Adoption of E-Payment Systems in the Philippines

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Abstract: *This study aims to explore factors affecting the Filipino consumers' adoption of e-payment systems. Spearman correlation analysis was used to analyze data collected from 83 employees of a company's Marketing Department who use online shopping payments. The results of the study showed that the significance of the constructs namely perceived risk, trust, security, use of web-assurance seals, perceived usefulness, and perceived advantage were inadequate to determine its relationships with the intention to adopt e-payment systems. Therefore, the factors used in this study are not the only drivers that would influence customers' decisions.*

Keywords: *cashless society, consumer attitude, trust*

Abstrak: *Studi ini bertujuan untuk mengeksplorasi faktor-faktor yang memengaruhi konsumen Filipina dalam mengadopsi sistem pembayaran elektronik. Analisis korelasi Spearman digunakan untuk menganalisis data yang dikumpulkan dari 83 karyawan Departemen Pemasaran perusahaan yang menggunakan pembayaran belanja online. Hasil penelitian menunjukkan bahwa signifikansi dari konstruk, yaitu perceived risk, trust, security, use of web-assurance seals, perceived use, dan perceived advantage tidak memadai untuk menentukan hubungannya dengan niat mengadopsi sistem pembayaran elektronik. Oleh karena itu, faktor yang digunakan dalam penelitian ini bukanlah satu-satunya faktor pendorong yang akan memengaruhi keputusan pelanggan.*

Kata Kunci: *cashless society, kepercayaan, sikap konsumen*

Despite the flourishing industry of electronic-payment (e-payment) systems in recent years, cash transactions continue to dominate the Philippines. One factor affecting this diminutive growth rate is the Country's low bank population (Remo, 2018). However, electronic transactions have great potential given that the Country's mobile phone usage rate is high. Nevertheless, there are still many challenges to overcome for the industry to become successful such as infrastructures, regulations concerns, and buy-in from merchants. Most importantly, firms need to address and build awareness and trust from consumers to improve e-payment usage in the country.

According to the Bangko Sentral ng Pilipinas (BSP) Financial Inclusion Survey 2017, most Filipinos still have no bank account due to failure to maintain the balance needed for these accounts. BSP reports that only 15.8 M or 22.6 percent of the total population own a bank account, mainly driven by perceived lack of need, lack of necessary documents, and high

cost. However, only a few users from this population utilize banking's digital features due to the lack of awareness and trust in terms of security (Lopez, 2018). The BSP aims to change these figures and increase digital banking usage by 20 percent by 2020.

E-payment systems in the Philippines mostly do not require a bank account and can be easily accessible using mobile phones. Systems such as GCash and PayMaya, make it easier for Filipinos to use digital payment platforms. Eliminated the requirement of bank accounts, e-payment systems have a strong potential in a low bank country like The Philippines. Previous studies on e-payment mainly used the technology acceptance model (TAM) as a framework. However, TAM has limited measures on consumer attitude. This study is grounded on TAM and Theory of Reasoned Action to include a more appropriate explanation of e-payment system adoption.

According to BSP data, more Filipinos were adopting e-wallet or e-payment systems more than credit cards in 2018. Platforms such as GCash and PayMaya are option for Filipinos to do digital financial transactions without physical cash and credit cards (Zoleta, 2021). Additional data also show that more Filipinos are becoming aware of contactless payments and see such services' benefits. The Visa Consumer Payment Attitudes study revealed that 80 percent of respondents were aware of e-payment systems (Visa, 2019). However, despite the Filipino consumers' awareness of the benefits of digital payment platforms,

the actual number of e-payment accounts dropped to 8.6 million from 11.4 million in 2018, according to the BSP's Financial Inclusion Survey.

As a result, this study proposes to investigate the factors affecting Filipinos' adoption to e-payment systems. The researchers would like to identify what factors are important for Filipino to adopt such a system so that developers of digital payment services can provide better systems to Filipino and encourage them to use and create a habit of digital transactions?

This research aims to identify certain factors that affect the adoption of Filipino consumers to use electronic payment systems similar to the previous study by Özkan, Bindusara, and Hackney (2010). This study's findings will be compared with the results reported in previous literature to see whether they are compatible with the results applied in the Philippine environment.

