GAMIFICATION IMPACT ON THE ACCEPTANCE OF MOBILE PAYMENT IN HO CHI MINH CITY, VIETNAM

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ABSTRACT

In line with the purpose of extending the understanding of the antecedents for mobile payment acceptance and further investigating the application of gamification in this environment, this paper employed the model of innovative technology, UTAUT with 6 variables (performance expectancy, effort expectancy, social influence, trust, perceived financial cost and gamification). The descriptive statistics and regression analysis were performed. As a result, there are significant evidences for the relationship between independent variables, namely performance expectancy, effort expectancy, trust as well as gamification, and dependent variable, adoption intention. The findings reveal there are merely substantial differences in intention to adopt technology between high school students and undergraduate as well as between undergraduates and graduates. Some conclusion and suggestion are made to help managers, marketers as well as financial institution to have a deep insight of users so that they can take effective action for the improvement.

Keywords: mobile payment acceptance, gamification, innovative technology.

1. INTRODUCTION

In recent years, Vietnam witnesses an accelerated and consistent growth in the usage of mobile devices, which is compatible with the global tendency. According to the ecommerce report 2014 from Vietnam Ministry of Industry and Trade, a half of the Vietnam population, approximately 46.25 million, spends typically 5 hours per day on their smartphone for a wide range of purpose, while shopping online accounts for about 58%. The first and most obvious reason is that the growth of Internet and innovation of mobile devices have contributed significantly to increase the number of mobile users. As a result, the number of relevant services increases tremendously, which offers mobile users a variety of mobile experiences. Take mobile banking as an example. MoMo is substantially successful mobile e-wallet with nearly 3 million subscribers and more than 4000 outlets spreading 45 provinces of Vietnam. Meanwhile, Timo, a mobile payment

application, offers fully utilitarian services as a traditional bank as well as, implements unique ones such as free transaction cost regardless of the banking system. Another contributing factor is that the Vietnam government set on a path of the economic reform with mobile payment methods (Sai Gon Giai Phong, 2017). In detail, the authorities advocate transaction through payment services as an alternative of cash, which ensures the transparency of citizen transactions as well as significantly contribute to develop "Smart City" project. As a result, mobile payment industry attracts a host of organizations to extend their business in this industry. Therefore, this study is expected to narrow this gap in understanding the antecedents to mobile payment adoption behavior as well as the gamification impact on customer acceptance in this industry. Given that no prior studies investigate this factor in mobile payment context, the research aims to provide novel insight into how gamification influence customer behaviors and extend the understanding of mobile payment acceptance .To reduce the gap mentioned in prior introduction parts of this study, we need to address questions below:

• What factors lead an individual to adopt mobile payment services?

• What is the relationship between gamification and mobile payment adoption intention?

2. LITERATURE REVIEW

Mobile payment

Mobile payment refers to a payment method that is utilized as an alternative for financial transactions. This payment system allows users to pay for a wide range of goods and services with a mobile device (Dahlberg et al., 2008) by implementing in a host of systems such as short message services (SMS), unstructured supplementary service delivery (USDD), wireless application protocol (WAP), SIM-based application, near-field communication (NFC) (Lai & Chuah, 2010; Leong et al., 2013a) and other communication technologies. In other words, the mobile payment system will connect with a server, allow users to authenticate and authorize, conduct a transaction and then, confirm the completed one (Antovski & Gusev, 2003; Ding & Hamp, 2003b). In term of mobile technology, the mobile payment can be categorized into proximity payment and remote payment (Terol & Jeremy, 2008; Holden, 2012b). Take Samsung Pay as an example. Proximity payment refers to the contactless payment application embedded into Samsung smartphone, which enables consumers to "wave and go" for completing financial transactions (Tan et al., 2014). Meanwhile, the second category allows consumers to accomplish a payment "over the-air" with the mobile devices (Tan et al., 2014a). In other words, remote payment requires no hardware excepting for mobile devices to make a payment. In Vietnam, for example, MoMo, the Best Mobile Payments Product in Vietnam for 2017, in collaboration with local banks launch a remote, electronic wallet and payment application for the smartphone with iOS/Android platform. Although, in the study of Dahlberg et al. (2008), he went further claiming

that mobile payment is on the progression with trials and errors, mobile payment has recently become a hot topic and is anticipated as one of the substantially developed area in the near future.

