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# Modelling the Behaviour of Millennials towards the Adoption of Mobile E-Money Services in National Capital Region of the Philippines using Structural Equation Modelling

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*Abstract: This study investigates the behavioural intention of millennials towards the adoption of mobile e-money services. The Theory of Planned Behaviour as the theoretical foundation with Attitude, Subjective Norms, and Perceived Behavioural Control variables and Structural Equation Modelling as the modelling technique were employed to identify what factor(s) influence the millennial's behavioural intent. A combined online and paper-and-pencil survey form was employed to assess how electronic banking through the use of mobile e-wallets is perceived by the millennials residing in the National Capital Region of the Philippines. The sociodemographic profile of the respondents and their banking experiences, including their access to financial products and services, are other goals of this study. The research concludes that millennials' attitude and perceived behavioural control have a significant impact on their intent to adopt mobile e-money services, and the majority have access to financial products and services. The millennials' subjective norms have a positive effect, but it is not significant. Additionally, the respondents' gender and whether they own a bank account or not were used for moderation analysis. The research findings showed that both variables do not have a significant effect on the links between variables. Results of this research could guide the financial regulatory bodies in their policy-making activities, the users of electronic financial products in their financial endeavours, and the government, ultimately, to achieve its financial goals.*

**Keywords:** E-Banking, Internet Banking, Financial Inclusion, Millennials.



## **1. INTRODUCTION**

Financial inclusion has always been the goal of the Central Bank of the Philippines, which helps the nation achieve its financial goals. Financial inclusion exists when there are products and services available for everyone that are of good quality, fit, and designed for their needs, such as saving and spending, among other financial services. In order to support the country's efforts to promote financial access through automation of payments, the central bank launched the Digital Payments Transformations Road Map for 2020–2023. The plan calls for boosting the percentage of individuals with bank accounts to 70% by 2023, as well as shifting 50% of all retail transactions to digital platforms. Despite the effort of the nation to build a financially inclusive country, and while there is an increasing trend in account penetration, 48% of the total population or 77.2 million adults is unbanked, which translates to almost half of the ten adult Filipinos who are still not financially included or who do not have a bank account that allows them to transact financially. Digital payments can be challenging because of socioeconomic differences, shifting perceptions, and a lack of financial awareness, among other obstacles to account ownership. Financial illiteracy causes people to not use their mobile devices. Most people don't know the features and accessibility of online financial products. Studies showed how financial illiteracy, or illiteracy in general, impacted the financial decisions of adults in the Philippines; thus, it is essential for the nation to build an environment where financial access is available to all individuals, especially the unbanked and vulnerable sectors. Given the foregoing issues on account ownership, there's a need for study on what influences individuals to account ownership and eventually the utilization of online banking for their financial needs. Hence, the study focused on determining the factors that influence individual behaviors towards the use of online banking services, specifically mobile e-wallets. This study would contribute to further studies on online banking, inclusive financing, and financial literacy. Further, this study could guide the financial regulatory bodies in their policy-making activities, the users of electronic financial products in their financial endeavors, and the government, ultimately, to achieve its financial goals.

## **2. RELATED WORKS**

According to BA Iqbal, S. Sami (2017), in order to develop society and promote economic prosperity, financial inclusion is a top objective for the nation. It is an emerging paradigm for economic growth, and it will be crucial in eliminating poverty in the nation. Financial inclusion is the process by which established institutional players ensure that vulnerable groups and all other members of society have inexpensive, fair, and transparent access to suitable financial products and services (Chakrabarty (2013). When a broad range of financial services are effectively accessible to all people, particularly those in vulnerable sectors, inclusion in terms of financial accessibility and availability exists. The concept of effective access encompasses not only availability but also the financial instrument's appropriate design, high quality, and responsiveness to the diverse needs of individuals and businesses. These needs may include saving, paying bills, financing, investing, or obtaining an insurance (BSP, NSFI 2022–2028). This relates how the World Bank identified people are considered financially included. According to the organization, where there is access to financial



products and services that are at par with the needs (transactions, payments, savings, credit, and insurance) that are offered in a sustainable way, inclusion exists. (World Bank, 2022).

Online banking platforms cater to various digital transactions that cannot be done using traditional banking. Financial transactions via the financial institution's website using online banking were also referred to as internet banking, e-banking, or virtual banking (Nedumaran, Dr. & Kaleeswaran, Baladevi, 2017). According to a 2015 study on mobile banking outreach in Ethiopia, the main obstacles to the development of mobile banking for inclusive financing are as follows: i.) regulatory body challenges; it took seven months to obtain an agent banking license; ii.) The lack of interoperability in Ethiopia's financial system that prevents the same infrastructure from supporting numerous payment methods and taking advantage of economies of scale; iii.) Only retail agents and financial institutions are involved in agent banking; and iv.) Account balance and daily mobile banking transactions are limited, despite being used to reduce the risk of funding terrorism and money laundering; v.) Poor network quality and lastly vi.) Another obstacle to the development of mobile banking has been identified as illiteracy in general and financial illiteracy specifically. Language hurdles prevent people from executing financial transactions via mobile phones because most mobile phone applications are made in foreign languages, and most unbanked societies have cell phones but reside in rural locations with high rates of illiteracy. Therefore, there is a need to improve stakeholder collaboration (harmonization) in regulatory matters. Mobile money, or e-wallets, is a critical component in tackling the problem of financial diversion, which may alter the way that finance is accessed (Asfaw, 2015).