The technological acceptance model (TAM) framework is a good lens to analyze software packages, using this for e-payment systems will result in limited prediction of consumer attitude as this does not have any productivity measures. However, perceived usability and perceived ease of use constructs from this model are important. That is why the theory of reasoned action theory (TRA) is more suitable for discussing the adoption of e-payment systems as it can be extended to more circumstances. This framework can be used to consider other factors influencing the use of e-payment systems, such as social influences (Özkan, et al., 2010).
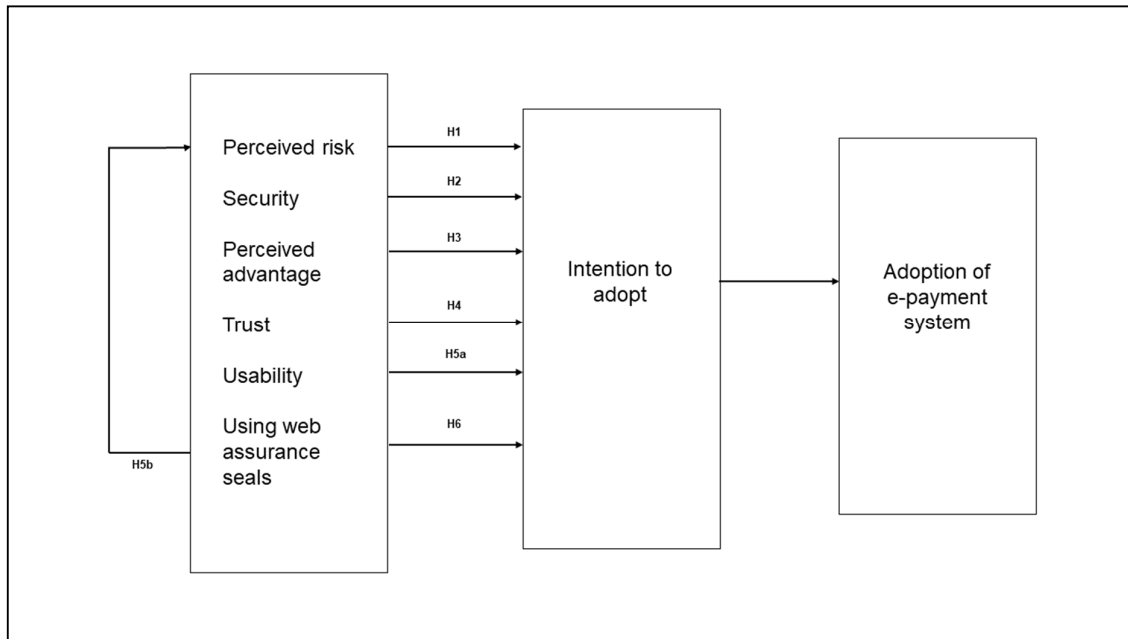
Figure 1 Conceptual Framework
Source: Özkan, et al. (2010)

Using the theoretical constructs formed using the technology acceptance model and theory of reasoned action, the conceptual framework and the hypothesis anchored from the study of Özkan, et al. (2010) were conceptualized.

Various existing scholarly researcher that studied e-payment systems using the technology acceptance model and other variations of it. E-payment systems are widely used in different parts of the world and the literature review provides different perspectives on the adoption of the system. The intention of adopting an e-payment system can attribute to its perceived risks. According to Hossain (2019), perceived risk can negatively influence mobile payment users' perceived trust and customer satisfaction. Consumers from The United Kingdom are also concerned with the risk of lost or stolen payment resulting in their financial loss (Hampshire, 2017).

H1. There is a relationship between intention to adopt an e-payment system and perceived risk (PR).

On the other hand, literature suggests that companies offering this platform are trying to improve their customers' privacy and offer them with rewards so they may be influenced to utilize it (Wang, Luo, Yang, & Qiao, 2019). The significant factors in improving perceived security in e-payment systems are technical & transaction procedures and access to security guidelines, and influencing trust, which may influence them to try the platform (Barkhordari, Nourollah, Mashayekhi, Mashayekhi, & Ahangar, 2017).

H2. There is a relationship between intention to adopt an e-payment system and Security (SC).

There are empirical evidence pointing to mobility as having the biggest effect on adoption of mobile payment systems and

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convenience in terms of time and location are significant to consumers (Daştan & Gürler, 2016). In the study of Chakiso (2019), the research showed a correlation for both users and non-users in terms of trust, ease of use, compatibility, and relative advantage, which has the strongest positive relationship. However, for the two groups of users, perceived risk was not a significant factor in terms of adopting a mobile banking system.

H3. There is a relationship between intention to adopt an e-payment system and perceived advantage (PA).