Unified Theory of Acceptance and Use of Technology (UTAUT)

When it comes to understand the acceptance of mobile payment and innovative technology in general, a wide range of models and theories has been proposed such as Theory of Reason Action (TRA), Theory of Planned Behavior (TPB), Technology Acceptance Model (TAM), Technology Acceptance Model 2 (TAM2), etc. However, the most popular model is TAM in explaining the adoption of information systems (Davis, 1989). According to this model, IT adoption behavior can be influenced by two main factors including perceived usefulness and perceived ease of use. To be more precise, this means people have a tendency to utilize mobile payment system if it enhances their performance and is effortless. Later, Venkatesh & Davis (2000) extended TAM model with additional factors and constructed a new models known as TAM2. In other words, there are cumulative studies that make an effort to improve TAM to explain technology acceptance, which, however, has some negative impacts that need to be considered (Min et al., 2008). In the study of Venkatesh & David (2000), they also denoted that TAM and TAM2 can merely explained 34-52 percent variance of behavior intention. Additionally, Benbasat & Barki (2007) elaborated that these models are simple and over-studied. Consequently, a variety of TAM-based researches, in fact, might result in a barrier for comparing findings and reduce its predictive capacity. As a result, Venkatesh et al. (2003) developed Unified 38 Theory of Acceptance and Use of Technology (UTAUT), grounded on eight prominent models in the field of information technology acceptance research and thus, it is better to predict the user adoption with capacity to explain 70% of variance in behavior intention (Venkatesh et al., 2003). In general, this model can also address the limitation of other models that they do not support each other (Min et al., 2008). The UTAUT proposes four main factors including Performance expectancy, Effort expectancy, and Social influence together with Facilitating condition influencing on Use behavior. Additionally, Venkatesh et al., (2003) posited that the effects of factors on behavior intention and use behavior are moderated by Gender, Age, Experience, and Voluntariness of use. When it comes to the application of this model, it has been employed in a host of technologies studies (Williams et al., 2011) and mobile payment acceptance researches (Thakur, 2013; Wang & Li, 2012). As a result, UTAUT is considered as theoretical background for further investigation.

Gamification

First used by Brett Terrill (2008), the term "Gamification" was described as "taking game mechanics and applying them to other web properties to increase engagement". However, this

term was widely adopted in 2010 (Deterding et al., 2011) in the digital media industry. When it comes to the precise definition of Gamification, in a study of Deterding et al., (2011), they denoted it as the utilization of game design elements rather than game-base technology as a whole in a none-game context. In other words, gamified application is determined by the existence of game system conditions such as rules, conflicting goals, and uncertain outcome, which direct users to a certain desired behaviors such as engagement in an innovation (Burke, 2012a), positive feedback and loyalty (Teng & Chen, 2014), mutual cooperation (Al-Dhanhani et al., 2014). Meanwhile, Werbach & Hunter (2012), from the viewpoint of a game designer, also presented another definition of Gamification that refers to "the process of making activities more game-like" for the 39 purpose of getting the theoretical perspective closer to the practical one. As regards the vagueness of prior studies in term of Gamification definition, Huotari & Hamari (2017) went further with claiming from the perspective of service marketing that Gamification is such a procedure of enhancing services with affordances for gameful experiences that aid user's value creation in general. To be more specific, regarding the enhancing service defined by Grönroos (2007), affordances for gameful experience should aid the value-inuse of core service to increase its value as well as differentiate it with other competitors. The current study focuses on the Gamification anchored to the study of Huotari & Hamari (2016), from the service marketing perspective, can be determined by two main contributions including the enjoyable experience and the support of overall product valuein-use.

Since UTAUT was developed in the organizational environment, it is advised that the further researches should extend the model because of distinctive features between the organization and consumer (Chong, 2013b)
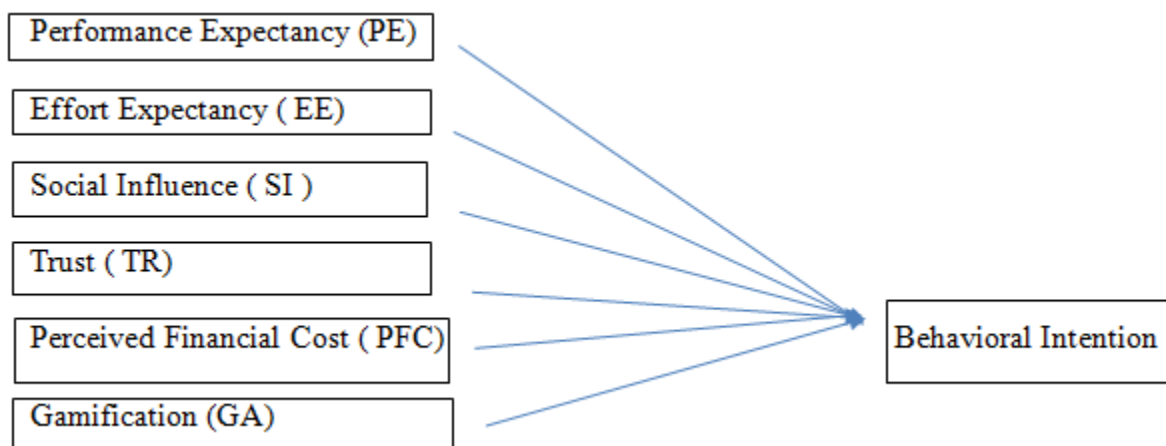