In a study containing an overview of financial access in China conducted in 2021, the growth of regional financial accessibility, the possible risk of the current service mode, and the risk of digital financial inclusion are some challenges that currently stand in the way of inclusion in terms of countrywide finances. Financial accessibility, a vital component of financial reform, made a substantial contribution to China's initiatives to strengthen regional economic growth and combat poverty. Although financial inclusion is becoming more and more popular in China, the concept remains relatively new. Prior to financial inclusion in China being a thriving industry, there is still more work to be done to increase the penetration and sustainability of financial inclusion (Chen and Yuan, 2021).

Internet banking services in India are beset with the following issues: 1. Guidelines for Technology and Security, 2. Legal Matters, and 3. Concerns related to regulations and oversight, such as risks, security issues, and internet necessity. The study also recommended further steps to educate the public on the new technology and other services provided by the banks, as e-banking poses certain distinct threats to traditional banking (Nedumaran et al., 2017). The well-known business advisor Patrick Dixon famously remarked, "The only thing you have to sell in banking or finance is trust.", this statement can be clearly understood given how an individual depends on various factors influencing their use or adoption of banking or any financing services, and there are various antecedents of behavior towards adoption. The relationship between trust and customer happiness is partially influenced by user behavior, according to a study on trust and product as moderators in online buying behavior. In other words, trust affects customer satisfaction both directly and indirectly. According to Davis et al. (2021), the research findings indicate that there is a need for ongoing studies on user behavior to support marketers in adapting their strategies to meet the



demands of consumers and maintain a sustainable competitive advantage. Specific factors and challenges influencing the use or adoption of mobile banking services have been found through various studies in the locality of the Philippines. Researchers discovered that trust immensely affects behavioral intent with regard to online banking (Chiu et al., 2017). An industry study on electronic money (Chavez et al., 2019) revealed that using e-money services is hampered by concerns about security and safety as well as other relevant variables such as bad internet signal, scams, ignorance of how to use e-money, and a lack of trust in online transactions. In another related study on trust and acceptance relating to online banking services, the technical, social, and environmental variables that are important to clients were the focus. As per Capistrano's (2021) findings, trust and facilitating conditions determine the individual's intent to avail of internet banking. In the Philippines, the intent to use mobile wallets was found to be substantially connected with perceived risk, ease of use, rebates, and social influence in a more focused study on the topic. (Cacas, 2022).

According to Zhang (2018), TPB explains how people make behavioral decisions and aims to comprehend and predict individual behavior. It promotes the idea that an individual's will is primarily responsible for the successful completion of human behaviors. The theory was first presented in 1975. It posits that behavioral intent may be explained by three factors: one's own attitude or opinions about the behavior; the subjective standards or opinions of others about the behavior; and one's perception of behavioral control or self-efficacy (Ajzen, 1985; Ajzen et al., 2005). According to the TPB model, one's mindset, subjective standards, and self-efficacy describe the behavioral purpose before the action takes place. One's intent is a reliable indicator of the behavior itself. Positive or negative assessments of an object are referred to as attitudes, and the knowledge one possesses about the thing is referred to as beliefs. Additional convictions that are pertinent to a behavioral intention include normative convictions, which are convictions that a certain referent believes a person should or shouldn't engage in the activity in issue. The intent to engage in specific actions, is determined by subjective norms and attitudes toward the conduct. Self-efficacy refers to an individual's belief in their ability to execute a particular behavior and their degree of control over it. This factor considers the potential difficulties and threats that may arise during the action, along with their knowledge and abilities that would enable them to behave in a certain way (Ajzen and Fishbein, 1975). To date, TPB has been used in many types of studies on behavior intentions; from pro-environmental behavior such as food choices, smoking, controlling hypertension to other application in the fields of social psychology, management and clinical medicine.

