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Evaluating the Impact of Financial Literacy and Awareness to Acceptance and Attitude Towards Cryptocurrency of Filipino Millennials Workforce in the City of Makati

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ABSTRACT

The emergence of virtual currencies in the name of cryptocurrency is a clear glimpse of what the future of finance can bring to the global economy. Along with the progressive digital transformations, cryptocurrency has started to penetrate and change traditional financial structures. The growing demand for these virtual currencies can be explained by the continuous acceptance of businesses and governments, with approximately 18,000 companies adopting cryptocurrencies as a mode of payment. The study determined the impact of financial literacy and awareness of acceptance and attitude towards cryptocurrencies of the Filipino Millennials workforce in the city of Makati with perceived benefits and risks as mediating variables. Furthermore, the study employed the descriptive-correlational research design to illustrate the variables' existing conditions and determine the relationships between them. This study employed descriptive-correlational design which is a combination of describing the current state of the phenomena and illustrating what is the existing condition of the variables in the given situation. The data were gathered from 435 Filipino Millennials with disposable income working in the City of Makati. The results of the study show that financial literacy has a positive significant influence on the acceptance of cryptocurrencies, but it has negative significant influence on attitude and on risk and benefits perception towards cryptocurrency. The results also imply that cryptocurrency awareness has a positive significant influence on acceptance, , and risk and benefits perception. Further, this study reveals that perceived risk and benefits perception has a positive significant influence on acceptance level, but it has no significant influence on attitude. Therefore, the study reveals that financial literacy and awareness have a significant impact on the acceptance and attitude towards cryptocurrency of Filipino millennials.

INTRODUCTION

Before the unexpected rise of decentralized cryptocurrencies, there were many attempts to penetrate the concept of digital currencies as an alternative payment system like eCash, invented in 1983, and DigiCash Inc. in 1982. Unfortunately, all these digital currency system attempts were unsuccessful and phased out in the late 1990s to early 2000s. Chuen and Wang (2017) posited that the main reason and the common denominator for the collapses was the failure to satisfy compliance issues from the governing bodies. The journey of digital currencies continued to fail until the invention of the first blockchain technology-based cryptocurrency named Bitcoin.

The rise of cryptocurrency started when Satoshi Nakamoto, a pseudonymous person, invented the first decentralized virtual currency technology in 2009, widely known as Bitcoin. It is remarkable that before that year, the pervasive global financial crisis exposed the drawbacks on financial systems and provoked the creation of decentralized virtual currency (Xi *et al.*, 2018). This virtual currency uses blockchain technology as the global public ledger to record all transactions that have ever occurred. Unlike traditional financial systems, wherein the money in circulation is backed up and governed by a central governing party or a mediator such as banks or federal reserves, cryptocurrencies do not have a central issuing authority or regulatory body. Hence, no organization

decides when to produce, how many to produce, or how to keep track of the currencies.

Aside from being a substitute payment channel, cryptocurrencies are also considered a commodity like gold, silver, or similar goods that change value based on public demand with the understanding that every cryptocurrency has a limited supply (Rose, 2015). Applying the law of supply and demand suggests that if more people want to buy it, then the more its value increases (Heckman, 2018). At this point, money managers witness its potential as a serious investment in the financial market. Although it is unstable due to a lack of regulations, investors are buying cryptocurrencies to sell their crypto assets at much higher prices in the future. It is also worthy to note that the first Bitcoin transaction offered to buy two pizzas for 10,000 bitcoins on May 22, 2010. The same 10,000 bitcoins on January 28, 2022, have a value of \$371.5 million in the market (Marthinsen & Gordon, 2022). The sudden growth in revenue suggests an optimistic investment value of cryptocurrency. With the growing population of users and acceptance from businesses globally, it seems that cryptocurrencies will be part of life for quite some time. There is no indication that it will disappear unless the system irreparably fails. Furthermore, according to Mikhaylov (2020), there are clear indications that this new technology will be the future of globalization. Therefore, the need to

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adopt cryptocurrencies and educate the public delivers a strong force of pressure on every country.

In the Philippines, there are no exact statistics for the number of Filipino crypto users. This is despite the leading online broker in the country, Coins. Ph is claiming that they already reached 10 million users and 33,000 retail partners in the Philippines as of January 2021 (Coins.ph, 2021). However, even with the growing demands in the country, there is still no formal education that teaches about cryptocurrencies as part of the financial system. This thereby increases potential losses by local users due to misinformation and lack of information.

