services (de Sena Abrahão *et al.*, 2016). Behavioral intention predicts actual usage (Anggraini and Rachmawati, 2019;

Liébana-Cabanillas *et al.*, 2018a). In this study, behavioral intention measures the strength of an individual's intention to continue to use MP (Musa *et al.*, 2015).

Perceived security is the degree to which individuals believe that their property and information privacy is secure when using MP (Fan et al., 2018). Perceived security also refers to the perception of security against risks associated with new technologies, especially the risk of losing confidential data, which may lead to financial losses (Liébana-Cabanillas et al., 2018a). Consumers must feel secure in order to enhance the use of new technology (Oliveira et al., 2016). Perceived security is a significant predictor of MP usage intention (Liébana-Cabanillas et al., 2018a; Oliveira et al., 2016; Musa et al., 2015). According to Fan et al. (2018), Perceived security has a significant impact on trust and this has been confirmed in literature reviews by Dahlberg et al. (2015) and Karsen et al. (2019). The following hypotheses are proposed:

- H1. Perceived security has a significant positive direct effect on behavioral intention.
- H2. Perceived security has a significant positive direct effect on trust.

Trust refers to one's belief that all the stakeholders in MP systems (service providers, banks, vendors and other users) will behave appropriately to improve the security of MP (Fan et al., 2018). A consumer will not use a system, especially a payment system, unless it can be trusted and providers have to be proactive in minimizing uncertainty about trusting electronic transactions (Liébana-Cabanillas et al., 2015a). Trust is an essential determinant of the adoption of systems, especially MP systems (Chauhan, 2015; Arvidsson, 2014). In MP studies Trust is a significant predictor of behavioral intention (Anggraini and Rachmawati, 2019; Shankar and Datta, 2018; Phonthanukitithaworn et al., 2016). The following hypothesis is proposed:

H3. Trust has a significant positive direct effect on behavioral intention.

Uncertainty avoidance is one of the six dimensions of national culture proposed by Hofstede (1984), which refers to the extent to which individuals minimize anxiety through formal rules and regulations. Not all of the dimensions are related to MP, but Uncertainty avoidance is a significant determinant of Trust (Fan *et al.*, 2018; Xin *et al.*, 2015). Xin *et al.* (2015) defined uncertainty avoidance as the level of risk accepted by individuals when they are in uncertain situations. This study defines it as the extent to which MP users are willing to follow formal rules and regulations designed to minimize uncertainty on MP platforms (Fan *et al.*, 2018). Consumers from societies having high uncertainty avoidance will use new technology only if it can be trusted. Indonesia is a developing country with a low Hofstede score of 48 on uncertainty avoidance (Hofstede-insights, 2020). The following hypothesis is proposed:

H4. Uncertainty avoidance has a significant positive direct effect on trust.

Network externalities refers to the degree to which the perceived value of MP increases as the number of users increases (Qasim and Abu-Shanab, 2016). Song *et al.* (2009) showed that the number of users who adopted a new technology is positively associated with behavioral intention. Nejad *et al.* (2016) argued that network externalities could be an obstacle to the adoption of services such as smart payment cards, e-banking and MP. The role of network externalities in MP is under-investigated. The following hypothesis is proposed:

H5. Network externalities has a significant positive direct effect on behavioral intention. Shankar and Datta (2018) referred to self-efficacy as the degree to which an individual believes that they have the skills needed to perform MP activities. They concluded that self-efficacy has a significant positive impact on behavioral intention. They also reported a strong relationship between self-efficacy and perceived ease of use. Bailey *et al.* (2017) showed that self-efficacy has a strong effect on perceived usefulness and perceived ease of use. The following hypotheses are proposed:

Adoption of mobile payment systems

- H6. Self-efficacy has a significant positive direct effect on behavioral intention.
- H7. Self-efficacy has a significant positive direct effect on perceived usefulness.
- H8. Self-efficacy has a significant positive direct effect on perceived ease of use.

Social influence is defined as the degree to which people close to users influence their intention to use MP (Qasim and Abu-Shanab, 2016). Many studies of MP found that the social influence had a significant influence on behavioral intention (Anggraini and Rachmawati, 2019; Lee *et al.*, 2019; Sobti, 2019). However, Shankar and Datta (2018) and Teo *et al.* (2015) reported that the influence on behavioral intention was not significant. Furthermore, contradictory results for the influence of social influence on the perceived usefulness in MP have been reported (Shankar and Datta, 2018). The following hypotheses are proposed:

- H9. Social influence has a significant positive direct effect on behavioral intention.
- H10. Social influence has a significant positive direct effect on perceived usefulness.

Perceived usefulness is a TAM variable defined as the degree to which MP is useful for paying for a purchase (Liébana-Cabanillas *et al.*, 2018a). In UTAUT, it is equivalent to performance expectancy. If users perceive that MP provides unique benefits then it is likely that they will use it (Aslam *et al.*, 2017). In MP studies (Lee *et al.*, 2019; Sobti, 2019; Wang *et al.*, 2019), perceived usefulness has a significant effect on behavioral intention. However, in other MP studies this effect was not significant (Anggraini and Rachmawati, 2019; Phonthanukitithaworn *et al.*, 2016; Teo *et al.*, 2015). The following hypothesis is proposed:

H11. Perceived usefulness has a significant positive direct effect on behavioral intention

Facilitating conditions is the degree to which an individual believes that organizational and technical infrastructure exists to support the use of MP (Oliveira *et al.*, 2016). In UTAUT, it is a direct determinant of behavioral intention (Venkatesh *et al.*, 2003). For MP it has been found to have a significant effect on behavioral intention (Sobti, 2019; Phonthanukitithaworn *et al.*, 2016; Teo *et al.*, 2015). However, Lee *et al.* (2019) and Oliveira *et al.* (2016) found that this effect was not significant. In addition, Wang *et al.* (2019) and Liébana-Cabanillas *et al.* (2015b) reported that facilitating conditions had a significant effect on perceived usefulness while Kim *et al.* (2010) found that this effect was not significant. The following hypotheses are proposed:

- H12. Facilitating conditions has a significant positive direct effect on behavioral intention
- H13. Facilitating conditions has a significant positive direct effect on perceived usefulness.

Perceived ease of use is a TAM variable defined as the degree of belief that using a MP system will be effortless (Chandra *et al.*, 2018). According to Venkatesh *et al.* (2003) it is similar to effort expectancy (UTAUT). For MP, studies have shown that perceived ease of use has a significant effect on behavioral intention (Sobti, 2019; Wang *et al.*, 2019). However, other studies found that this effect is not significant (Anggraini and Rachmawati, 2019; Lee *et al.*, 2019; Liébana-Cabanillas *et al.*, 2018a; Oliveira *et al.*, 2016). After reviewing 87 MP studies published in the period 2007 to 2014, Dahlberg *et al.* (2015) found that perceived ease of use was the factor used most often and the same result was found in a similar review by Karsen *et al.* (2019) of 54 studies published from 2014 to 2018. Some studies showed that perceived ease of use has a significant effect on perceived usefulness (Anggraini and Rachmawati, 2019; Wang *et al.*, 2019). However, Chauhan (2015) found that this effect was not significant. The following hypotheses are proposed:

- H14. Perceived ease of use has a significant positive direct effect on behavioral intention.
- H15. Perceived ease of use has a significant positive direct effect on perceived usefulness.

Moderating factors (gender, age, experience and income): Although UTAUT includes moderating effects, there has not been an adequate investigation of moderating effects in models of MP. Table 1 identifies previous studies that motivated 32 hypotheses associated with the 4 moderators (gender, age, experience and income). Each of the four moderators is hypothesized to have a significant effect on the direct effects on behavioral intention due to the eight model variables shown in Table 1. It is noted that there are 11 hypotheses for which there was no theoretical support among previous studies of MP. Consequently, these 11 hypotheses are considered to be exploratory in nature.

2.2 Theoretical model

Figure 1 presents the theoretical model notated with each of the hypotheses (H1–H15) for direct causal effects.

3. Research design and methods

This quantitative cross-sectional study used a questionnaire to collect data about an individual's experience using MP systems. This approach has been used successfully in prior studies of MP. The design decisions for this study follow the guidance provided by Neuman (2006).

3.1 Development of a questionnaire

A self-administered questionnaire was prepared in both the English and Indonesian languages. The questionnaire includes two sections: Section 1 concerns the personal characteristics of the respondents [age, gender, city of residence, monthly income, the frequency of MP usage each month and the MP system(s) used]. Instructions made it clear that only individuals from urban areas who are at least 17 years of age and have used MP should complete the questionnaire. Section 2 addresses variables in the theoretical model.