Figure 1: Measurement Model

Source: UTAUT, Venkatesh et al. (2003)

H1: Performance Expectancy positively affects individual intention to use mobile payment.

H2: Effort Expectancy positively affects individual intention to use mobile payment.

H3: Social Influence positively affects individual intention to use mobile payment.

H4: Trust positively affects individual intention to use mobile payment.

H5: Perceived Financial Cost negatively affects individual intention to use mobile payment.

H6: Gamification positively affects individual intention to use mobile payment.

3. METHOD

The process begins with the in-depth interviews with 10 potential customers who were asked to express their opinions to mobile payment services. The interviewees are undergraduates, most of whom are senior students at International University. In the following stage, two focus groups of 4 – 5 individuals were gained to conduct a group interview. The first group with 5 persons who are classmates and nonusers of mobile payment discussed which factors influencing their intention to use in the future. Meanwhile the second group was conducted with 4 experienced users who are coworkers and they were asked to discuss their perceptions toward mobile payment services. The goal of both steps was to validate the research model as well as point out the additional items. Also, the interviews and focus group sessions aid the understanding of the factors affecting on customer behaviors. In the next step, acknowledged by the responses in the focus group as well as adapting from the existing quantitative mobile payment researches, a questionnaire was developed and then, modified thanks to the support of mobile payment experts, who are staff members of Timo banks and supervisor. In other words, the primary goal of this step is to develop a proper questionnaire resulting from not only the pertinent literature but also the comments of experts and professionals which is suggested by Swinyard & Smith (2003), Ahmad et al. (2010) and Yu (2011). The data used in this research has been collected from 311 International University's students both undergraduate and graduate program.To sum up, the selection of items was based on three requirements including fitness to theoretical definition of constructs, fitness for Vietnamese users and fitness to mobile payment context.

Table 2: Demographic characteristics of the respondents

Demographics		Frequency	Percent
Gender	Male	185	59.5
	Female	126	40.5
Age	Below 25 years old	247	79.4
	From 26 to 30 years old	46	14.8
	Above 30 years old	18	5.8
Academic Qualification	High school	42	13.5
	Bachelor degree	183	58.8
	Master	68	21.9
	No degree	18	5.8
Have you ever use mobile payment?	Yes	49	15.8
	No	262	84.2

Source: Data.   Sample size = 331

Results

Measurement Scale		Mean	SD
Performance (Foon & Fah 2011, Luarn & Lin 2005, Venkatesh & Zhang 2010). In conducting transaction,			
PE1	I could use mobile payment anyplace	4.01	.912
PE2	Using mobile payment would save my time	4.14	.746
PE3	Using mobile payment would make it easier	4.02	.813
PE4	Using mobile payment would improve my performance	4.05	.724
PE5	I would find mobile payment useful	3.49	1.028

Effort Expectancy (Luarn & Lin 2005, Venkatesh & Zhang 2010, Scripalawat et al. 2011, Foon & Fah 2011)			
EF1	Learning to use mobile payment is easy for me	3.67	.767
EF2	It is easy for me to become skillful at using mobile payment	3.7	.859
EF3	My interaction with mobile payment is clear and understandable	3.93	.763
EF4	I find mobile payment easy to use	3.85	.774
EF5	I would find a mobile payment procedure to be flexible to interact with	3.83	.824
Social Influence (Venkatesh & Zhang 2010, Scripalawat et al 2011, Foon & Fah 2011)			
SI1	People who are important to me think that I should use mobile payment	3.88	.814
SI2	People who are familiar with me think that I should use mobile payment	4.03	.784
SI3	Mass media (e.g TV, radio, newspaper) will influence my decision to use mobile payment	3.7	.922
SI4	People who influence my behavior think that I should use mobile payment	3.77	.767
SI5	Most people surrounding with me use mobile payment	3.77	.759
Trust (Scriplawat et al.2011, Luarn & Lin 2005) . When using mobile payment,			
TR1	I believe the mobile payment environment is safe	3.74	.749
TR2	Mobile payment is as secure as any payment methods	3.88	.778
TR3	I believe my information is kept confidential	3.37	1.063
TR4	I believe my transactions are secured	3.54	.864
TR5	I believe my privacy would not be divulged	3.71	.859
Perceived financial cost (Scripalawat et al 2011, Luarn & Lin 2005)			
PFC1	It would cost a lot to use mobile payment	2.83	1.343