According to Medallon (2020), millennials make up about one-third of the Philippine population. It is estimated that this age generation occupied the major percentage of the Filipino workforce with a projected 47.1% out of the 66 million Filipino workers at the end of 2020. This justifies the need to evaluate if these young professionals have sufficient knowledge about cryptocurrencies. This

research will help to fill the knowledge gap, particularly in the Philippines. Therefore, the purpose of the study is to determine the impact of financial literacy and awareness on the acceptance and attitude of the Filipino Millennials workforce in Makati City towards cryptocurrencies.

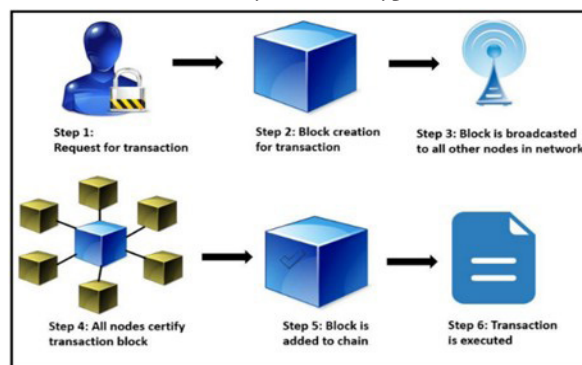


Figure 1: Blockchain Technology Adopted from Nadeem *et al* (2019)



Figure 2: Volume of bitcoin transactions in the philippines

LITERATURE REVIEW

This section primarily covers several investigations and other works of literature from both international and local studies that significantly impact the variables covered in the study. It focuses on various areas that will aid in the advancement of this research. This literature is drawn from books, journals, articles, electronic resources such as PDFs or E-Book, and other existing research papers, both international and domestic, that are relevant to the subject matter.

Cryptocurrencies and the Blockchain Technology

The main feature of Bitcoin that sets it apart from others is the Blockchain technology. This software supports the cryptocurrencies' transactions without intermediaries and governing bodies like banks and Federal Reserves. Ku-Mahamud *et al.* (2019) also explained that Bitcoin is mainly constructed using three important technology components: peer-to-peer network transactions, private key cryptography, and blockchain protocols.

After Bitcoin caught the attention of many countries, particularly in the USA, other cryptocurrencies were then created and developed using the same Blockchain technology concept as the global public ledger to handle

the transactions.

The most notable crypto assets invented after Bitcoin are Ethereum, Ripple, and Litecoin (Chuen & Wang, 2018). On August 21, 2021, Bloomberg reported that the total market capitalization of cryptocurrencies has already reached 2 trillion dollars with Bitcoin remaining at the top with a total market capitalization of 795 trillion dollars or almost 40 % of the total market (Bloomberg, 2021).

Unlike other payment channels and investment vehicles, cryptocurrencies operate without the intervention of any mediating bodies; hence, they only rely on the effectiveness of this new decentralized technology (Gulec, 2020). The invention of the blockchain technology is one of the prominent developments in the financial sector. It is a clear glimpse on the future of digitalization that decreases the human participation.

Saiedi *et al.* (2020) emphasized that cryptocurrencies are the future of globalization and a promising tool to reach businesses and people in rural and remote areas. Moreover, Rose (2015), GÜLEÇ (2020), and Ciaian (2016) agreed in their studies that network externalities play a very important role in the success of cryptocurrencies. The increasing adoption of merchants around the world conveys the growing demands for

cryptocurrencies. However, according to Doblas (2019), these technological inventions can also drastically disrupt and change the current financial structures if continues to be unregulated.

One of the biggest challenges of cryptocurrencies is the government bodies' interception in the use of these decentralized currencies. This kind of resistance is mainly due to difficulty in controlling and regulating the transactions. According to Giudici *et al.* (2019), around 46% of Bitcoin transactions are related to illegal activities, which are near impossible to trace because of the anonymity of users.

Nevertheless, Ciaian (2016) emphasized that because there would be no cash to take, cryptocurrencies could help reduce the vandalism of vending machines, public phones, and other public facilities. Similarly, enterprises that deal in cash, such as taxi drivers and other small businesses, may be less vulnerable to robbery if they use cryptocurrencies. Finally, there are no additional costs associated with currency exchange because this technology is a global free trade currency.

Cryptocurrency as a payment channel

The primary function of a currency is to serve the trade of goods and services. Decentralized digital currencies, such as Bitcoin and Ethereum, as a medium of exchange serve the users with features that differ from the traditional payment systems. This difference includes offers of user anonymity and transparency, not a legal tender, globally fixed transaction costs, and network externalities (Ciaian, 2016).