A focus group of five MP users with expertise in English and Indonesian languages reviewed both versions of the questionnaire. Suggested modifications were included in revised versions, and the Indonesian language version was used in a pilot study with a sample of ten participants. Their responses and comments were noted, and modifications

		Moderator		
Variable Affecting Behavioral				
Intention	Gender	Age	Experience	Income
Perceived Security Trust	Musa <i>et al.</i> (2015) Giovanis <i>et al.</i> (2019), Kalinić <i>et al.</i> (2019)	Shin (2009) Eze and Poong (2013), Giovanis et al. (2019), Shin (2009)	Musa <i>et al.</i> (2015) Giovanis <i>et al.</i> (2019)	Shin (2009) Eze and Poong (2013), Shin (2009)
Network Externalities Self-efficacy	Exploratory Exploratory	Exploratory Shin (2009)	Exploratory Exploratory	Exploratory Exploratory
Social Influence	Musa <i>et al.</i> (2015), Wong <i>et al.</i> (2020)	Eze and Poong (2013), Musa <i>et al.</i> (2015), Sobti (2019)	Giovanis et al. (2019)	Eze and Poong (2013)
Perceived Usefulness	Giovanis <i>et al.</i> (2019), Kalinić <i>et al.</i> (2019), Liébana-Cabanillas <i>et al.</i> (2018)	Eze and Poong (2013), Giovanis et al. (2019), Musa et al. (2015)	Giovanis <i>et al.</i> (2019), Musa <i>et al.</i> (2015)	Eze and Poong (2013)
Facilitating Conditions Perceived Ease of Use	Lee et al. (2019) Wong et al. (2020)	Sobti (2019) Sobti (2019)	Exploratory Exploratory	Exploratory Exploratory

Adoption of mobile payment systems

Table 1.
Hypotheses associated with moderators

were included in the final versions of the questionnaire. The Indonesian language version was used in the full study.

3.2 Measurement

The questionnaire adapted measuring instruments from prior studies in order to improve the validity and reliability of the measures. Table 2 describes details of the measurement of the ten latent variables where measures of indicators were treated as interval scale measures in analyses. Participants expressed their level of agreement with the statements using a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree).

Moderating factors gender and income are nominal level variables with the values male or female and less than Rp 5,000,000 or greater than or equal to Rp 5,000,000, respectively. The moderating factors age and experience are interval scale variables.

3.3 Sampling

The target population is an Indonesian resident at least 17 years of age who is currently living in an urban area in Indonesia and has used an Indonesian MP system. Indonesian residents have to be at least 17 years old to obtain a resident card which is required by MP providers to register their customers. The size of the target population is unknown but exceeds 100,000. Consequently, with 5% precision and a 95% confidence level, a minimum sample size of 400 was determined (Israel, 2003). This sample size ensured the statistical validity of the study, especially the use of SEM.

A purposive sampling method was used to distribute questionnaires to members of the target population in four large cities in Indonesia using Google Form. The cities were Jakarta and Surabaya (Java island), Denpasar (Bali island) and Makassar (Sulawesi island). This was done with the assistance of personal contacts in each of these four cities.

4. Data preparation and preliminary analyses

4.1 Data preparation

An initial sample of 805 respondents was obtained. The accuracy of data entry in an SPSS worksheet was checked using a random selection of 81 questionnaires (10%). No errors were found and there were no missing values for any of the variables. However, 69 questionnaires were removed from the sample because they contained at least one outlier value for a variable. The final sample size was 736.

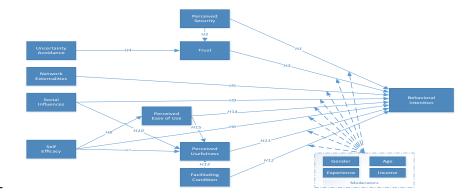


Figure 1. Theoretical model

Variable	Indicator	Measuring instrument	Existing Measuring Instrument	Adoption of mobile payment
Perceived Security	PS1	I would consider tde mobile payment to be	Musa et al.	systems
	PS2	trustwortdy I think that the mobile payment would have sufficient technical capacity to protect my private information	(2015)	
	PS3	I would have trust in the security measures used by a mobile payment to protect my personal and financial information	·	
	PS4	I would be confident with the security system adopted by the mobile payment		
Trust	TR1	Mobile payment is a trustworthy service	Chauhan (2015)	
	TR2	I can count on the mobile payment to protect my		
	TR3	money I can count on the mobile payment to transfer my money safely		
	TR4	The mobile payment can be relied on to keep its promises		
Uncertainty Avoidance	UA1	It is important for mobile payment service providers to show users formal regulations needed and the corresponding benefits	Fan et al. (2018)	
	UA2	When using mobile payment, I will follow all the rules, regulations, and operating procedures needed		
	UA3	When using mobile payment, I will read the		
	UA4	instructions for every procedure needed Regulations of mobile payment are important to me because it can protect the safety of my account and		
	UA5	my property When using mobile payment, I will follow the step-		
Network Externalities	NE1	by-step instructions to make a payment If more and more merchants accept mobile payment, then: The quality of mobile payment services will	Qasim and Abu- Shanab (2016)	
	NE2	improve A wider variety of mobile payment services will be offered		
	NE3	Customers will have to pay less to use mobile payment services		
Self-efficacy	SE1	It is easy to learn how to use a smartphone to pay for		
	SE2	purchases I have the necessary skills to use a smartphone to	(2017)	
	SE3	pay for purchases I am confident that I could figure out how to use a		
0 11 0	OH	smartphone to pay for my purchases	01 1 1	
Social Influence	SI1	People who are important to me think I should use mobile payment	Shankar and Datta (2018)	
	SI2	People whose opinions I value are preferred me to use mobile payment	• •	
	SI3	People who are important to me (e.g., family members, close friends, and colleagues) support me to use mobile payment		Table 2.
			(continued)	Measurement of latent variables

IJ	W.	IS

	Variable	Indicator	Measuring instrument	Measuring Instrument
	Perceived Usefulness	PU1	I believe mobile payment will be a useful service in my day-to-day activities	de Sena Abrahão <i>et al</i> .
		PU2	Using mobile payment would make me perform my financial transactions more quickly	(2016)
		PU3	Using mobile payment increases my productivity	
		PU4	Mobile payment would bring me greater convenience	
	Facilitating Conditions	FC1	I have the resources necessary to use mobile payment	Teo et al. (2015)
		FC2	I have the knowledge necessary to use mobile payment	
		FC3	Mobile payment is compatible with other technologies I use	
		FC4	I can get help from others when I have difficulties using mobile payment	
	Perceived Ease of Use	PEU1	My interaction with mobile payment would be clear and understandable	Oliveira <i>et al.</i> (2016)
		PEU2	It is easy for me to become skillful at using mobile payment	,
		PEU3	I find mobile payment easy to use	
		PEU4	Learning to operate a mobile payment system would be easy for me	
	Behavioral Intention	BI1	If it is possible then: I intend to continue using the mobile payment in the future	Teo et al. (2015)
		BI2	I will always try to use the mobile payment in my daily life	
Table 2.		BI3	I plan to continue to use the mobile payment frequently	

Existing

The construct validity of the measures of the latent model variables was tested iteratively using principal component factor analysis. The first iteration showed that the indicators for trust and perceived security loaded onto the same component. Also, the indicators for selfefficacy and facilitating conditions loaded onto the same component. To resolve these problems, perceived security and facilitating conditions were removed from the theoretical model while trust and self-efficacy were retained. The second factor analysis showed satisfactory construct validity for all of the remaining eight latent variables whereby indicators loaded significantly onto only their associated latent variable with loadings of magnitude 0.4 or greater and associated eigenvalues of at least 1 (Straub et al., 2004). The equivalence reliability of these sets of indicators was assessed using Cronbach's alpha coefficients. Each of the coefficients exceeded the acceptable value of 0.7 according to the interpretation by George and Mallery (2003). These results are displayed as part of Table 3. In addition, the composite reliability and convergent validity of each latent variable were checked by computing the composite reliability (CR) and the average variance extracted (AVE). Following recommendations by Fornell and Larcker (1981) as shown in Table 3, the CR and AVE values for all of the latent variables are greater than the minimum acceptable values of 0.7 and 0.5, respectively. For each latent variable the values for $\sqrt{\text{AVE}}$ are greater than the correlation coefficients for correlations between the latent variable and all other

Adoption of mobile payment systems

Latent variable	Indicator	Loading	Total	Initial ei Percent of variance	Initial eigenvalues riance Cumulative percent	Ç	Ave (\sqrt{ave})	Cronbach's alpha	Interpretation
Uncertainty avoidance	UA3 UA4 UA5	0.821 0.777 0.763	10.868	37.475	37.475	0.880	0.590 (0.768)	0.891	Excellent
Trust	UA2 UA1 TR2 TR3	0.746 0.741 0.879 0.844 0.826	2.528	8.718	46.192	0.902	0.698 (0.835)	0.902	Excellent
Perceived ease of use	TR4 PEU2 PEU4	0.790 0.842 0.804	2.272	7.834	54.026	0.856	0.599 (0.774)	0.910	Excellent
Perceived usefulness	FEUJ PU2 PU1	0.779 0.669 0.779 0.730	1.963	6.770	962'09	0.821	0.534 (0.731)	0.885	Good
Social influence	PU4 SI2 SI1	0.898	1.623	5.596	66.393	0.909	0.768 (0.876)	0.913	Excellent
Behavioral intention	SIS BIS BIZ	0.838 0.838 0.832	1.243	4.286	629.02	0.849	0.652 (0.807)	0.906	Excellent
Network externalities	BII NE2 NE3	0.749 0.856 0.851	1.062	3.661	74.340	0.881	0.711 (0.843)	0.867	Good
Self-efficacy	NE1 SE2 SE1 SE3	0.823 0.829 0.772 0.699	1.047	3.612	77.952	0.812	0.591 (0.769)	0.798	Acceptable

Notes: Extraction method: principal component analysis. Rotation method: Equamax with Kaiser Normalization. Rotation converged in 9 iterations. Kaiser–Meyer–Olkin measure of sampling adequacy = 0.927. Bartlett's Test of Sphericity: Approx. Chi-Square = 14874.165, df = 406, Sig. = 0.000. Only eigenvalues of 1 or more are shown

Table 3. Validity and reliability

latent variables as displayed in Table 6. According to Fornell and Larcker (1981), this indicates satisfactory discriminant validity for the measures of the latent variables.