PFC2	The wireless link fee is expensive when using mobile payment	4.03	.884
PFC3	The mobile setup to using mobile payment charges me a lot of money	4.04	.826
PFC4	The cost of mobile payment is higher than using other payment systems	3.86	.899
PFC5	Using mobile payment is a cost burden to me	3.81	.962
Gamification (Baptisa & Oliveira 2017)			
G1	If mobile payment was more fun/enjoyable, I probably use it more often	3.6	.89
G2	If using mobile payment would give me points, rewards and prizes (better interest rate, lower transaction rates,…) I probably use it more often	3.59	.879
G3	If mobile payment was more fun, I probably advise others to use it	3.6	.948
G4	I enjoy performing payment and playing a related game at the same time	3.57	.990
G5	I enjoy being challenged by achievements and leaderboards	3.6	.902
Behavioral intention (Luarn & Lin 2005, Scripalawat et al 2011, Chong et al 2012). When conducting transactions,			
BI1	I intend to use mobile payment	3.75	.813
BI2	I would use mobile payment	3.64	.894
BI3	I prefer to using mobile payment	3.52	1.056
BI4	I am currently using mobile payment frequently	3.53	.875
BI5	I will purchase mobile payment enabled phones in the near future	3.5	.857

Source: Data

In order to examine the measurement model, we perform exploratory factor (EFA) and reliability with Cronbach's Alpha Coefficient. Meanwhile, "Cronbach's Alpha If Deleted", according to

Lemmens (2010), is utilized to identify the impact on the removal of items from each sub-scale. It means if the Cronbach's Alpha of an item is larger than the final Cronbach's value, this item should be eliminated to develop a proper scale. All the constructs are evaluated in detail below

Construct	Measurement items	Cronbach's alpha
Performance Expectancy	PE1, PE2, PE3, PE4, PE5	0.783
Effort expectancy	EF1, EF2, EF3,EF4,EF5	0.776
Social influence	SI1, SI2, SI3, SI4, SI5	0.765
Perceived financial cost	PFC1,PFC2,PFC3, PFC4, PFC 5	0.636
Trust	TR1, TR2, TR3, TR4, TR5	0.727
Gamification	GA1, GA2, GA3, GA4, GA5	0.903
Behavioral intention	BI1, BI2, BI3,BI4, BI5	0.834

As seen in Table 4, in general, there are merely four of six independent variables with sig. value lower than 0.5 that have statistically significance in predicting the behavioral intention (Pallant, 2007), namely PE (p=.000, p<0.05), EE (p=.000, p<0.05), GA (p=.043, p<0.05) and TR (p=.000; p<0.05) (Pallant, 2007). Turning to the remaining, however, the influences of PFC (p=.499) and SI (p=.284) are found to be statistically insignificant to dependent variables.

Also, we examine the beta values to compare the contribution level of each predictor (Pallant, 2007). It is noticeable that PE with the largest beta value, particularly 0.302. In other words, it makes the strongest unique contribution to explain the intention to use while GA with lowest beta value (beta = 0.098) moderately contributes to the explanation. Besides, both EE and TR make an equivalently important contribution, with beta value at 0.243 and 0.220 (Table 32).