Giudici (2020) and Yeong *et al.* (2019) concluded that cryptocurrencies, especially Bitcoin, are a reliable alternative payment system owing to their unique advantages. Furthermore, the cryptocurrency algorithm is safer and more secure than using credit cards; cryptocurrency provides substantially reduced processing costs even though it is currently understudied (Fauzi & Paiman, 2020). However, Yuneline (2019) found that although it has the characteristics of money, cryptocurrencies do not meet the criteria of a currency because these are not legal tender, and the prices are not stable. In addition, it is not a government-approved method of payment. Merchants and stores are not required by any law to accept virtual currencies as a form of payment, nor can they legally oblige their customers to do so (Chua & Rustico, 2018).

While it is obvious that cryptocurrencies are strongly penetrating the online payment channels around the world, the current legislation to most countries is unfavorable to use cryptocurrency as a means of payment (Bezhovski, 2021). On the other hand, the Philippines are gradually taking the necessary steps to regulate the use of cryptocurrencies. In 2017, Bangko Sentral ng Pilipinas issued regulations that allowed businesses to register as virtual currency exchanges. It designated Coins.ph as an electronic money issuer (EMI), making it Asia's first blockchain-based start-up to be granted an EMI license

(Rustico & Chua, 2018). With this initiative, businesses in the Philippines engaging in cryptocurrencies must get a certificate of registration as remittance and transfer companies in the Securities and Exchange Commission. These businesses must have suitable measures against money laundering and terrorist financing, as well as technological hazards and consumer protection mechanisms (Bangko Sentral Ng Pilipinas, 2017).

Cryptocurrency as an investment vehicle

Other than payment channel, cryptocurrencies are also considered investment assets due to their value appreciation. For instance, 10,000 Bitcoins in 2010 were only worth two pizzas, but as of January 28, 2022, the price of Bitcoin is 37,150 USD a piece (Marthinsen & Gordon, 2021). The rising value of cryptocurrency is mainly driven by investor sentiments (Xi *et al.*, 2020). Therefore, as long as investors are buying cryptocurrencies with the intention of selling it at much higher prices, then its investment capacity is generally maintained.

OECD (2019) found that the primary motivation for users to buy these assets is to make a profit. In addition, Saiedi *et al.* (2020) acknowledges that speculation is the main factor behind the rising numbers of individuals holding cryptocurrencies.

Cryptocurrency acceptance

Acceptance on the existence of these virtual currencies is one of the vital requirements for cryptocurrencies to remain relevant in circulation. Because these digital currencies are not legal tender, businesses are not obliged to accept these as payments, nor are users required to use these. Moreover, some countries have already ordered a total ban on using cryptocurrencies like Bangladesh, Bolivia, Ecuador, Kyrgyzstan, Egypt, Pakistan, Iraq, Vietnam, and Bolivia (Yuneline, 2019; and Bezhovski, 2021). It is concluded in the descriptive survey research by Eigbe (2019) that countries with low-level adoption of e-commerce and digital payments lead to a minimum acceptance rate of cryptocurrencies. However, Saiedi (2020) concluded a country-level analysis in 137 countries across the globe by claiming that countries with low trust in banks and the financial system have huge acceptance levels on cryptocurrencies.

On the other hand, several nations, such as the United States, the European Union, Japan, the United Kingdom, Canada, Australia, and South Korea, accept cryptocurrencies as a form of payment (Bajpai 2019). Typically, these countries do not regard cryptocurrencies as money but as a commodity, assets, security, and property. In contrast, according to Ciaian *et al.* (2016), some countries have different acceptance treatment (e.g., Bitcoin is regarded as a valued commodity in Finland but only recognized as a private currency in Germany).

Attitude towards cryptocurrency

Attitude, behavior, perspective, and user's interest are words simultaneously used by different researchers to

measure people's reactions towards cryptocurrencies. Several studies were conducted to determine the predictors that significantly affect the attitude of individuals and social classes towards cryptocurrencies.

According to Gagarina *et al.* (2019), the category of attitude is mainly constructed in three components namely cognitive, emotional, and behavioral responses of human beings. In the same study of respondents' attitude using linear regression analysis, it found out that the potential of cryptocurrency as a payment mechanism is associated positively with financial system confidence and adversely with government confidence.

In an economic aspect, positive attitudes to cryptocurrencies are associated with the perceived drawbacks on the current financial systems and inversely related with the confidence to the government (Drobysheva *et al.*, 2021). Therefore, economic capabilities and government trust are the main agents that influence the interest on this new form of financial assets in the country. Fettahoglu and Sayan (2022) also emphasized that perceived benefits has the greatest impact on cryptocurrency usage. According to Saiedi (2020), countries with high inflation rates have experienced an increase in public interest on cryptocurrencies. This can be seen in Venezuela, where inflation has climbed and trust in the government's policies and currency has fallen. Thus, interest in Bitcoins has risen.