The removal of perceived security and facilitating conditions from the theoretical model produced a modified theoretical model (Figure 2). Consequently, the four hypotheses about direct effects (*H*1, *H*2, *H*12 and *H*13) and the eight hypotheses in Table 1 about moderating effects involving these two variables were not able to be tested in the modified theoretical model.

4.2 Preliminary analyses

Table 4 summarizes the characteristics of the participants based on Section 1 of the questionnaire.

Ages range from 17 years to 66 years with mean 32, median 28, mode 22 and standard deviation 12. For Experience the mean, median, mode and standard deviation were 15, 10, 10 and 15, respectively. For age and experience the medians were used to form two groups to analyze the moderating effects in section 5.2.

Table 5 shows descriptive statistics for the variables and their indicators in the modified theoretical model. A single scale measure for each latent variable was computed as the weighted mean of the values of the indicators using the standard deviations of the indicators as the weights.

In Table 5, the magnitudes of skewness and kurtosis are within the acceptable limits of 3 and 7, respectively, as recommended for using maximum likelihood estimation in subsequent SEM analyses (Kline, 2016).

Significant results from *t*-tests showed that (p < 0.05):

- (1) Each model variable has a mean value which is significantly greater than the *neutral* value of 3 on their five-point measurement scales.
- (2) The mean values of:
 - Trust, self-efficacy and perceived ease of use for the younger age group were greater than for the older age group but the reverse was true for uncertainty avoidance.
 - Social influence for males was less than for females.
 - Self-efficacy and behavioral intention for the group with less MP experience was less than the group with more experience.

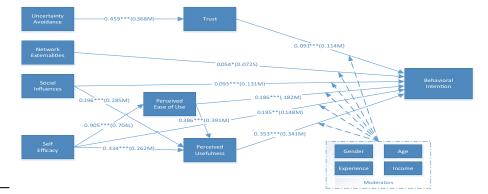


Figure 2. Direct effects in the modified theoretical model

Characteristic	Frequency	(%)	Adoption of mobile
Montdly Income (Rp)			payment
<5,000,000	311	42.3	
≥5,000,000	425	57.7	systems
Experience (Number of times MP is used/month)			
1 to 10	432	58.7	
≥11	304	41.3	
MP System Used		_	
Gopay	567	77.0	
Ovo	654	88.8	
Dana	295	40.1	
LinkAja	119	16.2	
Other	117	15.9	
City			
Surabaya	310	42.1	
Jakarta	182	24.7	
Denpasar	123	16.7	
Makassar	121	16.4	
Gender			
Male	410	55.7	
Female	326	44.3	
Age (Years)			Table 4.
17 to 28	378	51.4	Characteristics of
≥29	358	48.6	participants

 Social influence, uncertainty avoidance and behavioral intention were less for those with lower incomes than those with higher incomes.

Table 6 shows the correlation coefficients for the associations among the model variables. All of the correlations are significant and positive (p < 0.05). The shaded cells correspond with the 11 direct effects in the modified theoretical model (Figure 2). The correlations underlined correspond to five plausible direct effects that may be added to the modified theoretical model. They are plausible because the correlations are significant and it is feasible that one variable precedes the other in time. However, a significant correlation does not mean that the effect is also significant. Consequently, these five effects are only noted at this stage but are examined carefully in Section 5.1.

5. Model analyses

Analyses were done using Amos software. All effects are shown in the following format. The unstandardized effect is shown first, followed by *, ***, **** or NS, which indicates that the level of statistical significance is 0.05, 0.01, 0.001 or not statistically significant at a level of 0.05 or less, respectively. In parentheses, the standardized effect is shown, followed by an interpretation of its magnitude based on Cohen (1988): small (S, \leq 0.1), medium (M, between 0.1 and 0.5) or large (L, \geq 0.5).

5.1 Analyses and development of the modified theoretical model Figure 2 shows direct effects in the SEM analysis of the modified theoretical model.

IIIIIO											
IJWIS	Variable/						Variable/				
	Indicator	Mean	SD	Skewness	s Kurt	osis	Indicator	Mean	SD	Skewness	Kurtosis
	Uncertainty avoidance	4.42	0.539	-0.942	0.	316	Perceived usefulness	4.55	0.511	-0.927	-0.107
	UA1	4.60	0.578	-1.097	0.	209	PU1	4.56	0.601	-1.006	-0.003
	UA2	4.53	0.610	-0.938			PU2	4.64	0.541	-1.173	0.376
	UA3	4.24	0.697	-0.576			PU3	4.44	0.651	-0.751	-0.492
	UA4	4.32	0.697	-0.643			PU4	4.59	0.558	-0.931	-0.156
	UA5	4.48	0.619	-0.768	− 0.	403	Perceived ease of use	4.60	0.488	-0.930	-0.077
	Trust	3.97	0.671	-0.247	-0.	473	PEU1	4.52	0.561	-0.652	-0.615
	TR1	4.01	0.740	-0.333	-0.	285	PEU2	4.60	0.563	-1.033	0.066
	TR2	3.89	0.807	-0.297			PEU3	4.65	0.522	-1.063	0.027
	TR3	4.15	0.737	-0.435	-0.	477	PEU4	4.62	0.549	-1.085	0.166
		3.85	0.762	-0.106	-0.	560		3.97	0.773	-0.219	-0.953
	TR4						influence				
	Network externalities	4.25	0.679	-0.765	− 0.	093	SI1	3.95	0.870	-0.221	-1.023
	NE1	4.26	0.757	-0.690	-0.		SI2	3.89	0.849	-0.149	-0.916
	NE2	4.35	0.712	-0.768	-0.		SI3	4.08	0.786	-0.400	-0.612
	NE3	4.13	0.813	-0.617	− 0.	296	Behavioral intention	4.43	0.661	-1.072	0.427
	Self-efficacy	4.72	0.397	-1.242	0.	410	BI1	4.59	0.604	-1.184	0.355
	SE1	4.70	0.489	-1.267	0.	451	BI2	4.40	0.739	-1.005	0.252
Table 5.	SE2	4.78	0.416	-1.344			BI3	4.34	0.779	-0.940	0.099
Descriptive statistics	SE3	4.70	0.494	-1.260	0.	461					
	Variable	Trust	Netv extern		Self- ficacy		ocial Uncert	-	Perceiv usefuln		eived ease of use
	Network externalities Self-efficacy	0.353 0.294	1 0.3								
	Social influence Uncertainty	e <u>0.302</u>	0.3	35 ().290	1					
	avoidance Perceived	0.308	0.3	68 ().357	0.	318 1				
T 11 C	usefulness Perceived ease	0.352	0.3	60 (0.495	0.	442 0.48	33	1		
Table 6. Correlations among	of use Behavioral	0.324	0.3	18 (0.591	0.	.307 0.40)5	0.60	4	1
model variables	intention	0.385	0.3	70 (0.492	0.	418 0.38	<u>33</u>	0.61	0 (0.561

The fit statistics for the modified theoretical model are $\chi 2 = 1005.261$, df = 360, NC = $\chi 2/$ df = 2.792, RMR = 0.039, GFI = 0.912, AGFI = 0.894, NFI = 0.933, IFI = 0.956, CFI = 0.956 and RMSEA = 0.049, meeting the standard assessment criteria from Kline (2016). The proportion of the variance of each endogenous variable that is explained is satisfactory [trust (0.136), perceived usefulness (0.557), perceived ease of use (0.495), behavioral intention (0.526)]. However, in Figure 2, network externalities has small effect on behavioral intention, and it may be possible to remove it from the model.

Adoption of mobile payment systems

Furthermore, as discussed in Section 4.2 (Table 6), there are five plausible causal effects that may be added to the modified theoretical model: Trust \rightarrow Perceived usefulness and perceived ease of use; Social influence and network externalities \rightarrow Trust; and Uncertainty avoidance \rightarrow Behavioral intention. These five direct effects were added to the modified theoretical model. Using the specification search facility in Amos, they, together with Network externalities \rightarrow Behavioral intention, were made optional. The specification search analyzed the hierarchy of 2^6 (64) possible models. Following Kline (2016), the model in this hierarchy with the smallest value of NC was selected to become the final model shown in Figure 3.