The trust transfer process has a positive impact on the continued use of mobile payments by satisfaction, which is an important factor in the continued purpose. Trust can also be positively influenced by perceived similarity and perceived entitativity between online and mobile payments (Cao, Yu, Liu, Gong, & Adeel, 2018). Based on Chiu, Bool, & Chiu's (2017) study, mobile banking non-adopters found that initial confidence had a significant influence on their intention to use online banking services.

H4. There is a relationship between intention to adopt an e-payment system and perceived trust (TR).

Additional causal relationships were found which were not present in the Technology Acceptance Model. These include experience and computer playfulness as factors driving the third-party e-commerce payments and computer anxiety (Chen, 2018). Perceived usefulness is the most significant factor in consumers' decision to use a mobile payment service in Malaysia

(Mun, Khalid, & Nadarajah, 2017). In addition, ease of use and usefulness impact customer satisfaction and the decision to continue using mobile payment applications (Humbani & Wiese, 2019).

H5a. There is a relationship between intention to adopt an e-payment system and web assurance seals (WB).

Regarding providing assurance seals to minimize the impact of perceived risks, a study in US suggests that consumers had a strong positive impact on the perceived effectiveness of Web Assurance Seal Service (WASS) in e-commerce. On the contrary, it is not the same for Korean consumers, and WASS did not influence their e-commerce intention and transaction (Kim, Yim, Sugumaran, & Rao, 2016). Agag, et al. (2018) study confirmed that WASS positively affects their perceived trust by hotel customers who book online.

H5b. There is a relationship between perceived risk and web assurance seals.

Finally, previous studies found that a positive relationship existed between the decision to adopt e-payment system and its usability. Research by Molina-Castillo, Lopez-Nicolas, & de Reuver (2020) found that the key factors in mobile payment intention are perceived functional value and facilitating conditions that promote it. The study of de Luna, Liébana-Cabanillas, Sánchez-Fernández, & Muñoz-Leiva (2018) determined that usefulness attitude and perceived security are key factors influencing e-payment systems' intention to use.

H6. There is a relationship between intention to adopt an e-payment system and Usability (PU).

METHOD

This quantitative study used a positivist worldview and deductive approach. The cross-sectional study was conducted using structured questionnaires to generalize the sample from the population. With a confidence level of 95 percent and a confidence interval of 5, the researcher arrived at a sample size of 83 out of a population of 105. A probabilistic sampling was used to determine the survey respondents from the population list.

The research used a quantitative method based on pre-determined hypotheses and data gathered from an instrument-based questionnaire. The data were evaluated using statistical analysis, and results were interpreted statistically. The statistical tool SPSS was used to analyze the gathered data.

The questionnaire was adopted from Özkan, et al. (2010). A reliability analysis using Cronbach's Alpha was conducted to determine the strength of the instrument for the sample. Results of the Cronbach's Alpha reliability analysis are found in Table 1.

The results of the questionnaire will be analyzed using a statistical tool and functions and will be in five parts: (1) descriptive frequencies, (2) descriptive analysis and normality test, (3) cross-tabulation analysis for demographics, and (4) hypotheses testing.

FINDINGS

Profile of Participants

The research participants are Marketing Department employees of a company in Bonifacio Global City, Taguig. The participants are exposed to different establishments and services offering e-payment systems. Restaurants, retail shops, and convenience stores in the area accept digital transactions from platforms such as GCash and PayMaya.

The survey respondents are mostly from 29 to 35 years old, while respondents above 42 years old are the least number of participants. The respondents are mainly female, with a total of 59 percent of the sample size. However, the number of male respondents is not too far, with a total of 41 percent. The majority of the respondents have an Undergraduate or Bachelor's degree as their highest educational attainment.

Table 1 Reliability Statistic for the Questionnaire

Construct	Cronbach's Alpha (1) (99 ((1) RONBACH'SALPHA (1)
Perceived Risk	0.721
Security	0.713
Trust	0.819
Using Web Assurance Seals	0.822
Perceived Advantage	0.880
Perceived Usability	0.820

(1) Alpha values greater than 0.70 are considered acceptable internal consistency
Source: Primary Data

Table 2 Age Profile of Respondents

Age	Frequency	Percentage (%)
19-23	4	4.8
24-28	21	25.3
29-35	44	53.0
36-42	12	14.5
Above 42	2	2.4
Total	83	100.0