### **3. METHODOLOGY**

The study modelled the people's behavioral intention, particularly millennials, regarding the use of e-money services using the TPB. Ajzen concluded that asking individuals if they intend to act in a specific manner yields the best behavioral prediction (Ajzen, 1975 & 1988; Ajzen et al., 2006). He questioned that if intention may be used to characterize behavior, then how about the intention? The same model introduced three components that can be linked to behavioral intention: Attitudes or one's own beliefs regarding the actions, subjective norm, or other people's perceptions of the act, and perceived behavioral control or the self-efficacy

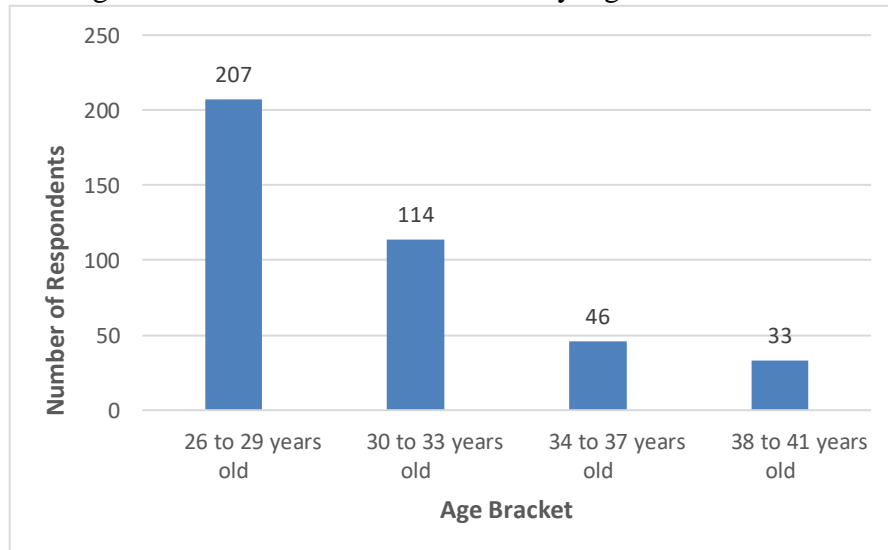
regarding the behavior. Therefore, the study aimed to determine which among these variables or components influence millennials behavioral intention with regard to the use or adoption of mobile e-money services. With this, a total of 400 samples were generated for the study. They are millennials with ages from 26 to 41 years old and residing within National Capital Region of the Philippines. The research instrument used in this study is a combination of an online and paper-and-pencil seven-point scale survey (1 being very much disagree and 7 being very much agree) and results were assessed based on its consistency and reliability. Demographic profiles of the respondents and their banking experience were also gathered and analyzed and presented in this paper. Finally, the SmartPLS version 4 was used to build the model with partial least square structural equation modelling as estimation method or modelling technique. Multi-group analysis was also employed to test if the variables age and account ownership affects the model as a whole.

#### 4. RESULTS AND DISCUSSION

The data collected and survey results were presented below. The respondents' demographic profile, and their banking experience including their attitude, personal norms, and self-efficacy over the use of e-wallets are the subsequent sets of inputs.

##### A. Demographic Profiles

Figure 1. Distribution of Millennials by Age Bracket



Of the 400 respondents, the majority or more than 50% are between the ages 26 and 29, followed by respondents with ages between 30 and 33, which accounts for almost 29% of the total samples. The 12% attributed to the number of respondents is between 34 and 37, while the least 8.25% of the samples are between 38 and 41.

Figure 2. Distribution of Millennials by Sex

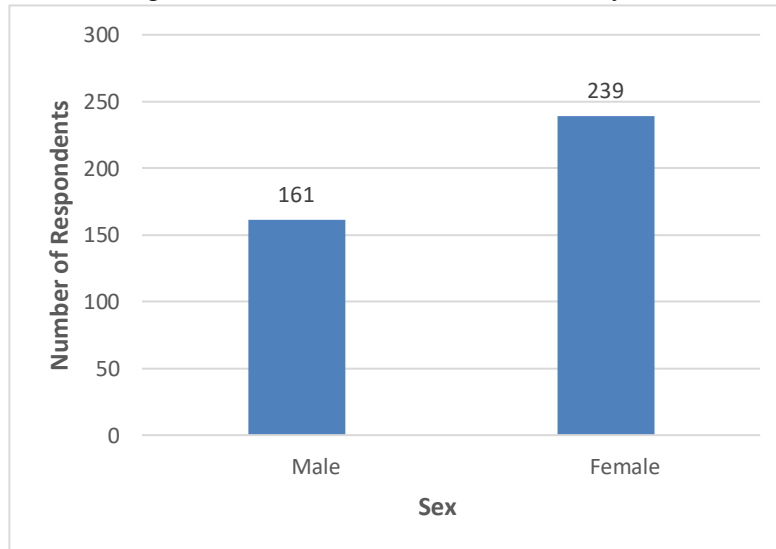


Figure 2 shows that samples drawn are predominantly female, which accounts for almost 60% of the total samples. Males, on the other hand, account for 40% of the total number of samples.