Four of the five direct effects considered as plausible additions were included in the final model, but Uncertainty avoidance \rightarrow Behavioral intention was not included. Network externalities \rightarrow Behavioral intention was retained in the final model even though the unstandardized direct effect is small and not significant (p > 0.05). Fit statistics for the final model are $\chi^2 = 913.844$, df = 356, NC = 2.567, RMR = 0.021, GFI = 0.919, AGFI = 0.902, NFI = 0.939, IFI = 0.962, CFI = 0.962 and RMSEA = 0.046. Compared to the modified model, the fit statistics for the final model are improved. The proportion of the variance of each endogenous variable that is explained is satisfactory [trust (0.223), perceived usefulness (0.560), perceived ease of use (0.490), behavioral intention (0.541)]. However, it is emphasized that the changes made to produce the final model are exploratory. They are based on only empirical evidence from the sample of participants.

Table 7 displays the result of a complete analysis of the final model. The statistical significance of indirect effects was determined using the heuristic proposed by Cohen and Cohen (1983). The statistical significance of totals of effects was determined using nonparametric bootstrapping with 1,000 random samples.

5.2 Moderating effects

In Figure 2, four variables (gender, age, income and experience) are proposed to have significant moderating effects on the six direct effects on behavioral intention. Two groups were formed for each of the moderators based on their distributions (Table 4).

Using the group analysis function in Amos, the fit statistics for the modified theoretical model for each of the groups were satisfactory. Table 8 shows that there were only two significant moderator effects: gender moderates the direct effect of self-efficacy on behavioral intention and experience moderates the direct effect of network externalities on behavioral intention.

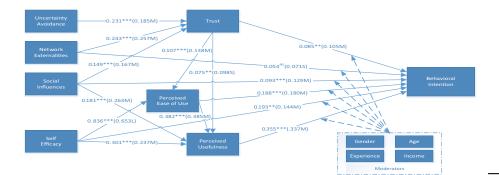


Figure 3. Direct effects of the final model

IJWIS	ĺ	ı			(F)
	Dependent Behavioral intention (BI)	0.085**(0.105M) TR-PU-BI 0.027**(0.033S) TR-PEU-BI 0.020***(0.025S) TR-PEU-PU-BI 0.014***(0.018S)	0.061***(0.076S) 0.061***(0.181M) 0.146***(0.181M) 0.146***(0.181M) 0.14-TR-PEU-BI 0.005***(0.005S) UA-TR-PEU-PU-BI 0.003***(0.003S) UA-TR-PU-BI 0.003***(0.003S)	0.034**(0.033S) 0.034**(0.033S) 0.034**(0.033S) 0.054NS(0.071S) NE-TR-BU 0.021**(0.007S) NE-TR-PEU-BI 0.005***(0.006S) NE-TR-PEU-BI 0.004***(0.005S) NE-TR-PU-BI	0.036***(0.046S) 0.036***(0.046S) 0.09***(0.117M) 0.193***(0.144M)
	Perceived ease of use	0.107***(0.138M) Nii	Nil 0.107***(0.138M) Nil UA-TR-PEU 0.025***(0.025S)	0.025***(0.025S) 0.025***(0.025S) Nil NE-TR-PEU 0.026***(0.035S)	0.026***(0.035S) 0.026***(0.653L) 0.836***(0.653L)
	Perceived usefulness	0.075**(0.098S) TR-PEU.PU 0.041***(0.053S)	0.041***(0.053) 0.116***(0.151M) Nii UA-TR-PU 0.017**(0.018S) UA-TR-PEU-PU 0.009***(0.01S)	0.026**(0.028S) 0.026**(0.028S) Nil NE-TR-PU 0.018**(0.025S) NE-TR-PEU-PU 0.01***(0.014S)	0.028**(0.039S) 0.028**(0.039S) 0.301***(0.237M)
	Intervening Trust	ii Z Zi	Nil Nil 0.231***(0.185M) Nil	Nil 0.221***(0.185M) 0.243***(0.257M) Nil	Nii 0.243***(0.257M) Nii
	Effect	Direct Indirect	Total Indirect Total Indirect	Total Indirect Total Direct Indirect	Total Indirect Total Direct
Table 7. Analysis of the final model	Variable	Trust (TR)	Uncertainty avoidance (UA)	Network externalities (NE)	Self-efficacy (SE)

Dependent Rehavioral intention (RI)	SE-PU-BI 0.107***(0.079S) SE-PEU-BI 0.157***(0.117M) SE-PEU-PU-BI	0.113***(0.0855) 0.377***(0.281M) 0.057***(0.425M) 0.093***(0.129M) SI-TR-BI 0.013**(0.0175) SI-TR-PU-BI 0.004**(0.0055) SI-TR-PEU-BI 0.002****(0.0045) SI-TR-PEU-BI 0.002****(0.0045) SI-PEU-BI	0.064***(0.089S) 0.086***(0.118M) 0.179***(0.247M) 0.355***(0.337M) Nil Nil 0.355***(0.337M) 0.188***(0.180M) PEU-PU-BI 0.136***(0.130M) 0.136***(0.130M)	Adoption of mobile payment systems
Derraited ages of tree	Nii	Nil 0.836***(0.653L) Nil SI-TR-PEU 0.016*** (0.023S)	0.016***(0.023S) 0.016***(0.023S) Nil	
Darraivad usafulnass	SE-PEU-PU 0.319***(0.251M)	0.319***(0.251M) 0.620***(0.488M) 0.181****(0.263M) SI-TR-PU 0.011** (0.016S) SI-TR-PEU- PU 0.006****(0.009S)	0.017**(0.025S) 0.198***(0.288M) Nil Nil Nil Nil Nil Nil 0.382***(0.385M) Nil	
Intervening Tract	Nill	Nil Nil 0.149****(0.167M) Nil	Nil 0.149***(0.167M) Nil Nil Nil Nil Nil Nil Nil Nil	
RHace	Indirect	Total Indirect Total Direct Indirect	Total Indirect Total Direct Indirect Total Indirect Total Direct Indirect Total Total Total Total	
Variable	Valiable	Social influence (SI)	Perceived usefulness (PU) Perceived ease of use (PEU)	Table 7.

6. Discussion

The characteristics of the participants (Section 4.2) showed that they were suited to the requirements of the study and well placed to provide valid and reliable responses to the questionnaire.

6.1 Direct effects

From the final model (Figure 3), there is support for 10 of the 11 hypotheses about significant direct effects. Among these 11 hypotheses, six referred to significant direct effects on Behavioral Intention. Five of these were supported, and in decreasing order of importance, these effects were due to perceived usefulness, self-efficacy, perceived ease of use, social influence and trust. The direct effect of network externalities on behavioral intention (*H5*) was not supported. Compared to other constructs, Indonesian consumers place less importance on network externalities as a motivation for using MP technology. This finding is supported by a prior study in Sweden conducted by Arvidsson (2014). On the contrary, Qasim and Abu-Shanab (2016) reported that this effect was significant in Jordan. However, as mentioned in their study's limitation, they used a small sample size (only 253 participants) that may cause some biases. Network externalities was also significantly positively correlated with behavioral intentions (Table 6). Thus, the effect of network externalities on behavioral intention still needs to be explored in future studies.

As seen in Figure 3, perceived usefulness was the strongest direct effect on behavioral intention, with medium magnitude. This finding is consistent with research conducted by Lee *et al.* (2019), Sobti (2019) and Wang *et al.* (2019). This possibly happened since the data collection was carried out during the COVID-19 pandemic, so that the Indonesian people's interest in using cashless transactions has increased to avoid being infected with the virus. Therefore, using the MP to perform their daily transaction is considered very useful for them.

Self-efficacy was the second biggest direct effect on behavioral intention, with medium magnitude, followed in decreasing order of importance by perceived ease of use, social influence, trust and network externalities. This result is in line with several prior studies (Anggraini and Rachmawati, 2019; Lee *et al.*, 2019; Phonthanukitithaworn *et al.*, 2016; Qasim and Abu-Shanab, 2016; Shankar and Datta, 2018; Sobti, 2019). This finding is possible since the percentage of mobile internet users in Indonesia is 133% of Indonesian people (Tomato Digital Indonesia, 2020). They are accustomed to mobile devices and feel capable and confident in using MP.

Effects	Unstandardized Effect	Unstandardized Effect	Difference Unstandardized Effect Group 1 – Group 2	Magnitude of the Critical Ratio for the Difference
	Gen	der		
	Group 1: Males (410)	Group 2: Females (326)		
$SE \to BI$	0.437***	-0.042 NS	0.479	3.163**
	Experience (T	imes/Month)		
$NE \to BI$	Group 1: $\leq 10 (432)$ 0.106**	Group 2: ≥ 11 (304) -0.005 NS	0.111	2.049*

Table 8.The significant moderator effects

6.2 Indirect and total effects

In Table 7, all of the indirect effects on behavioral intention are positive and significant. Except for perceived usefulness every variable has at least one indirect effect on behavioral intention and all of these indirect effects are small with the exception of the following two indirect effects which are medium:

- (1) Self-efficacy → Perceived ease of use → Behavioral intention is almost as influential as the direct effect of self-efficacy on behavioral intention. This finding emphasizes the importance of the impact of self-efficacy on behavioral intention both directly, as reported by Shankar and Datta (2018), and indirectly though the mediator perceived ease of use;
- (2) Perceived ease of use → Perceived usefulness → Behavioral intention is almost as influential as the direct effect of perceived ease of use on behavioral intention. This indirect effect supports the important direct influence of perceived ease of use on behavioral intention, reported by Sobti (2019) and Wang et al. (2019), and contrary to results from other studies (Anggraini and Rachmawati, 2019; Lee et al., 2019; Liébana-Cabanillas et al., 2018a; Oliveira et al., 2016). The finding highlights the mediation role of perceived usefulness

Each of the six totals of indirect effects on behavioral intention is significant. Three are small (due to trust, network externalities and uncertainty avoidance) while three are medium (due to self-efficacy, social influence and perceived ease of use). The total of indirect effects on behavioral intention is greatest for self-efficacy. The total exceeds the significant direct effect on behavioral intention mainly due to the important mediator perceived ease of use. This finding supplements the importance of the direct effect as reported by Shankar and Datta (2018) and again highlights the importance of an individual feeling confident in their abilities to use MP.