Source: Primary Data

Table 3 Gender Profile of Respondents

Gender	Frequency	Percentage (%)
Female	49	59
Male	34	41
Total	83	100

Source: Primary Data

Table 4 Educational Attainment of Respondents

Educational attainment	Frequency	Percentage (%)
Postgraduate	17	20.5
Undergraduate	66	79.5
Total	83	100

Source: Primary Data

Descriptive Analysis and Normality Test

All the respondents answered that they were able to do online transactions prior to the survey and therefore they proceeded to the questionnaire's consequent questions. Most of the respondents used such a service for online shopping and restaurant payments. The respondents are the most frequent digital

Table 5 Summary of Online Transactions Using e-Payment

Online Transaction	Count
Online shopping	68
Payments in restaurants	48
Payments in retail stores	22
Food delivery	20
Bills payment	7
Payments in groceries	4
Payments in convenience stores	3
Airline booking	1
Insurance payments	1
Payments for services through PayPal	1

Source: Primary Data

payment platforms users, which means they use the systems multiple times per month. 69 out of 83 respondents identified themselves as frequent users, while 14 from the total respondents identified themselves as seldom, meaning that they only use the platforms once or twice in three months.

Most of the respondents previously experienced problems using an online payment system but they identified them as insignificant. Seventeen out of the total respondents cannot recall if they encountered any problems and 13 respondents stated that they never encountered any problem. For those who encountered problems, issues were mainly caused by delays in the application's processing and usability.

Among the factors, security, trust in payment method, and usability were the top priority when paying online. Meanwhile, most of the respondents consider perceived advantage as their 4th out of 6th priorities, followed by web assurance seals in 5th priority and perceived risk in the 6th priority.

Shapiro-Wilk tests were conducted in order to determine whether the distributions of Intention to Adopt, Perceived Risk, Security, Trust, Use of Web Assurance Seals, Perceived Advantage, and Perceived Usability were significantly different from a normal distribution. The following variables had distributions which significantly differed from normality based on an alpha of 0.05: Intention to Adopt ($W = 0.52$, $p < .001$), Perceived Risk ($W = 0.90$, $p < .001$), Security ($W = 0.84$, $p < .001$), Trust ($W = 0.87$, $p < .001$), Use of Web Assurance Seals ($W = 0.87$, $p < .001$), Perceived Advantage ($W =$

0.68, p < .001), and Perceived Usability (W = 0.84, p < .001). The results are presented in Table 6.

Table 6 Shapiro-Wilk Test Results

Variable	W	p
Intention to Adopt	0.52	< .001
Perceived Risk	0.90	< .001
Security	0.84	< .001
Trust	0.87	< .001
Use of Web Assurance Seals	0.87	< .001
Perceived Advantage	0.68	< .001
Perceived Usability	0.84	< .001

Source: Primary Data

Cross-tab Analysis for Demographics

To test the significance of the three demographic groups gathered from the data, an Independent Sample T-test was used to determine the different groups' significance. Gender and education do not have significant differences as well as age and gender groups. Among the three comparisons, only age and educational attainment got a significant level of p <0.05.

The cross-tabulation analyses are presented in Tables 7, 8, and 9, which show the average mean for each construct between two demographic groups.

Table 7 Gender and Age Cross-Tabulation Analysis

Age	Female	Male	Average Mean
Perceived Risk			
19-23	2.83	3.50	3.00
24-28	2.40	2.86	2.64
29-35	2.86	2.72	2.81
36-42	3.14	1.80	2.58
Above 42	5.00	3.00	4.00
Average Mean	2.85	2.66	2.77
Security			
Age	Female	Male	Average Mean
19-23	4.00	4.00	4.00
24-28	4.25	4.00	4.12
29-35	4.18	3.84	4.06
36-42	4.29	4.00	4.17
Above 42	4.00	5.00	4.50
Average Mean	4.19	3.96	4.10

Trust			
Age	Female	Male	Average Mean
19-23	3.83	3.00	3.63
24-28	3.65	3.86	3.76
29-35	3.96	4.50	4.16
36-42	3.71	3.90	3.79
Above 42	3.00	5.00	4.00
Average Mean	3.84	4.18	3.98

Web Assurance Seals			
Age	Female	Male	Average Mean
19-23	4.67	4.50	4.63
24-28	4.10	3.77	3.93
29-35	4.05	3.94	4.01
36-42	4.07	3.20	3.71
Above 42	5.00	4.00	4.50
Average Mean	4.12	3.79	3.99