Social attributes also imposed a concrete influence in the attitude towards cryptocurrencies (Parino *et al.*, 2018). Social media channels such as Twitter, Facebook and Google advertisements are among the social platforms that impact the behavior and interest towards these digital currencies (Rosati *et al.*, 2018).

Financial literacy

Financial literacy is the application of financial knowledge, skills, motivations, and confidence to make appropriate decisions to improve financial well-being (Lusardi, 2019). Hence, it is critical to determine if people are adequately prepared to handle the complexity of financial decisions that they confront in their daily lives. Beal and Delpachitra (2003, as cited in Oanea & Dornean, 2012) emphasized that there are five general survey question categories to measure the financial literacy of an individual, namely Basic Concepts, Markets and Instruments, Financial Planning, Analysis and Decisions, and Insurance.

According to Yeong *et al.* (2019), public use of bitcoin as an investment instrument and a payment channel necessitates specific technical and financial understanding to use it effectively and safely. Users should have the basic financial knowledge to monitor the price value and avoid unexpected significant financial losses.

Several studies found a negative relationship between financial literacy, and acceptance and attitude towards cryptocurrencies. In other words, financially literate populations are not willing to engage with this system and show negative reaction to these digital assets (Bouri *et al.*, 2019; Panos & Karkkainen, 2019; and Cordero *et*

al., 2019). Moreover, Mazhiev (2020) concluded using interrogation and comparative analysis method that younger and financially inexperienced individuals are the most active users of cryptocurrencies. However, Eggink (2020) and Oliva *et al.* (2021) emphasized in their respective research that financial literacy has no significant influence on investing to cryptocurrencies.

Cryptocurrency awareness

Awareness is defined as being conscious of something (Hommerová *et al.*, 2020). In other words, awareness assesses the individuals' understanding of a certain topic. In investor perspective, awareness is measured based on the individual's judgment on the risks and returns at stake on a particular investment vehicle (Gopi & Paulraj, 2017, as cited in Vidhya & Magesh, 2018).

According to Mendoza-Tello *et al.* (2018), awareness on usefulness is the most important aspect in deciding to utilize cryptocurrencies for digital payments. Shahzad *et al.* (2018) emphasized that being conscious on the benefits and simplicity of use have a big impact on people to decide if they will use cryptocurrencies.

There are mixed results in the studies of awareness in different countries. Bezhovski *et al.* (2021) found that most populations from the United States of America and European countries are aware of the existence of cryptocurrency. However, only few are willing and interested to use these digital assets whether for investment or for means of payment. Similarly, Henry *et al.* (2017) found Canadians as resounded by OECD (2019) in Southeast Asian countries including the Philippines, that majority of the population are aware on the existence of cryptocurrencies with only few wanting to own them. There is minimal level of awareness towards cryptocurrency with limited adoption in Greece (Tsanidis *et al.*, 2015), Norway (Prethusa & O'Malleyb, 2017) and Nigeria (Eigbe, 2018). Meanwhile, Smutny *et al.* (2021) observed that lack of information is the main resistance on investing in cryptocurrencies.

In the Philippines, Doblaz (2019) found that awareness has no significant impact on the adoption of cryptocurrencies. He further explained that the main reason behind the low awareness from Filipinos is due the complexity of this new and unfamiliar technology.

Theoretical Framework

The study is anchored on two theories – Theory of Diffusion of Innovation and Perceived Risk Theory. The theories described the perceived benefits and perceived risks respectively as the primary motivators that affect the acceptance and attitude of a particular social class towards a brand-new idea. Therefore, to explain the rationale behind the adoption of cryptocurrencies as new payment channel and an investment vehicle, both Theory of Diffusion of Innovation and Perceived Risk Theory are employed in this study.

Diffusion of Innovation Theory

Rogers' (1962 as cited in Doblas, 2019) Theory of Diffusion of Innovation describes how a new idea or advancements eventually gains momentum and spreads among specific population groups or social classes. He explains that human adoption commonly begins with

acknowledging the need for innovation or improvements leading to an effort to find a better way of doing things. The process then moves on to the intent of making that decision to finally decide whether to adopt the innovation or not based on the identified advantages (Rogers, 1962