The greatest total effect on behavioral intention is due to self-efficacy followed in decreasing order of importance by perceived usefulness, perceived ease of use, social influence, trust, network externalities and uncertainty avoidance. This order contrasts with the order when only direct effects are analyzed (i.e. perceived usefulness, self-efficacy, perceived ease of use, social influence and trust). Using total effects is more informative especially regarding perceived usefulness and self-efficacy as well as network externalities and uncertainty avoidance. The direct effect of network externalities on behavioral intention is small and not significant but its total effect on behavioral intention, uncertainty avoidance has a significant total effect. These results confirm the importance of analyzing indirect and total effects instead of only direct effects.

Apart from influences on behavioral intention, other results in the final model indicate the importance of analyzing indirect and total effects. Based on total effects the greatest influence on:

- Perceived usefulness is self-efficacy followed in decreasing order of importance by
 perceived ease of use, social influence, trust, network externalities and uncertainty
 avoidance. However, using only direct effects the order is perceived ease of use,
 social influence, self-efficacy and trust. considering only direct effects conceals the
 important mediating roles of trust and perceived ease of use in indirect effects due to
 network externalities, uncertainty avoidance and self-efficacy;
- Perceived ease of use is self-efficacy followed by trust, network externalities, uncertainty avoidance and social influence. Consider only direct effects the order is

Adoption of mobile payment systems

self-efficacy followed by trust which conceals the important mediating role of trust in indirect effects on perceived ease of use due to network externalities, uncertainty avoidance and social influence.

6.3 Moderator effects

Among the 24 hypotheses concerning significant moderator effects in the modified theoretical model (Figure 2) only two significant moderator effects were found (Table 8). In both cases, these moderator effects involving gender and experience were exploratory in nature:

- For males, the direct effect of self-efficacy on behavioral intention was significant, positive, medium and significantly greater than the not significant and small effect for females.
- For the group with MP usage ten times or less per month, the direct effect of network externalities on behavioral intention was significant, positive, medium and significantly greater than the not significant and small effect for the group with greater MP experience.

These findings enhance understanding of the direct effects of self-efficacy and network externalities on behavioral intention described in Section 6.1.

6.4 Contributions

The findings represent theoretical and practical contributions to understanding MP, especially in Indonesia.

Theoretical Contributions: Some of the findings are new, while others are reported in only a few studies or evidence in other studies is contradictory. Starting with the study's new findings, both social influence and network externalities have significant positive direct effects on trust. One of Hofstede's culture dimensions, uncertainty avoidance, does not have a significant direct effect on behavioral intention. All of the indirect effects and corresponding totals of effects presented in Table 7 are also considered as new findings. Further, three variables (trust, perceived usefulness, and perceived ease of use) are found to be the important mediators in indirect effects. All of the results related to moderator effects of gender, age, experience and income are also categorized as new findings. Only a few studies have reported that trust has a significant positive direct effect on perceived usefulness (Anggraini and Rachmawati, 2019; Chauhan, 2015) and perceived ease of use (Chandra et al., 2018; Liébana-Cabanillas et al., 2018a).

This study also produces some contrary results compared to previous research. Social influence was found to have a significant direct effect on behavioral intention and perceived usefulness, which is not in line with the studies conducted by Shankar and Datta (2018) and Teo *et al.* (2015). Another finding that perceived usefulness has a significant direct effect on behavioral intention is not supported by the result from Anggraini and Rachmawati (2019). Several prior studies also did not agree with the finding that perceived ease of use has a significant direct effect on Behavioral Intention (Anggraini and Rachmawati, 2019; Lee *et al.*, 2019). Finally, a study from Chauhan (2015) did not support the finding that perceived ease of use has a significant direct effect on perceived usefulness.

Practical Contribution: The following discussions are based on the total effects from each factor that influences the intention to adopt MP, as listed in Table 7. By understanding the

Adoption of mobile payment systems

factors influencing a customer's acceptance of MP, the MP service providers can develop strategic decisions to achieve success in increasing the number of individuals who adopt MP. As self-efficacy was found to be the strongest factor that influences the consumer's intention to use MP (Table 7), MP providers need to develop the technical knowledge that consumers need to use MP. Reducing the need for any complicated technical skills would be desirable as well as providing *in-situ* help for using MP and demonstrating MP payment transactions. The result of the moderating effect of gender (Table 8) suggests that female consumers would hopefully benefit the most from these actions.

The other influential determinants of MP acceptance are perceived usefulness, perceived ease of use, social influence, trust and network externalities. Consequently, MP service providers should provide useful MP features to maximize consumer benefits by continuously upgrading the MP system to enhance the performance (perceived usefulness). Moreover, MP providers need to take specific activities to ensure that consumers can easily perform a transaction by building kiosks in public services to help consumers use MP and designing MP systems and apps that are simple and follow standard rules (perceived ease of use). The providers should create a positive social awareness of MP by promoting MP on social media networks and encouraging as well as rewarding the consumers who promote MP among their contacts (social influence). Ensuring that MP systems are secure and safe should be paid attention to by the providers through investment in both hardware and software security and development responsive help support for consumers (trust). Lastly, MP providers need to inform potential users of the strong acceptance and growth of MP by offering incentives and rewards for consumers at well-known merchants and promoting the MP system as much as possible (network externalities). The result of the moderating effect of experience (Table 8) suggested that consumers who frequently use MP would benefit the most from these actions.

7. Conclusion

The study aimed to address:

- a gap in the literature related to MP systems in Indonesia;
- analyses of direct, indirect and total effects among constructs in a theoretical model derived from previous studies;
- moderating effects of gender, age, income and MP experience on direct influences on a user's intentions to use MP; and
- practical implications of the theoretical findings.

Section 6 presents a detailed discussion of the findings, which include support for findings from previous studies, new findings and additional evidence where previous findings have been contradictory or not commonly reported.

There are limitations to the findings. It was not possible to obtain valid measures for perceived security and facilitating conditions separately from trust and self-efficacy, respectively. Groups used for moderators were derived from the distributions of the moderators and different results may be obtained if different groupings were used. The study needs to be repeated in order to enhance the external validity of the findings, especially in relation to the new findings.

Further studies may consider different model variables, different moderators (e.g. level of education) and groups and participants from different urban and rural areas. Also, studies from the perspective of the MP provider and future cross-cultural studies and comparisons are recommended.