Perceived Advantage			
Age	Female	Male	Average Mean
19-23	3.67	3.50	3.63
24-28	3.70	3.86	3.79
29-35	3.63	3.84	3.70
36-42	3.86	3.80	3.83
Above 42	4.00	4.00	4.00
Average Mean	3.68	3.84	3.75

Perceived Usability			
Age	Female	Male	Average Mean
19-23	3.17	2.50	3.00
24-28	2.95	3.18	3.07
29-35	3.00	3.16	3.06
36-42	3.14	2.90	3.04
Above 42	2.50	3.00	2.75
Average Mean	3.01	3.10	3.05

Source: Primary Data

Table 8 Gender and Education Cross-Tabulation Analysis

	Post-graduate	Under-graduate	Average Mean
Perceived Risk			
Female	3.14	2.33	2.85
Male	2.76	2.73	2.75

	Post-graduate	Under-graduate	Average Mean
Average Mean	2.85	2.66	2.77
Security			
Female	4.36	4.00	4.24
Male	4.14	3.95	4.06
Average Mean	4.19	3.96	4.10
Trust			
Female	3.64	4.08	3.79
Male	3.89	4.20	4.02
Average Mean	3.84	4.18	3.98
Web Assurance Seals			
Female	4.09	3.33	3.82
Male	4.13	3.89	4.03
Average Mean	4.12	3.79	3.99
Perceived Advantage			
Female	3.68	3.92	3.76
Male	3.68	3.82	3.74
Average Mean	3.68	3.84	3.75
Perceived Usefulness			
Female	2.91	2.92	2.91
Male	3.04	3.14	3.08
Average Mean	3.01	3.10	3.05

Source: Primary Data

Table 9 Age and Education Cross-Tabulation Analysis

Age	Post-graduate	Under-graduate	Average Mean
Perceived Risk			
19-23	0.00	3.00	3.00
24-28	0.00	2.64	2.64
29-35	3.10	2.77	2.81
36-42	2.50	3.00	2.58
Above 42	4.00	0.00	4.00
Average Mean	2.85	2.75	2.77
Security			
19-23	0.00	4.00	4.00
24-28	0.00	4.12	4.12
29-35	4.40	4.01	4.06
36-42	4.10	4.50	4.17
Above 42	4.50	0.00	4.50
Average Mean	4.24	4.06	4.10
Trust			
19-23	0.00	3.63	3.63
24-28	0.00	3.76	3.76
29-35	3.80	4.21	4.16
36-42	3.75	4.00	3.79
Above 42	4.00	0.00	4.00
Average Mean	3.79	4.02	3.98
Web Assurance Seals			
19-23	0.00	4.63	4.63
24-28	0.00	3.93	3.93
29-35	4.10	4.00	4.01
36-42	3.55	4.50	3.71
Above 42	4.50	0.00	4.50
Average Mean	3.82	4.03	3.99
Perceived Advantage			
19-23	0.00	3.63	3.63
24-28	0.00	3.79	3.79
29-35	3.50	3.73	3.70
36-42	3.85	3.75	3.83
Above 42	4.00	0.00	4.00
Average Mean	3.76	3.74	3.75
Perceived Usefulness			
19-23	0.00	3.00	3.00
24-28	0.00	3.07	3.07
29-35	2.80	3.09	3.06
36-42	3.00	3.25	3.04
Above 42	2.75	0.00	2.75
Average Mean	2.91	3.08	3.05

Source: Primary Data

Hypothesis Testing

Spearman correlation analysis was used to test the hypotheses because all the constructs are not normally distributed based on the Shapiro-Wilks normality test. Cohen's standard was used to evaluate the strength of the relationship. Coefficients between .10 and .29 represent a small effect size, coefficients between .30 and .49 represent a moderate effect size, and

Table 10 Summary of Spearman Correlation Results

Combination	r_s	Lower	Upper	
Intention to Adopt - Perceived Risk	0.00	-0.21	0.22	.970
Intention to Adopt – Security	-0.18	-0.38	0.03	.099
Intention to Adopt - Perceived Advantage	-0.06	-0.27	0.16	.586
Intention to Adopt – Trust	-0.12	-0.32	0.10	.296
Intention to Adopt - Use of Web Assurance Seals	0.11	-0.10	0.32	.307
Intention to Adopt - Perceived Risk	0.00	-0.21	0.22	.970
Perceived Risk – Use of Web Assurance Seals	0.01	-0.20	0.23	.896
Intention to adopt – Perceived Usability	0.08	-0.13	0.29	.454

Note: The confidence intervals were computed using $\alpha = 0.05$; $n = 83$

Source: Primary Data

coefficients above .50 indicate a large effect size (Cohen, 1988). The correlations were examined based on an alpha value of 0.05. There were no significant correlations between any pairs of variables.