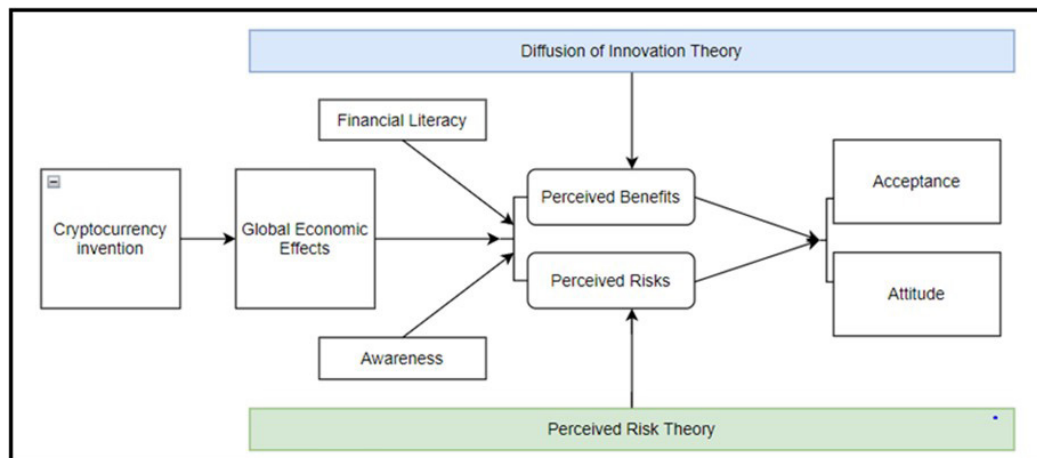


Figure 3: Theoretical Framework

as cited in Doblas, 2019). Dearing and Cox (2018) posited that the perceived potential benefits associated with new idea are the main agent that spreads the innovation to particular social classes. They also emphasized that when an individual learns about the important consequences of innovation, the person will tend to further search information, then will eventually lead to adoption of new idea.

The rise of cryptocurrencies has frequently been attributed to the possibility for radical innovation and entrepreneurship in financial solutions made possible by the proliferation of new internet-based technology (Saiedi *et al.*, 2020). In addition, there are other notable advantages that this new financial technology brings to the table compared to the traditional financial system. The benefits include worldwide accessibility, transparency, efficiency, and low cost.

According to Fettahoğlu and Sayan (2022), the transaction factor, the security and control factor, and the decentralization factor are the three sub-factors that make up the perceived benefits. The transaction factor indicates the advantages of cryptocurrency transactions over the traditional payment channels. The individual views on overall security for cryptocurrencies in the payment system are expressed in the security and control factor. The decentralization factor involves the advantages of blockchain technology or decentralized system on the usage of cryptocurrencies. Hence, this theory supports that the perceived distinct benefits of cryptocurrencies are the main influences that persuade the adoption of this new technology.

Perceived Risk Theory

On the other hand, Bauer's (1995 as cited in Havlena & DeSarbo, 2018) Perceived Risk Theory is an argument emphasizing the role of risk perception towards a new product in consumer decision to accept or to reject. The

premise behind the theory is that adoption of innovative product entails some level of risk. Therefore, every action taken by the consumer is likely to have repercussions that he or she cannot predict the exact outcomes. At least some of them are likely to be unfavorable that can cause losses.

Legal risk factor, operational risk factor, and adoption risk factor are three sub-factors of perceived risks in cryptocurrency adoption (Fettaholu & Sayan, 2022). The legal risk aspect includes the fact that the legal status of utilizing cryptocurrencies varies by country, and there is no global cryptocurrency regulation. Potential risks in the current working process of the blockchain system or personal mistakes are the risk associated with the operational risk factor. Finally, the adoption risk factor indicates the uncertainty surrounding merchants' acceptance of cryptocurrencies. Hence, perceived legal, operational, adoption risks associated with the use of cryptocurrencies are mainly identified upon the full adoption of these digital currencies.

Based on the research problem identified and the findings on the literature review regarding the influence of financial literacy and awareness to acceptance and attitude towards the use of cryptocurrencies, the following hypotheses are proposed

H01a. Financial literacy has no significant influence on the acceptance of cryptocurrencies

H01b. Financial literacy has no significant influence on the level of attitude towards cryptocurrencies

H01c. Financial literacy has no significant influence on the perceived benefits and risks towards cryptocurrencies

H02a. Awareness on cryptocurrencies has no significant influence on the acceptance of cryptocurrencies

H02b. Awareness on cryptocurrencies has no significant influence on the of attitude towards cryptocurrencies

H02c. Awareness on cryptocurrencies has no significant influence on the perceived benefits and risks towards

cryptocurrencies

H03a. Perceive benefits and risks have no significant influence on the acceptance of cryptocurrencies

H03b. Perceived benefits and risks have no significant influence on the attitude towards cryptocurrencies

H04a. Acceptance of cryptocurrency has no significant influence on the attitude towards cryptocurrencies