References

- Ajzen, I. (1991), "The theory of planned behavior", Organizational Behavior and Human Decision Processes, Vol. 50 No. 2, pp. 179-211.
- Al-Saedi, K., Al-Emran, M., Abusham, E. and El Rahman, S.A. (2019), "Mobile payment adoption: a systematic review of the UTAUT model", *International Conference on Fourth Industrial Revolution (ICFIR)*, IEEE, pp. 1-5.
- Anggraini, E.L. and Rachmawati, I. (2019), "Analysis factors influencing the adoption of mobile payment using the UTAUT2 model (a case study of OVO in Indonesia)", *International Journal of Scientific Research and Engineering Development*, Vol. 2 No. 3, pp. 168-175.
- Arvidsson, N. (2014), "Consumer attitudes on mobile payment services results from a proof of concept test", *International Journal of Bank Marketing*, Vol. 32 No. 2, pp. 150-170.
- Aslam, W., Ham, M. and Arif, I. (2017), "Consumer behavioral intentions towards mobile payment services: an empirical analysis in Pakistan", Market-Tržište, Vol. 29 No. 2, pp. 161-176.
- Aydin, G. and Burnaz, S. (2016), "Adoption of mobile payment systems: a study on mobile wallets", Pressacademia, Vol. 5 No. 1, pp. 73-92.
- Bailey, A.A., Pentina, I., Mishra, A.S. and Mimoun, M.S.B. (2017), "Mobile payments adoption by US consumers: an extended TAM", International Journal of Retail and Distribution Management, Vol. 45 No. 6, pp. 626-640.
- Chandra, Y.U., Kristin, D.M., Suhartono, J., Sutarto, F.S. and Sung, M. (2018), "Analysis of determinant factors of user acceptance of mobile payment system in Indonesia (a case study of Go-Pay mobile payment)", International Conference on Information Management and Technology (ICIMTech), IEEE, pp. 454-459.
- Chauhan, S. (2015), "Acceptance of mobile money by poor citizens of India: integrating trust into the technology acceptance model", *Info 2015*, Vol. 17 No. 3, pp. 58-68.
- CNBC Indonesia (2019), "Daftar 10 dompet digital terpopuler di RI, siapa jawaranya?", available at: www.cnbcindonesia.com/tech/20190815104730-37-92151/daftar-10-dompet-digital-terpopuler-diri-siapa-jawaranya (accessed 5 March 2020).
- Cohen, J. (1988), Statistical Power Analysis for the Behavioral Sciences, 2nd ed., Academic Press, New York, NY.
- Cohen, J. and Cohen, P. (1983), "Applied multiple regression/correlation analysis for the behavioral sciences", 3rd ed., Erlbaum, Mahwah, NJ.
- Dahlberg, T., Guo, J. and Ondrus, J. (2015), "A critical review of mobile payment research", Electronic Commerce Research and Applications, Vol. 14 No. 5, pp. 265-284.
- Davis, F.D. (1989), "Perceived usefulness, perceived ease of use and user acceptance of information technology", Mis Quarterly, Vol. 13 No. 3, pp. 319-340.
- de Sena Abrahão, R., Moriguchi, S.N. and Andrade, D.F. (2016), "Intention of adoption of mobile payment: an analysis in the light of the unified theory of acceptance and use of technology (UTAUT)", RAI Revista de Administração e Inovação, Vol. 13 No. 3, pp. 221-230.
- Eze, U.C. and Poong, Y.S. (2013), "The moderating roles of income and age in mobile commerce application", Journal of Electronic Commerce in Organizations (JECO), Vol. 11 No. 3, pp. 46-67.
- Fan, J., Shao, M., Li, Y. and Huang, X. (2018), "Understanding users' attitude toward mobile payment use", *Industrial Management and Data Systems*, Vol. 118 No. 3, pp. 524-540.
- Fornell, C. and Larcker, D.F. (1981), "Evaluating structural equation models with unobservable variables and measurement error", *Journal of Marketing Research*, Vol. 18 No. 1, pp. 39-45.
- George, D. and Mallery, P. (2003), SPSS for Windows Step by Step: A Simple Guide and Reference, 11.0 Update, Allyn and Bacon, Boston, MA.

- Giovanis, A., Kavoura, A., Rizomyliotis, I., Varelas, S. and Vlachvei, A. (2019), "Exploring the factors affecting consumer acceptance of proximity M-payment services", In Strategic Innovative Marketing and Tourism, Springer, Cham, pp. 551-558.
- Handarkho, Y.D. and Harjoseputro, Y. (2019), "Intention to adopt mobile payment in physical stores", Journal of Enterprise Information Management, Vol. 33 No. 2, pp. 285-308.
- Hofstede, G. (1984), Culture's Consequences: international Differences in Work-Related Values, Vol. 5, Sage Publications.
- Hofstede-insights (2020), "Country comparison", available at: www.hofstede-insights.com/country-comparison/indonesia/ (accessed 3 April 2020).
- Israel, G.D. (2003), "Determining sample size", (Tech. Rep. No. PEOD6), University of FL, Institute of Food and Agricultural Sciences, FL.
- Kalinić, Z., Liébana-Cabanillas, F.J., Muñoz-Leiva, F. and Marinković, V. (2019), "The moderating impact of gender on the acceptance of peer-to-peer mobile payment systems", *International Journal of Bank Marketing*, Vol. 38 No. 1, pp. 138-158.
- Karsen, M., Chandra, Y.U. and Juwitasary, H. (2019), "Technological factors of mobile payment: a systematic literature review", *Procedia Computer Science*, Vol. 157, pp. 489-498.
- Kim, C., Mirusmonov, M. and Lee, I. (2010), "An empirical examination of factors influencing the intention to use mobile payment", *Computers in Human Behavior*, Vol. 26 No. 3, pp. 310-322.
- Kline, R.B. (2016), Principles and Practice of Structural Equation Modeling, 4th ed., The Guilford Press, New York, NY.
- Lee, J.M., Lee, B. and Rha, J.Y. (2019), "Determinants of mobile payment usage and the moderating effect of gender: extending the UTAUT model with privacy risk", *International Journal of Electronic Commerce Studies*, Vol. 10 No. 1, pp. 43-64.
- Liébana-Cabanillas, F., Muñoz-Leiva, F. and Sánchez-Fernández, J. (2015a), "Behavioral model of younger users in m-payment systems", Journal of Organizational Computing and Electronic Commerce, Vol. 25 No. 2, pp. 169-190.
- Liébana-Cabanillas, F., Muñoz-Leiva, F. and Sánchez-Fernández, J. (2018b), "A global approach to the analysis of user behavior in mobile payment systems in the new electronic environment", *Service Business*, Vol. 12 No. 1, pp. 25-64.
- Liébana-Cabanillas, F., Ramos de Luna, I. and Montoro-Ríos, F.J. (2015b), "User behavior in QR mobile payment system: the QR payment acceptance model", *Technology Analysis and Strategic Management*, Vol. 27 No. 9, pp. 1031-1049.
- Liébana-Cabanillas, F.J., Sánchez-Fernández, J. and Muñoz-Leiva, F. (2014a), "Role of gender on acceptance of mobile payment", *Industrial Management and Data Systems*, Vol. 114 No. 2, pp. 220-240.
- Liébana-Cabanillas, F., Marinkovic, V., de Luna, I.R. and Kalinic, Z. (2018a), "Predicting the determinants of mobile payment acceptance: a hybrid SEM-neural network approach", Technological Forecasting and Social Change, Vol. 129, pp. 117-130.
- Marginingsih, R., Widiyanti, W., Susilowati, I.H., Retnowulan, J. and Soraya, I. (2019), "Mobile payment as financial transactions in the digital era: an empirical analysis", in *IOP Conference Series: Materials Science and Engineering*, IOP Publishing, Vol. 662, No. 2, p. 022133.
- MarketWatch (2020), "Global mobile payments market in-depth analysis by size, share and future trends 2020-2025", available at: www.marketwatch.com/press-release/global-mobile-payments-market-in-depth-analysis-by-size-share-and-future-trends-2020-2025-2020-02-19 (accessed 9 February 2020).
- MDI and Mandiri Sekuritas (2019), "Mobile payments in Indonesia: race to big data domination", available at: www.mdi.vc/mobilepaymentindonesia.pdf (accessed 5 March 2020).

- Musa, A., Khan, H.U. and AlShare, K.A. (2015), "Factors influence consumers' adoption of mobile payment devices in Qatar", *International Journal of Mobile Communications*, Vol. 13 No. 6, pp. 670-689.
- Nejad, M.G., Apanasevic, T., Markendahl, J. and Arvidsson, N. (2016), "Stakeholders' expectations of mobile payment in retail: lessons from Sweden", *International Journal of Bank Marketing*, Vol. 34 No. 1, pp. 37-61.
- Neuman, W.L. (2006), "Social research methods", Qualitative and Quantitative Approaches, 6th ed., Allyn and Bacon, Boston.
- Oliveira, T., Thomas, M., Baptista, G. and Campos, F. (2016), "Mobile payment: understanding the determinants of customer adoption and intention to recommend the technology", Computers in Human Behavior, Vol. 61, pp. 404-414.
- Phonthanukitithaworn, C., Sellitto, C. and Fong, M.W. (2016), "An investigation of mobile payment (m-payment) services in Thailand", Asia-Pacific Journal of Business Administration, Vol. 8 No. 1, pp. 37-54.
- Qasim, H. and Abu-Shanab, E. (2016), "Drivers of mobile payment acceptance: the impact of network externalities", Information Systems Frontiers, Vol. 18 No. 5, pp. 1021-1034.
- Rolfe, A. (2019), "Mobile wallet trends anual report 2019", available at: www.paymentscardsandmobile. com/mobile-wallet-trends-annual-report-2019/ (accessed 9 April 2020).
- Rosnidah, I., Muna, A., Musyaffi, A.M. and Siregar, N.F. (2019), "Critical factor of mobile payment acceptance in millenial generation: study on the UTAUT model", in *International Symposium* on Social Sciences, Education, and Humanities (ISSEH 2018), Atlantis Press.
- Shankar, A. and Datta, B. (2018), "Factors affecting mobile payment adoption intention: an Indian perspective", Global Business Review, Vol. 19 No. 3_suppl, pp. 72S-89S.
- Shin, D.H. (2009), "Towards an understanding of the consumer acceptance of mobile wallet", Computers in Human Behavior, Vol. 25 No. 6, pp. 1343-1354.
- Slade, E., Williams, M., Dwivedi, Y. and Piercy, N. (2015), "Exploring consumer adoption of proximity mobile payments", Journal of Strategic Marketing, Vol. 23 No. 3, pp. 209-223.
- Sobti, N. (2019), "Impact of demonetization on diffusion of mobile payment service in India", Journal of Advances in Management Research, Vol. 16 No. 4, pp. 472-497.
- Song, M., Parry, M.E. and Kawakami, T. (2009), "Incorporating network externalities into the technology acceptance model", *Journal of Product Innovation Management*, Vol. 26 No. 3, pp. 291-307.
- Straub, D., Boudreau, M.-C. and Gefen, D. (2004), "Validation guidelines for is positivist research", Communications of the Association of Information Systems, Vol. 13, pp. 380-427.
- Teo, A.C., Tan, G.W.H., Ooi, K.B., Hew, T.S. and Yew, K.T. (2015), "The effects of convenience and speed in m-payment", *Industrial Management and Data Systems*, Vol. 115 No. 2, pp. 311-331.
- The Jakarta Post (2019a), "Indonesia's mobile ads record highest growth rate in the world", available at: www.thejakartapost.com/news/2019/12/12/indonesias-mobile-ads-record-highest-growth-rate-in-the-world.html (accessed 12 December 2019).
- The Jakarta Post (2019b), "The top five e-wallet apps in Indonesia", available at: www. thejakartapost.com/life/2019/08/14/the-top-five-e-wallet-apps-in-indonesia.html (accessed 14 Maret 2020).
- Tomato Digital Indonesia (2020), "Data digital Indonesia 2019", available at: www.tomato.co.id/data-digital-indonesia-2019/ (accessed 13 April 2020).
- Venkatesh, V., Morris, M.G., Davis, G.B. and Davis, F. (2003), "User acceptance of information technology: toward a unified view", *Management Information System Quarterly*, Vol. 27 No. 3, pp. 425-478.