Figure 3. Distribution of Millennials by Marital Status

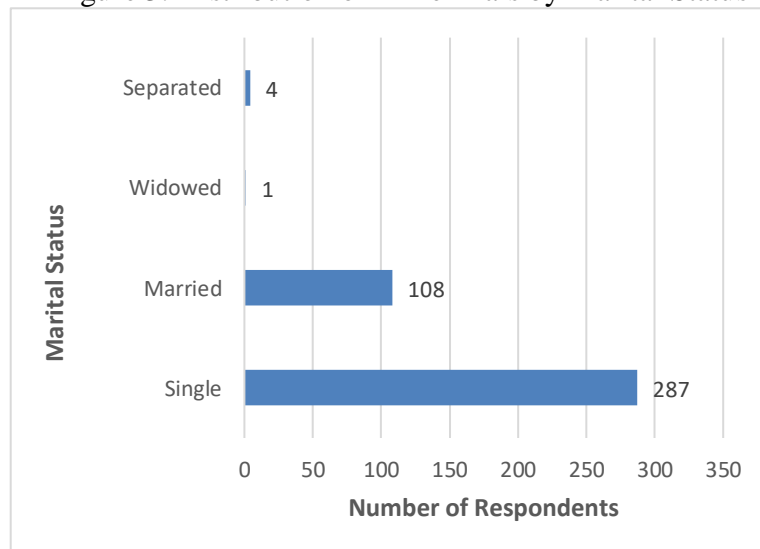
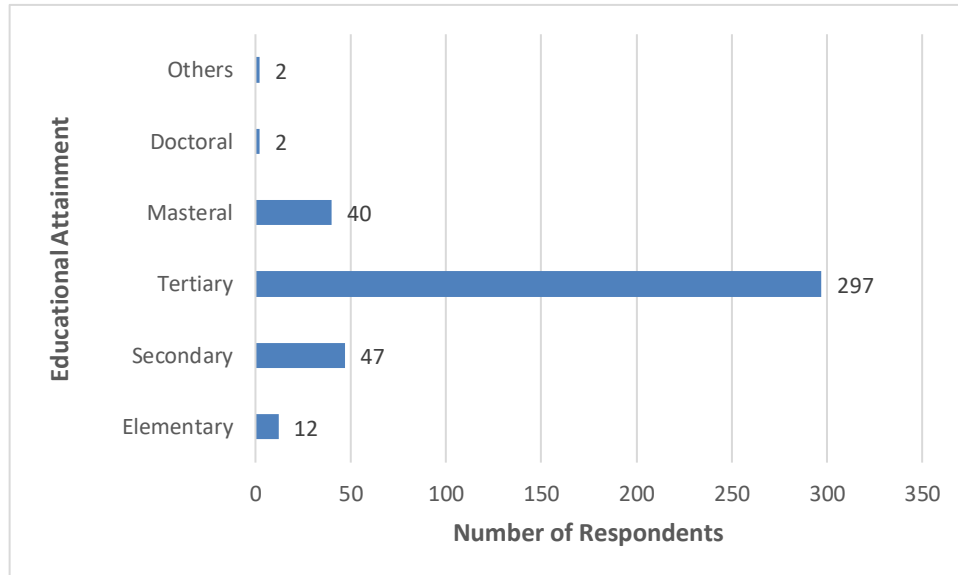


Figure 3 shows a large group of respondents who are single, which account for more than 71% of the total samples, followed by married respondents, which accounts for 27% of the total samples.

Only a few have a marital status of either widowed or separated.