The final multiple regression equation : $\hat{Y} = .302 * PE + .243 * EF + .220 * TR + .098 * TR$

Table 4: Hypothesis Testing

Hypotheses		Std.Error	Beta	t	Sig.	Decision
H1	PE -> BI	.052	.302	5.896	.000	Supported
H2	EF -> BI	.064	.243	4.538	.000	Supported
H3	SI -> BI	.063	.056	1.074	.284	Unsupported
H4	PFC -> BI	.055	-.035	-.676	.499	Unsupported
H5	TR -> BI	.045	.220	4.518	.000	Supported
H6	GA -> BI	.043	.098	2.030	.043	Supported

Source: data
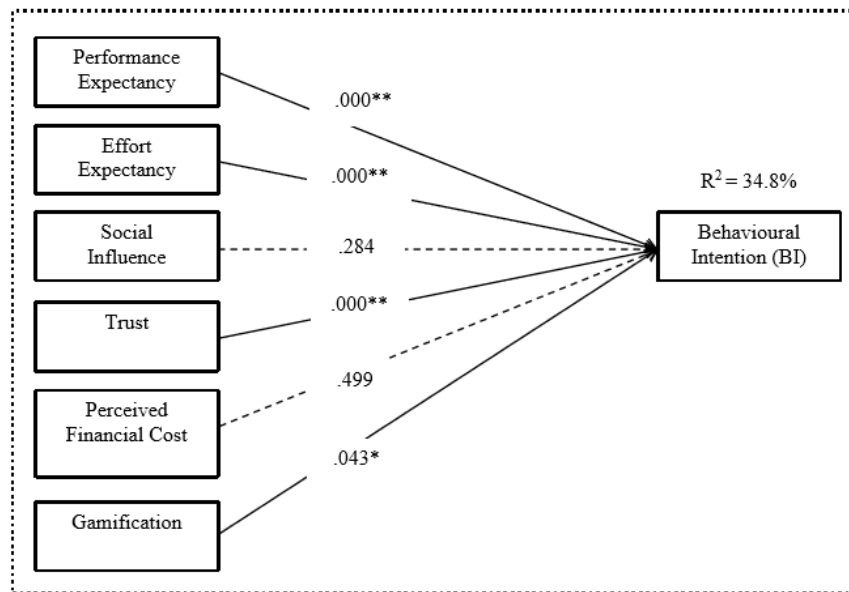
4. DICUSSION

This study is conducted to investigate the major factors shaping the customer intention to adopt mobile payment in Vietnam. As a result, a modification of UTAUT with two novel constructs, namely Gamification and Trust, is adopted for investigation. Moreover, Vietnam is an emerging market for mobile payment and prior researches on this area as well as the impact of gamification are limited, the following outcomes are expected to provide novel insight and suggest practical implications for both researchers and local practitioners.

Relationship between PE, EE, SI, PFC, TR, GA and BI:

As expected, the finding reveals that Performance Expectancy has a direct effect on customer intention to adopt mobile payment. This is consistent with a host of previous studies based on TAM/UTAUT such as that of Peng et al. (2011), Yu (2012), Leong et al. (2013a). In other words, mobile payment with unique features portability, simplified transactions, time savings is considered to outweigh traditional payment method and hence, contribute substantially to acceptance of this technology. Moreover, based on the beta value in Table 32, Performance Expectancy obtains the highest value that means the more useful the technology is, the more customers adopt mobile payment services.

Similarly, Effort Expectancy plays an vital role in influencing adoption intention of mobile payment, which confirms that users finding innovative technology (NFC, USDD, WAP, SMS) effortless to learn and interact have a tendency to conduct transaction on mobile, in line with researches of Venkatesh et al. (2012), Tan et al. (2014a), Im et al. (2011) and Zhou et al. (2010).

Besides, Trust is found to have substantial relationship with customer intention to adopt, while the original UTAUT model does not include this construct for investigation.

However, prior TAM/UTAUT-based studies reveal that security concern strongly influences the utilization of mobile payment services (Chong et al., 2013a; Chen, 2008; Yang et al. 2012). In other words, with the advancement of payment methods that relating to a host of stakeholders, that users perceive no risk for privacy and security information contributes to enhancing the positive relationship with their adoption intention.

On the other hand, interestingly, there is no support for the relationships between Social Influence as well as Perceived Financial Cost and Behavior Intention. In details, as regards Social Influence, a possible explanation is that transaction is highly associated with an individual decision rather than that of their friends, family or other third parties. This is inconsistent with some prior studies from Schierz et al (2010) and Scripalawat et al. (2011) that denoted Social Influence is one of the factors influencing on adoption of mobile payment services. Turning to the Perceived Financial Cost, in line with research from scholars such as Chong et al. (2010), cost is no longer a vital constraint for the adoption of mobile payment. This is mainly because of the affordable price of mobile devices and ubiquitous wireless network connection as a result of rapid growth in communication and information technologies.