Wang, G., Putri, N.M. and Christianto, A. (2019), "An empirical examinition of characteristics of mobile payment users in Indonesia", *Journal of Theoretical and Applied Information Technology*, Vol. 96 No. 1, pp. 169-182.

Wong, S.M., Leong, C.M. and Puah, C.H. (2020), "Mobile internet adoption in Malaysian suburbs: the moderating effect of gender", *Asian Journal of Business Research*, Vol. 9 No. 3, pp. 90-114.

Xin, H., Techatassanasoontorn, A.A. and Tan, F.B. (2015), "Antecedents of consumer trust in mobile payment adoption", *Journal of Computer Information Systems*, Vol. 55 No. 4, pp. 1-10.

Adoption of mobile payment systems

Further reading

Liébana-Cabanillas, F., Sánchez-Fernández, J. and Muñoz-Leiva, F. (2014b), "The moderating effect of experience in the adoption of mobile payment tools in virtual social networks: the m-Payment acceptance model in virtual social networks (MPAM-VSN)", *International Journal of Information Management*, Vol. 34 No. 2, pp. 151-166.

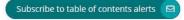
Corresponding author

Lisana Lisana can be contacted at: lisana@staff.ubaya.ac.id

International Journal of Web Information Systems

Issue(s) available: 65 - From Volume: 1 Issue: 1, to Volume: 17 Issue: 1

Category: Information and Knowledge Management







Editorial team

Co-Editor

Dr Eric Pardede

La Trobe University - Australia

E.Pardede@latrobe.edu.au

Dr David Taniar

Monash University - Australia

David.Taniar@infotech.monash.edu.au

Publisher

Summer Wang

Emerald Publishing - People's Republic of China

swang@emerald.com

Journal Editorial Office (For queries related to pre-acceptance)

Suraj Rajaram Singh Emerald Publishing surajr.emerald@kwglobal.com

Supplier Project Manager (For queries related to post-acceptance)

Uday Bhan

Emerald Publishing

udaybhan.emerald@kwglobal.com

Editorial Board

Toshiyuki Amagasa

University of Tsukuba - Japan

Barbara Carminati

University of Insubria - Italy

Angela Carrillo-Ramos

Pontificia Universidad Javeriana - Colombia

Tran Khanh Dang

HCMC University of Technology - Vietnam

Takahiro Hara

Osaka University - Japan

Yiu-Kai (Dennis) Ng

Brigham Young University - USA

Jaroslav Pokorný

Charles University in Prague - Czech Republic

Sherif Sakr

NICTA - Australia

Paolo Trunfio

University of Calabria - Italy

Vania Vidal

Federal University of Ceará - Brazil

Roberto V. Zicari

Institute of Computer Science, Goethe University Frankfurt - Germany

Advisory Board

Majed Al-Mashari

King Saud University - Saudi Arabia

Stephane Bressan

National University of Singapore - Singapore

Kuo Ming Chao

Coventry University - UK

Schahram Dustdar

Vienna University of Technology - Austria

Pedro ISIAIS

University of Queensland - Australia

Maria Indrawan

Monash University - Australia

Gabriele Kotsis

Johannes Kepler University Linz - Austria

Zoe Lacroix

Arizona State University - USA

Zakaria Maamar Zayed University - United Arab Emirates

Wenny Rahayu La Trobe University - Australia

Maytham Safar

Kuwait University - Kuwait

Klaus-Dieter Schewe

Information Science Research Centre - New Zealand

Timothy Shih

Tamkang University - Taiwan (Republic of China)

Makoto Takizawa

Hosei University - Japan

A Min Tjoa

Vienna University of Technology - Austria

Roland Wagner

Johannes Kepler University of Linz - Austria

Edgar R Weippl

Secure Business Austria - Security Research - Austria

Mohammad Younas

Oxford Brookes University - UK

Factors influencing the adoption of mobile payment systems in Indonesia

Lisana Lisana .

International Journal of Web Information Systems

ISSN: 1744-0084

Article publication date: 8 April 2021 @ Supris & Parrissions

Abstract

Purpose

This empirical study aims to determine factors that influence an individual's intention to use mobile payment (MP) systems. The study investigates direct, indirect and total effects as well as factors that mediate or moderate effects on intention.

Design/methodology/approach

A theoretical model is derived from previous studies and combines factors from technology acceptance model and unified theory of acceptance and use of technology (perceived usefulness, perceived ease of use, social influence, facilitating conditions, behavioral intention) with factors relevant to MP (perceived security, uncertainty avoidance, trust, network externalities and self-efficacy). Gender, age, MP experience and income are included as moderators of direct effects on behavioral intention. The sample includes 736 participants from the four large cities in Indonesia. Structural equation modeling is used to analyze and develop the theoretical model.

Findings

Self-efficacy has the greatest total effect on behavioral intention, followed in decreasing order of importance by perceived usefulness, perceived ease of use, social influence, trust, network externalities and uncertainty Avoidance. only gender and MP experience have significant moderating effects whereby the direct effects of self-efficacy and network externalities on behavioral intention are influenced by gender and MP experience, respectively. Trust, perceived usefulness and perceived ease of use have important mediation effects.

Originality/value

This study fills the gap in the limited theoretical understanding of MP adoption in Indonesia. New theoretical findings related to mediating and moderating effects, direct, indirect, and total effects are used to discuss important practical implications of the findings.

Related articles

Intention to adopt mobile payment in physical stores

Yonathan Dri Handarkho et al., Journal of Enterprise Information Management, 2019

Understanding mobile payment users' continuance intention: a trust transfer perspective

Xiongfei Cao et al., Internet Research, 2018

Examining mobile based payment services adoption issues

Parijat Upadhyay et al., Journal of Enterprise Information Management, 2015

FDA Identifies Most Needed Meds to Address Urgent Medical Conditions ☑

MRP, 2020

Fraud detection within bankcard enrollment on mobile device based payment using machine learning 2

Hao Zhou et al., Frontiers of Information Technology & Electronic Engineering, 2018

Factors influencing Dutch practice nurses' intention to adopt a new smoking cessation intervention (8)

Lisa Leitlein et al., Journal of Advanced Nursing, 2011





Keywords

Mobile Payment | Mediators | Moderators

Acknowledgements

The author is grateful to the University of Surabaya, Indonesia, for funding this research.

Citation

Lisana, L. (2021), "Factors influencing the adoption of mobile payment systems in Indonesia", International Journal of Web Information Systems, Vol. ahead-of-print No. ahead-of-print. https://doi.org/10.1108/IJWI5-01-2021-0004



Publisher: Emerald Publishing Limited
Cogyright © 2020. Emerald Publishing Limited

A novel framework for delivering static search capabilities to large textual corpora directly on the Web domain: an implementation for Migne's Patrologia Graeca

Evagelos Varthis, Marios Poulos, Ilias Giarenis, Sozon Papavlasopoulos

This study aims to provide a system capable of static searching on a large number of unstructured texts directly on the Web domain while keeping costs to a minimum. The...



Legal document recommendation system: a dictionary based approach

<u>Jenish Dhanani</u>, <u>Rupa Mehta</u>, <u>Dipti P. Rana</u>

In the Indian judicial system, the court considers interpretations of similar previous judgments for the present case. An essential requirement of legal practitioners is...



$\underline{A\ new\ neutrosophic\ TF\text{-}IDF\ term\ weighting\ for\ text\ mining\ tasks:\ text\ classification\ use\ case}$

Mariem Bounabi, Karim Elmoutaouakil, Khalid Satori

This paper aims to present a new term weighting approach for text classification as a text mining task. The original method, neutrosophic term frequency – inverse term...



<u>Incorporating LDA with LSTM for followee recommendation on Twitter network</u>

Brahim Dib, Fahd Kalloubi, El Habib Nfaoui, Abdelhak Boulaalam

The purpose of this study is to facilitate the task of finding appropriate information to read about, and searching for people who are in the same field of interest...