Research Paradigm

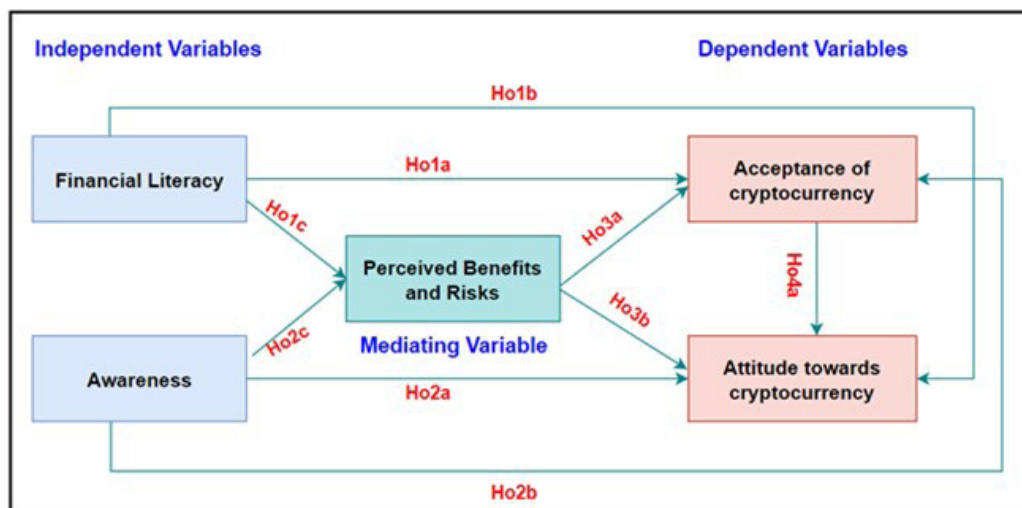


Figure 4: Research Paradigm

dependent and independent variables as supported in the theoretical framework (See Figure 3). In this study, all the variables are assessed using a survey questionnaire. Seven questions related to basic finance, accounting, and banking were asked to evaluate the level of financial literacy of the respondents, while 4-point Likert scale questions were included in the survey to measure the level of perceived risks and benefits, acceptance, and attitude toward cryptocurrencies.

METHODOLOGY

This part describes the study methodology that will be used to examine the financial literacy and cryptocurrency awareness, as well as, their impact on acceptance and attitude toward cryptocurrencies. Research instruments methodologies used, as well as the constraints encountered by the researcher during data gathering are also discussed in this chapter.

Research Instrument

This study employed the descriptive-correlational design type of research. According to Kupahu (2017), descriptive-correlational design is a combination of describing the current state of the phenomena and illustrates what is the existing condition of the variables in the given situation. Moreover, the descriptive study design demonstrates the link between variables in the form of correlation and answers the questions: who, what, where, when, and how. This type of research design is appropriate for this study since it describes the current financial literacy and cryptocurrency awareness of the target respondents. It

The research paradigm shows the flow of the study to be undertaken by the researcher. It presents ten hypotheses as illustrated in Figure 4. The framework shows the interconnection of the independent variables namely financial literacy and cryptocurrency awareness to the dependent variables namely, acceptance, and attitude towards cryptocurrencies. Moreover, it also proposes that perceived risks and benefits as the mediating variables that support the existing relationship between the

determines the influence of the acceptance, and attitude towards cryptocurrencies with perceived benefits and risks as mediator.

The source of primary data came from survey questionnaires. These questionnaires were distributed with an attached consent form on the front page. The consent form contains ethical procedures for respecting the privacy and confidentiality of the target respondents. The researcher disseminated the survey questionnaires online to social media channels and e-mails of the target respondents using google forms. At the same time, the researcher visited some corporate offices and business establishments to hand over the survey.

The researcher conducted a pre-testing by disseminating the survey questionnaire to 37 persons that are not scope of the study, this is to evaluate if the survey questions are reliable instrument to answer the research enquiry. This procedure tested if the respondents understand the questions and if the provided options applicable. As a result, two questions under attitude section were excluded in the survey. Based on the pilot test results, these two questions are not coherent to the research objectives.

The survey questionnaire used was a combination of researcher-prepared questions and adapted questionnaires from earlier studies by the following authors.

1. Social and Psychological Predictors of Youths' Attitudes to Cryptocurrency by Maria Gagarina, Timofey Nestik, and Tatiana Drobysheva (2021).

2. Defining and Measuring Financial Literacy: New Evidence from Romanian Students of The Master in Finance by Dumitru-Cristian Oanea and Adina Dornean

(2012).