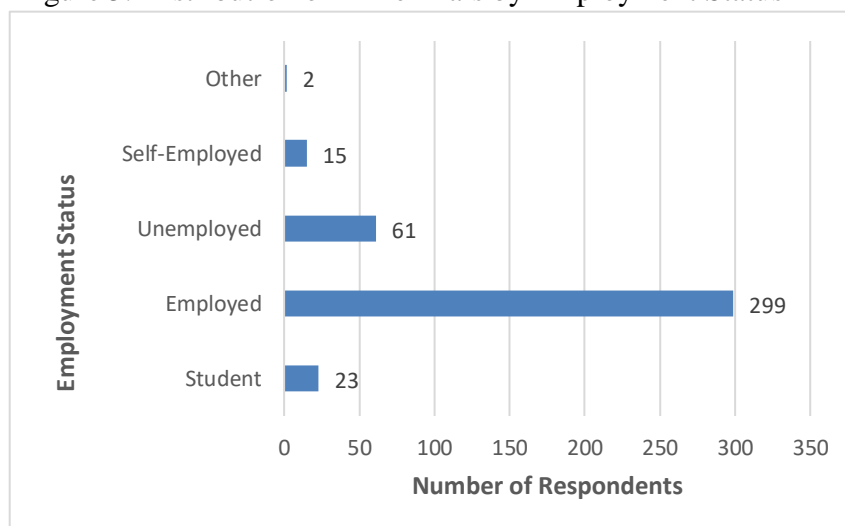


Figure 4. Distribution of Millennials by Educational Attainment



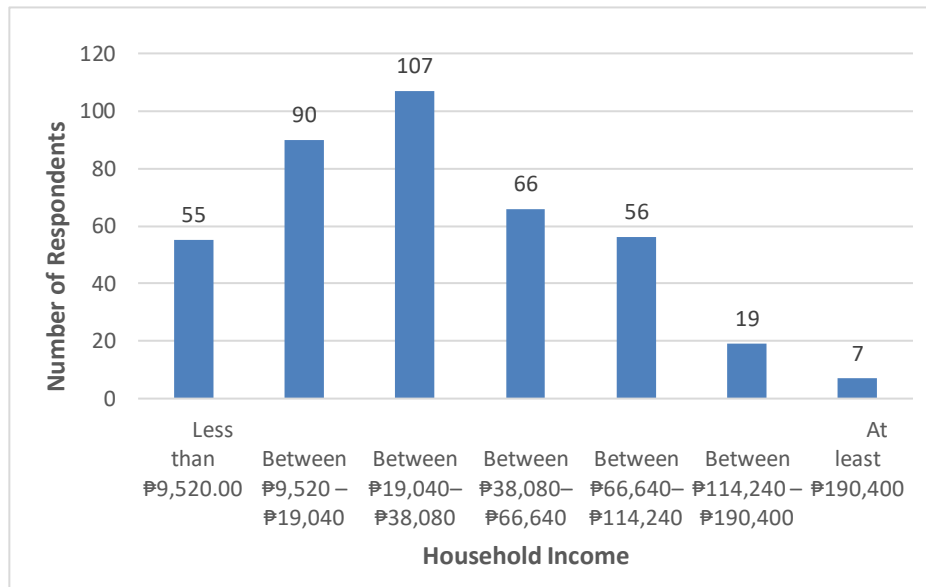
As shown in Figure 4, the majority of the respondents are at the tertiary level, this accounts for more than 74% of the total samples. The next large group is the number of respondents with master's studies, while few account for respondents at the elementary and secondary levels. There are also two respondents who have attained doctorates and two with other levels of educational attainment.

Figure 5. Distribution of Millennials by Employment Status



In terms of employment, about 75% of respondents are employed. While more than 15% are not. Almost 6% are students while about 4% are respondents who are self-employed.

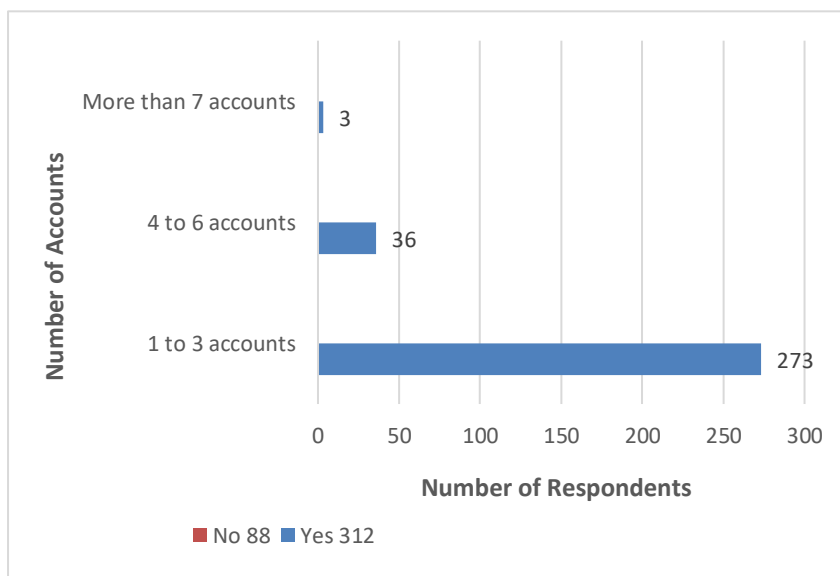
Figure 6. Distribution of Millennials by Household Income



The household income of the respondents is fairly distributed in different ranges, but the highest number of respondents falls in the range between ₱19,040 and ₱38,080, which accounts for 27% of the total samples. About 23% of the respondents have a household income between ₱9,520 and ₱19,040. About 20% accounts for respondents with higher household income as shown, in Table 7.