DISCUSSION

The results from the data gathered show that the participants from the sample are well-aware of e-payment systems and use such systems for different transactions such as online shopping and payments for restaurants and retail stores.

The respondents experienced problems while using these systems mainly due to delays in processing and user-friendliness, but most found it not significant. Some of the respondents cannot recall if they encountered such situations and others have not yet encountered any problems. This refers to that respondents probably not considering delays and user-friendliness as their top factors in adopting an e-payment system. This also shows that it would be a challenge to determine the problems they encountered since many respondents cannot recall their issues while using the platforms. Respondents asked to rank the factors according to the most important and ease of use only came in third after security and trust.

The distribution of the data gathered from the sample is not normal. All the constructs are below p >0.05, they deviate from a normal distribution and cannot be considered statistically significant.

Hypotheses Results

H1 cannot be accepted since the significance level is not enough to reject the null hypothesis. The values show that intention to adopt an e-payment system and perceived risk has a small correlation. The result is consistent with the results of the anchor article. Also, Özkan, et al. (2010) found no connection between the intention adopting an e-payment system and perceived risk. In previous studies, perceived risk was significant. It influences perceived trust and customer satisfaction and not intention to adopt (Hossain, 2019).

H2 was also found not enough for the null hypothesis to be rejected. There remains no connection between intention to adopt an e-payment system and security. The correlation between the two is also small. The finding of the study is contrary

to the results of Özkan, et al. (2010) where it was found that the significance value is enough for the null hypothesis to be rejected. Still, despite the significance, the correlation between them was also small.

The null hypothesis remains to be consistent in H3. The proposed hypothesis cannot be accepted due to the p-value of greater than 0.05. The anchor article had opposite results and found that a relationship exists between intention to adopt an e-payment system and perceived advantage even though the result also showed a negative relationship between the two. Prior studies focused on mobility and convenience in terms of time and location (Daştan & Gürler, 2016) to determine the perceived advantage compared to the factors used in this study, which only focused on ease of use and time and money savings.

As with the findings of Özkan, et al. (2010), H4 was also rejected, and this study showed that there is no connection between intention to adopt an e-payment system and perceived trust. As opposed to prior literature, such as the study of Chiu, et al. (2017) on mobile banking, trust is significant in using online services even for non-adopters of mobile banking.

H5 was also rejected, and in contrast to the previous results, this study found no relationship between intention to adopt an e-payment system and web assurance seals. Özkan, et al. (2010) found a positive strong linear correlation between the two. On the other hand, in H5b, there is a correlation between the low risk of credit card fraud in online transactions and the presence of web assurance seals, which makes the e-payment system less risky.

H6 is not accepted, and the hypothesis remains that there is no relationship between intention to adopt an e-payment system and usability. In another Southeast Asian country, perceived usefulness is the most important factor in the intention to use a mobile payment service, as per the study of Mun, et al. (2017).

The results of the study are somewhat consistent with the previous studies done using the same model. Özkan, et al. (2010) found the relationship between security, perceived advantage, perceived trust, use of web assurance seals and usability, and intention to adopt an e-payment system. Similar to the study mentioned, this study also found no relation between the intention to adopt and perceived risk.

Previous studies stated in the literature overview considered these constructs as significant and stated their concerns regarding this. Contrary to this study's result, the participants did not find any significant issues they encountered that can possibly affect perception towards the constructs.

CONCLUSION

In a country where cash remains a king like the Philippines, digital platforms for payments will find it challenging to be widely used in transactions. Filipinos still have low populations even in terms of owning bank accounts since most still prefer the tangibility of physical money. Despite the study results, the same model can still be used in the larger sample size to determine a better judgment

of the population. Since the sample size in the study is relatively small, it cannot be concluded that the model is not an effective way to determine the factors affecting the adoption of e-payment systems.

Future research can also investigate correlation of intention to adopt and owning a bank account. Most of the e-payment services do not require a bank account and can be easily accessed using a few personal information without the need to go to a physical establishment. Subsequent studies can also consider the frequency of using e-payment transactions compared to the frequency of physical transactions. To better understand the consumers who use and will most likely use e-payment systems, case studies can also be considered in a more in-depth study to better determine their attitude outside the close-ended questions used in questionnaires.

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