Reprints & Permissions

DOWNLOADS





ISSN: (International Standard 04 Serial Online date, start - end: Number.) 2005

2005
Copyright Holder:

Emerald Publishing Limited

Open Access:

hybrid

Editors:

- Dr Tran Khanh Dang
- Dr. Josef Küng

Further Information

- About the journal 🗂
- Purchase information
- Editorial team
- Write for this journal

Support & Feedback

Manage cookies

Emerald logo

y f in □ © 2022 Emerald Publishing Limited

Services

Authors

Editors Librarians

Researchers

Reviewers

About

About Emerald
Working for Emerald

Contact us

Publication sitemap

Policies and information

Privacy notice

Site policies

Modern Slavery Act
Chair of Trustees governance statement

COVID-19 policy

<u>Accessibility</u>

also developed by scimago: SCIMAGO INSTITUTIONS RANKINGS



Scimago Journal & Country Rank

Enter Journal Title, ISSN or Publisher Name

Q,

Home

Journal Rankings

Country Rankings

Viz Tools

Help

About Us

International Journal of Web Information Systems

COUNTRY	SUBJECT AREA AND CATEGORY	PUBLISHER	H-INDEX
United Kingdom Universities and research institutions in United Kingdom	Computer Science Computer Networks and Communications Information Systems	Emerald Group Publishing Ltd.	18
PUBLICATION TYPE	ISSN	COVERAGE	INFORMATION
Journals	17440084, 17440092	2005-2021	Homepage
			How to publish in this journal
			E.Pardede@latrobe.ed u.au

SCOPE

The Global Information Infrastructure is a daily reality. In spite of the many applications in all domains of our societies: e-business, e-commerce, e-learning, e-science, and e-government, for instance, and in spite of the tremendous advances by engineers and scientists, the seamless development of Web information systems and services remains a major challenge. The journal examines how current shared vision for the future is one of semantically-rich information and service oriented architecture for global information systems. This vision is at the convergence of progress in technologies such as XML, Web services, RDF, OWL, of multimedia, multimodal, and multilingual information retrieval, and of distributed, mobile and ubiquitous computing. Topicality While the International Journal of Web Information Systems covers a broad range of topics, the journal welcomes papers that provide a perspective on all aspects of Web information systems: Web semantics and Web dynamics, Web mining and searching, Web databases and Web data integration, Web-based commerce and e-business, Web collaboration and distributed computing, Internet computing and networks, performance of Web applications, and Web multimedia services and Web-based education.

Join the conversation about this journal

Quartiles B

FIND SIMILAR JOURNALS



Journal of Intelligent Information Systems NLD

> **75%** similarity

Ingenierie des Systemes d'Information **FRA**

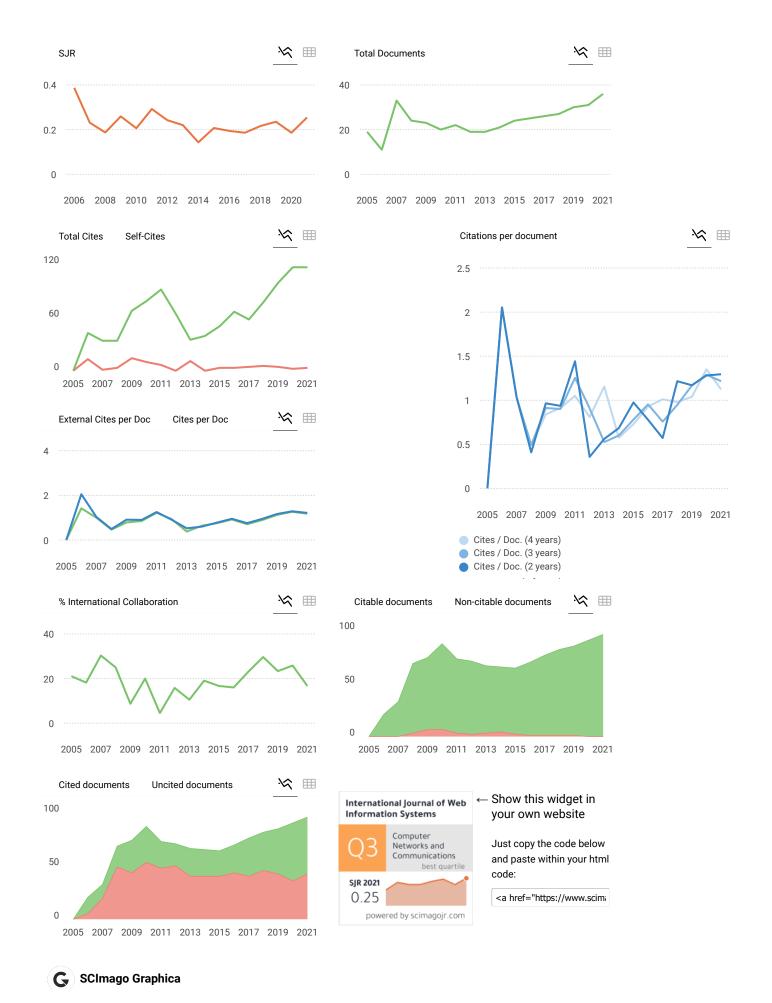
> **75%** similarity

3 Journal of Universal **Computer Science** AUT

> **74%** similarity

Computer S Information **SRB**

2 of 6 11/15/2022, 11:49 AM



Explore, visually communicate and make sense of data with our new data visualization tool.

Metrics based on Scopus® data as of April 2022

P Peter Phan 3 years ago

Hi,

I need to check what is the journal rank (Q1, Q2, Q3, Q4?) of my publication The ISSN is 1744-0084

I search it and found in your website, but there is not above information

Thanks

reply

Melanie Ortiz 3 years ago

Dear Peter,

Thank you for contacting us. Please check above on "Quartiles" section.

Best Regards, SCImago Team

A Abir Boujelben 3 years ago

Dear Sir/Madam What is the impact factor of this journal? Best regards

reply

Melanie Ortiz 3 years ago

SCImago Team

11/15/2022, 11:49 AM

SCImago Team

Dear Abir, SCImago Journal and Country Rank uses Scopus data, our impact indicator is the SJR. Check our web to locate the journal. We suggest you to consult the Journal Citation Report for other indicators (like Impact Factor) with a Web of Science data source. Best Regards, SCImago Team

A Ahmad 3 years ago

Hi, is this journal ISI? which rank is it

reply



Melanie Ortiz 3 years ago

SCImago Team

Dear Ahmad, SCImago Journal and Country Rank uses Scopus data, our impact indicator is the SJR. Check our page to locate the journal. We suggest you consult the Journal Citation Report for other indicators (like Impact Factor) with a Web of Science data source. Best Regards, SCImago Team

G Garima Kapoor 4 years ago

Good Evening Sir/Ma'am

I want to publish my publish my research work in your journal. Please let me know:

- Time of Response
- Publication Fee
- Average Acceptance

Thanks,

Garima

reply

Leave a comment

Name

Email

(will not be published)

5 of 6 11/15/2022, 11:49 AM

Submit

The users of Scimago Journal & Country Rank have the possibility to dialogue through comments linked to a specific journal. The purpose is to have a forum in which general doubts about the processes of publication in the journal, experiences and other issues derived from the publication of papers are resolved. For topics on particular articles, maintain the dialogue through the usual channels with your editor.

Developed by:

Powered by:





Follow us on @ScimagoJR

Scimago Lab, Copyright 2007-2022. Data Source: Scopus®

EST MODUS IN REBUS
Horatio (Satire 1,1,106)

Edit Cookie Consent

Source details

International Journal of Web Information Systems

Scopus coverage years: from 2005 to Present

Publisher: Emerald

ISSN: 1744-0084 E-ISSN: 1744-0092

Subject area: (Computer Science: Computer Networks and Communications) (Computer Science: Information Systems)

Source type: Journal

View all documents > Set document alert Save to

☐ Save to source list Source Homepage

SNIP 2021

①

①

①

CiteScore 2021

1.9

SJR 2021

0.254

0.442

CiteScore CiteScore rank & trend Scopus content coverage

Calculated on 05 May, 2022

CiteScoreTracker 2022 ①

$$2.5 = \frac{268 \text{ Citations to date}}{108 \text{ Documents to date}}$$

Last updated on 09 November, 2022 • Updated monthly

CiteScore rank 2021 ①

Category	Rank	Percentile
Computer Science Computer Networks and Communications	#229/359	36th
Computer Science Information Systems	#232/353	34th

View CiteScore methodology \gt CiteScore FAQ \gt Add CiteScore to your site $\mathscr{E}^{\mathcal{P}}$

About Scopus

What is Scopus

Content coverage

Scopus blog

Scopus API

Privacy matters

Language

日本語版を表示する

查看简体中文版本

查看繁體中文版本

Просмотр версии на русском языке

Customer Service

Help

Tutorials

Contact us

ELSEVIER

Terms and conditions \supset Privacy policy \supset

Copyright o Elsevier B.V \nearrow . All rights reserved. Scopuso is a registered trademark of Elsevier B.V.

We use cookies to help provide and enhance our service and tailor content. By continuing, you agree to the use of cookies \neg .

RELX