**B. Banking Experience**

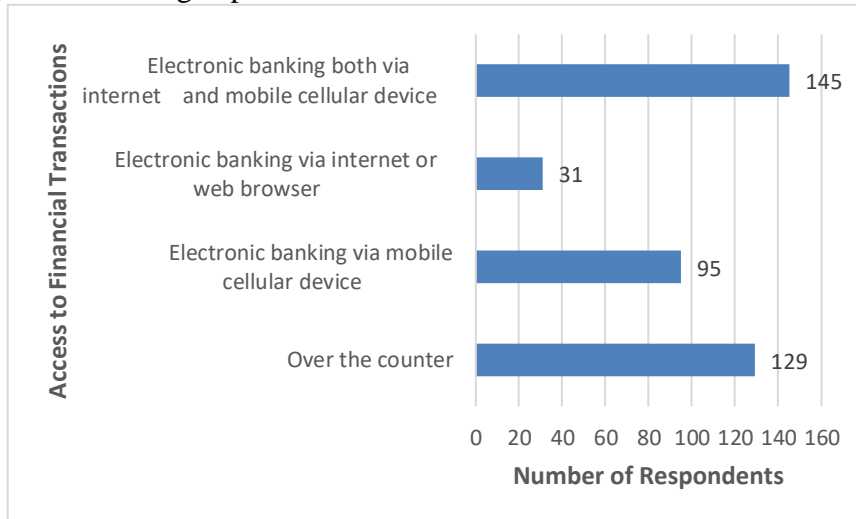
Figure 7. Banking experience in terms of Account Ownership





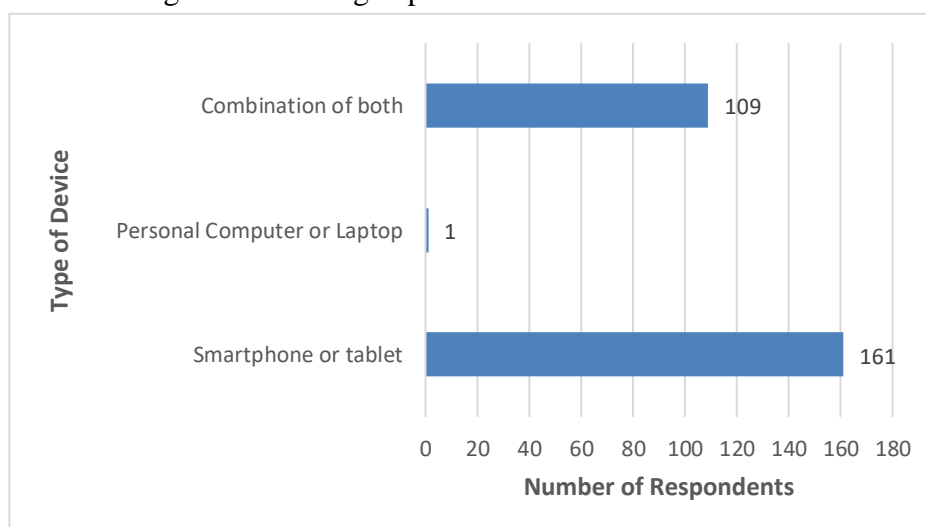
Out of 400 respondents, 312 or 78% of the total samples, have bank accounts, while 22% do not. Of the 312 respondents who reported having bank accounts, 273 or almost 88% have 1 to 3 bank accounts while the rest or 12% had 4 or more accounts.

Figure 8. Banking experience in terms of Access to Financial Transactions



The majority, or about 68% of the respondents, access or do their financial transactions through electronic banking, while the rest, or 32% still do their transaction over the counter. Of the 68% who utilize banking electronically, the majority, or more than 36% uses both the web browser and mobile cellular devices. About 24% solely use mobile cellular devices, while 8% use the internet or web browser alone.

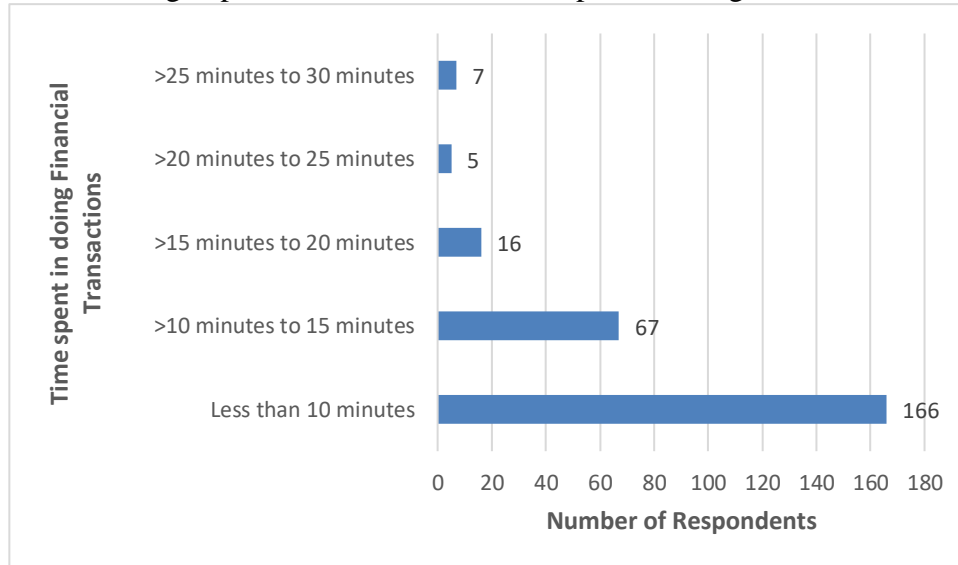
Figure 9. Banking experience in terms of device/s used