When it comes to Gamification construct, a novel addition in our study, the research model validates relationship between gamification and behavioral intention, which is compatible with some prior researches from Zichermann and Linder (2010), Graham (2014). Although in comparison with other drivers, Gamification contributes more moderately to the acceptance of

novel technology, it is a signage that customers respond positively to the future of an enjoyable financial environment and extrinsic motivation such as prices, points, rewards.

5. RESEARCH IMPLICATIONS

On the one hand, acknowledged that UTAUT is a strong model for explanation in technology adoption, there are limited numbers of researches based on this model. As a result, Venkatesh & Zhang (2010) recommended the extension of technology context applying model to enhance its generalizability as well as validity. Therefore, firstly, on the theoretical implications, this study contributes to the limited UTAUT-based findings in mobile payment context. Moreover, as a result of modifying original models, with novel constructs including Trust and Gamification, the study enriches the current theory-based mobile payment researches from the perspective of the emerging market, Vietnam. Furthermore, by adding gamification construct, this study extends previous literatures on its impact and implementation. Additionally, Hamari et al. (2014) elaborated that the gamification effects are greatly associated with particular context and hence, the findings in this study conclude that gamification moderately influence adoption intention of mobile payment services. Consequently, this research contributes to applicability of gamification from mobile payment industry perspective.

On the other hand, from the managerial implications, the results of this findings is significantly supportive for mobile stakeholders such as merchants, service providers, bankers and mobile phone manufacturers to design, refine as well as implement services that grow customer acceptance rate. The study reveals that they should pay attention to performance expectancy, effort expectancy, trust and gamification, which are four salient factors to predict customer adoption intention. Given that Performance expectancy plays the most significant role in affecting behavioral intention, the first implementation is that the relevant mobile stakeholders should continue to educate mobile user about the significant advantages of the services. For example, they might organize the trade fairs or exhibition to promote the efficiency of products. Similarly, Effort expectancy has a strong relationship with intention to adopt mobile payment and hence, the user interface must be concerned. It should be understandable and effortless for a smooth experience. Turning to Trust, mobile stakeholders should concern the technical design of the system and proactively address problems relating to security for customers. Moreover, the relationships among service stakeholders should be transparent to enhance customer confidence. As for the last factor of gamification, although a successful application results in the repeatedly desired outcomes (Robson et al., 2015), there are some adverse effects if it is utilized improperly which gains criticism (Smith, 2012). In other word, in mobile payment context, gamification must be modified according to specific technology system and target customers. In addition, the hedonic motivation from gamification should not outweigh service utility that is harmful to the appearance as a reliable provider and consequently, lose customer trust.

Moreover, this study reveals difference among groups of customers from various educational backgrounds in intention to use mobile payment. Based on this result, the mobile stakeholders, especially the marketer could segment their target customers according to education background. Moreover, the mobile payment systems and services should be customized to attract the target segment.

6. CONCLUSION

Based on the prior mobile payment studies, this research conduct an analysis employing an innovative model, UTAUT with novel constructs, namely Gamification and Trust. The outcome confirms the convergence and divergence of measurement model with previous findings. Similarly, a substantially direct relationship between Performance expectancy and Behavioral intention is compatible with studies from many scholars. Besides, Effort expectancy and Trust are also founded to be significant antecedents of adoption intention of customers. Moreover, it is noticeable that Gamification moderately influences customer intention to adopt mobile payment services. Another contribution that needed to be mentioned is that there are vitally differences among groups of users in term of their educational background. To sum up, for researchers, this study contributes to extend the prior literatures associated with antecedents of mobile payment as well as the impact of employing gamification. Meanwhile, for practitioners, the findings enhance their understanding of the key drivers to customer behavioral intention, which is essential for their design, refine and service implementation to increase customer acceptance rate.

7. LIMITATION AND FURTHER STUDIES

In general, there are several limitations in this study so that further investigation is essentially significant. Beginning with the sample size, the target respondents are merely in the metropolis area, namely Ho Chi Minh City. Consequently, the caution is vital when generalizing the findings in whole mobile payment industry. In other words, the further researches should investigate this outcome across residence area. Secondly, although the original model has been extended with Trust and Gamification, its moderators have been excluded and thus, moderator examination and novel constructs should be conducted to further understand the mobile payment adoption. Additionally, turning to the Gamification section, in today's fast-changing life, individual values and motivations can be various in different moments so that longitudinal studies should be conducted to understand the evolvement of mobile payment acceptance aligned with the implementation of gamification. Finally, since there is a significant link between Behavioral intention and Usage behavior (Venkastesh, 2012), this construct should be included in future researches.

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