The questionnaire is composed of six sections classified as Section A – Filtering questions, Section B – Demographic profile, Section C – Financial literacy, Section D – Cryptocurrency awareness, Section E – Perceived benefits and risks, Section F – Acceptance, and Section G – Attitude. Filtering questions are composed of two qualifying questions to check if the respondents are qualified as the target subjects of the study. For the demographic profile section, information on age, gender, educational attainment, and income level was asked. Comprehensive questions about money management, finance, and accounting are the content of section C – Financial Literacy. Self-assessment questions using 4-point Likert scale are included in section D to test the level of cryptocurrency awareness and sections E, F, and G questions to determine the level of perceived benefits and risks, cryptocurrency acceptance, and attitude towards cryptocurrency.

Data Analysis

The researcher analyzed the data gathered using three statistical tools namely reliability test, inferential analysis, and mode of analysis. Furthermore, following the research design of this study, all data obtained from each participant (except identifying marks like name and employer) will be entirely submitted to a statistician to accurately reveal the findings.

The Cronbach's Alpha Test was employed to measure reliability scores of the questionnaire using Statistical Package for the Social Sciences version 22.0 with values of 0.7 or higher to imply acceptable internal consistency. Similarly, the survey questionnaire was pilot tested to assess the reliability and appropriateness of the instrument in measuring the variables using the formula below.

The statistical tool analysis utilized in this study for inferential analysis is Structural Equation Modeling (SEM). It is a set of statistical procedures for assessing and evaluating the relationships between observable and latent variables. (Stein *et al.*, 2012). It explores linear underlying links among variables while accounting for measurement error, making it similar to but more powerful than regression studies.

The two main components of SEM are the measurement model and the structural model. Confirmatory factor analysis is being used in the measurement model to determine how effectively observable variables represent latent variables (unmeasured constructs). The structural model, on the other hand, represents multiple regression analysis as well as path analysis. This will be used to describe the components' causal relationships to one another. (Dragan & Topolsek, 2014).

The primary assumptions associated with structural equation modeling are as follows: multivariate normality, no systematic missing data, a large enough sample size, and accurate model specification. In addition, the primary goal of SEM is to determine whether the theoretical model based on assumptions consistently represents the observed facts. This examination is carried out by

computing a number of “model-data fit” indices, which indicate the degree of plausibility of assumed links between the treated variables. (Phiakoksong *et al.*, 2013). To calculate the model fit, the researcher together with the research statistician employed Statistical Package for the Social Sciences (SPSS) software for ease of data analysis. The most often utilized tests in this application can be classified into absolute and relative fit measures (Hooper *et al.*, 2008).

RESULTS AND DISCUSSIONS

This research study investigated the impact of financial literacy and cryptocurrency awareness on Filipino millennials' acceptance and attitude toward cryptocurrencies. A total of 425 Filipino millennial workforces in Makati City responded to the survey questionnaire, which was administered through the google form online platform as well as corporate office and business establishment visits.

Demographic Profile

The demographic characteristics of the respondents, consisting of 425 millennials workforce in the city of Makati. Descriptive statistics showed that majority of the participants were female which is equivalent to 52.24% (n=221). It can be observed that a large number of respondents were single, which is equivalent to 75.53% or 321 out of 425 participants. In terms of educational attainment, majority of the participants were Bachelor's degree graduate with 76.24% frequency or 324 out of 425 respondents. Further, a large number of respondents' source of income were salary from employment, meaning 97% of the participants had income from employment. Lastly, as expected, since respondents were millennials, their income level were less than 40,000 pesos a month, which is equivalent to 44.24% or 188 out 425 participants.

Table 1: Descriptive Statistics (Financial Literacy)

Knowledge		
Parameters	Statistic	Std. Error
Mean	4.88	0.065
95% Confidence Interval for Mean		
Lower Bound	4.75	
Upper Bound	5.01	
5% Trimmed Mean	4.92	
Median	5	
Variance	1.799	
Std. Deviation	1.341	
Minimum	1	
Maximum	7	
Range	6	
Interquartile Range	2	
Skewness	-0.333	0.118
Kurtosis	-0.281	0.236

What is the level of financial literacy of Filipino Millennials?

Financial literacy, in this study, is measured using seven (7) financial knowledge questions about finance, banking and accounting. Table 1 demonstrates the descriptive statistics (mean and standard deviation) of the Filipino millennials' financial literacy. The value of mean (4.88) are above 3.5, which means that the respondents demonstrated above-average scores, with a basis of 3.5 as the mid-point scale. This means that Filipino millennials are financial literate.