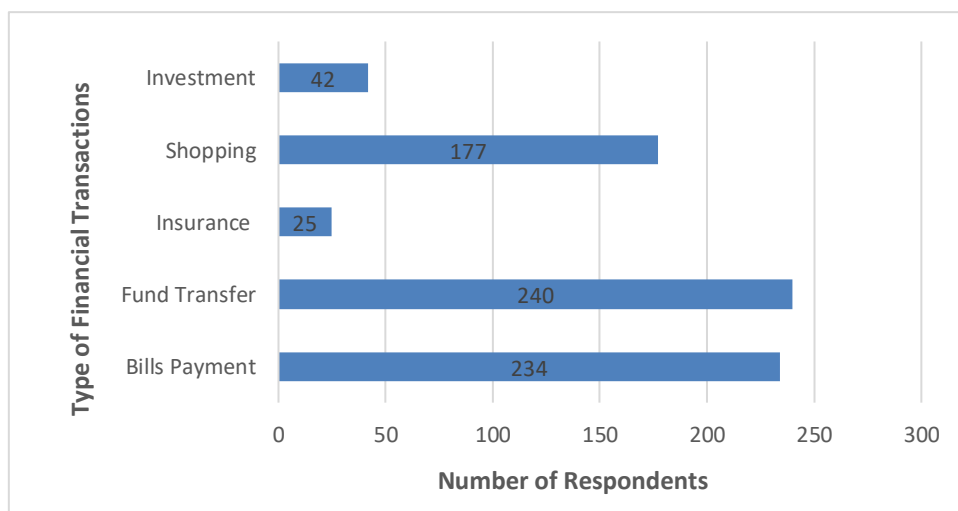
In terms of electronic devices used to do financial transactions, the majority of respondents have reported using solely a smartphone or tablet, which accounts for almost 60% of the total samples. About 40% use either mobile devices, a personal computer or a laptop. Less than 1% use a personal computer or laptop alone.

Figure 10. Banking experience in terms of Time Spent in doing Financial Transactions



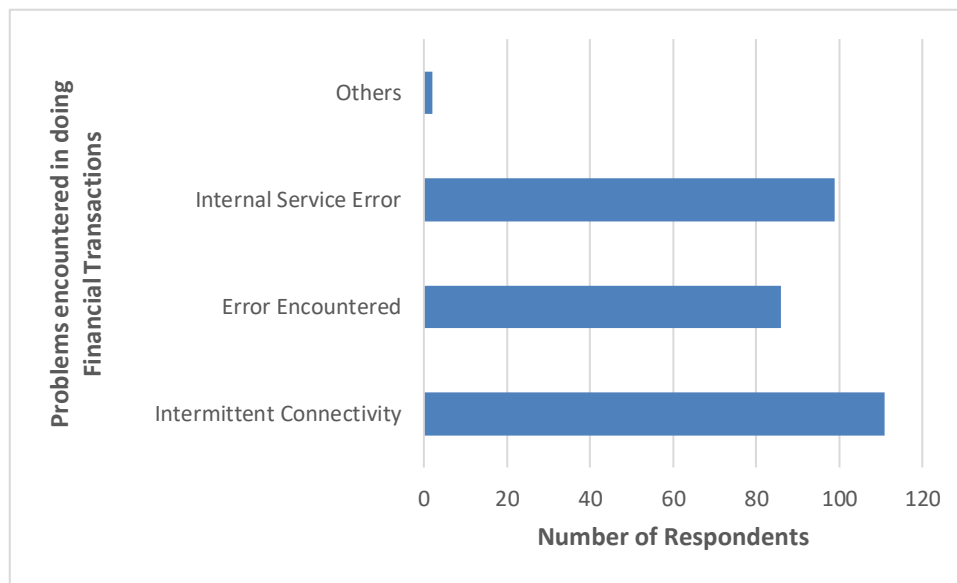
The majority of respondents (more than 61%) stated that they completed their financial transactions using electronic banking in less than ten minutes, but a sizable portion, which accounts for almost 25% of the total respondents, claimed to have completed their transactions in more than ten minutes but less than fifteen. 10% of the group completed their banking transactions in more than 15 minutes.

Figure 11. Banking experience in terms of Type of Financial Transactions



Fund transfers are the most frequent financial transaction made by the respondents, followed by bill payments. Many people also use their bank accounts to make investment, insurance, and retail payments.

Figure 12. Problems encountered in doing Financial Transactions



When asked about difficulties a respondent experienced in doing financial transactions using electronic banking, 75% responded that they had encountered issues with internet connectivity, internal service errors or just errors in general when completing their transactions online.

Table 1. Significance of Relationship between variables Attitude, Subjective Norm, and Perceived Behavioral Control to the Behavioral Intention

	Hypotheses	Std. Estimates	Remarks
H <sub>1</sub>	The respondents' attitudes positively influence their behavioral intention to adopt mobile e-money service.	0.439	Positive and Supported
H <sub>2</sub>	The subjective norms positively influence the respondent's behavioral intention to adopt mobile e-money service.	0.074	Positive but Not Supported
H <sub>3</sub>	The respondents' perceived behavior control positively influence their behavioral intention to adopt mobile e-money services.	0.398	Positive and Supported

Significant levels:  $p < 0.05$ , Model Fit: R-Squared = 0.72, NFI=0.92, RMSEA=0.09 and SRMR=0.03



The PLS-SEM model initially constructed in SmartPLS version 4 showed a significant result ( $p < 0.05$ ) for the variables attitude and perceived behavioral control. All path coefficients indicate a positive association among latent variables. The results also show how each latent variable favorably relates to its indicator, with all loadings for the outer model being significant. R-squared is at 0.727, specifying the variation in the individual's behavior intent that is explained by one's attitudes, subjective norm, and perceived behavioral control regarding the behavior. Simple rules of thumb do not function well for evaluating goodness of fit, according to Nye and Drasgow (2010), who found that Standardized Root Mean Square (SRMR) performs better than RMSEA. The acceptable model fit threshold is set at  $SRMR \leq 0.08$ . An SRMR of 0.034 in SmartPLS version 4 results suggests a very good fit. Another goodness of fit metric that requires a score of  $>90$  is the Normed Fit Index or NFI, where in the model it is high at 0.92. A Chi-Square test that is used to assess the fit of a model to the data resulted to a non-significant chi-square value which indicates a good fit. These measures indicate the overall fit of the model.

Table 2. Multi-Group Analysis with Gender as Moderating Variable in SmartPLS4

<b>Constructs</b>	<b>Difference</b>	<b>t-value</b>	<b>p-value</b>
Attitude <-> Behavioral Intention	-0.103	0.582	0.561
Perceived Behavioral Control <-> Behavioral Intention	0.139	0.754	0.452
Subjective Standard <-> Behavioral Intention	-0.055	0.469	0.640

The model created for the male and female groups was found to have significant differences. Every construct in the aforementioned table have high p-values, implying that they are not statistically significant. It can be further inferred that the respondents' gender has no bearing on how variables link together.

Table 3. Multi-Group Analysis with Account Ownership as Moderating Variable in SmartPLS4

<b>Constructs</b>	<b>Difference</b>	<b>t-value</b>	<b>p-value</b>
Attitude <-> Behavioral Intention	-0.047	0.231	0.818
Perceived Behavioral Control <-> Behavioral Intention	0.039	0.205	0.838
Subjective Standard <-> Behavioral Intention	0.068	0.496	0.621

Whether a respondent has a bank account or not does not significantly affect their results, as seen in Table 3. Having or not having a bank account has no bearing on a person's intent to avail of e-money services.



## 5. CONCLUSIONS

The growth of mobile e-money and the views of millennials toward these services have a positive impact on the adoption or use of e-wallets. The respondents' opinions regarding the security, utility, and necessity of e-wallets have a significant impact on their behavioral intent with regard to e-wallets. Furthermore, according to survey data, most participants agree that using an e-wallet is now in line with the trend. The behavioral intention of the respondents to embrace mobile e-money services is either negatively influenced or remains unaffected by the subjective norm or the opinion of others regarding the respondents' intent with regard to e-money services. The respondents' decision to utilize e-wallets is not always influenced by the opinions of their friends, family, or other important people. The survey's results also indicate that the majority of non-user respondents know someone who uses an e-wallet, but they still don't intend to adopt the behavior themselves. The way millennials will behave while adopting mobile e-money services is also influenced by their perception of behavioral control. The majority of respondents said they would use e-wallets more frequently because they thought they would enable them to complete financial transactions more swiftly and effectively. Additionally, respondents felt that they knew enough or were sufficiently knowledgeable about using mobile applications for e-wallet services, and they thought these programs were simple to use or navigate. In summary, the behavioral intention of millennials with regard to mobile e-money services is significantly influenced by both attitude and self-efficacy, or perceived behavioral control. Gender and whether or not respondents have bank accounts are not significant to the model, even if attitude and self-efficacy are found to be significant drivers of the respondent's behavioral intent pertaining to e-wallets.

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