Table 2: Descriptive Statistics (Cryptocurrency Awareness)

Awareness		
Parameters	Statistic	Std. Error
Mean	2.88	0.031
95% Confidence Interval for Mean		
Lower Bound	2.82	
Upper Bound	2.94	
5% Trimmed Mean	2.91	
Median	3.00	
Variance	0.416	
Std. Deviation	0.645	
Minimum	1	
Maximum	4	
Range	3	
Interquartile Range	1	
Skewness	-0.442	0.118
Kurtosis	0.372	0.236

What is the level of cryptocurrency awareness of Filipino Millennials?

Table 2 presents the descriptive statistics (mean and standard deviation) of cryptocurrency awareness. The value of the mean for awareness is 2.88, which is above 2.5; with a basis of 2.5 as the mid-point scale, the respondents demonstrated above-average awareness towards cryptocurrency. This implies that Filipino millennials have awareness on the existence of cryptocurrencies as a payment channel and investment vehicle.

What is the level of perceived risks and benefits of Filipino Millennials towards cryptocurrencies?

Table 3 presents the descriptive statistics (mean and standard deviation) of the perceived risks and benefits. Perceived risks and benefits are treated as one mediating variable in the study. Hence, for the data analysis, the gathered results for perceived benefits were reversed to present the data for perceived risks and benefits as one variable. The mean value for perceived risks and benefits is 2.28, which is below 2.5; with a basis of 2.5 as the mid-point scale, the respondents demonstrated above-average feelings towards perceived benefits compared to the perceived risks. This means that Filipino millennials have positive perceptions to the benefits of cryptocurrencies compared to the perceived risks.

Table 3: Descriptive Statistics (Perceived Benefits and Risks)

Perceived Risks and Benefits		
Parameters	Statistic	Std. Error
Mean	2.28	0.020
95% Confidence Interval for Mean		
Lower Bound	2.24	
Upper Bound	2.32	
5% Trimmed Mean	2.30	
Median	2.43	
Variance	0.169	
Std. Deviation	0.411	
Minimum	1	
Maximum	3	
Range	2	
Interquartile Range	1	
Skewness	-0.621	0.118
Kurtosis	0.252	0.236

What is the level of acceptance of Filipino Millennials towards cryptocurrencies?

Table 4 presents the descriptive statistics (mean and standard deviation) of the Filipino millennials' acceptance towards cryptocurrencies. The value of mean for acceptance is 2.75, which is above 2.5; with a basis of 2.5 as the mid-point scale, the respondents demonstrated above-average acceptance towards cryptocurrency. Therefore, Filipino millennials accept cryptocurrencies as a payment channel and investment vehicle.

Table 4: Descriptive Statistics (Acceptance)

Acceptance		
Parameters	Statistic	Std. Error
Mean	2.75	0.030
95% Confidence Interval for Mean		
Lower Bound	2.69	
Upper Bound	2.81	
5% Trimmed Mean	2.76	
Median	2.86	
Variance	0.391	
Std. Deviation	0.625	
Minimum	1	
Maximum	4	
Range	3	
Interquartile Range	1	
Skewness	-0.247	0.118
Kurtosis	0.083	0.236

What is the level of attitude of Filipino Millennials towards cryptocurrencies?

Table 5 presents the descriptive statistics (mean and standard deviation) of the Filipino millennials' attitude

toward cryptocurrencies. The value of the mean for acceptance is 2.47, which is below 2.5; with a basis of 2.5 as the mid-point scale, the respondents demonstrated a below-average attitude towards cryptocurrency. This proves that Filipino millennials have a negative attitude toward the existence of cryptocurrencies.

Table 5: Descriptive Statistics (Attitude)

Attitude		
Parameters	Statistic	Std. Error
Mean	2.47	0.024
95% Confidence Interval for Mean		
Lower Bound	2.42	
Upper Bound	2.51	
5% Trimmed Mean	2.46	
Median	2.40	
Variance	0.249	
Std. Deviation	0.499	
Minimum	1	
Maximum	4	
Range	3	
Interquartile Range	1	
Skewness	0.311	0.118
Kurtosis	1.209	0.236

Table 6: Model Fit Indices

Indices	Index Value	Decision Rule	Interpretation
Average path coefficient (APC)	0.299 (p<0.001)	p < 0.05	Excellent
Average R-squared (ARS)	0.473 (p< 0.001)	p < 0.05	Excellent
Average adjusted R-squared (AARS)	0.469(p<0.001)	p < 0.05	Excellent
Average block VIF (AVIF)	1.37	acceptable if < 5 ideally < 3.3	Ideal
Average full collinearity VIF (AFVIF)	2.002	acceptable if < 5 ideally < 3.3	Ideal
Tenenhaus GoF (GoF)	0.544	small > 0.1 medium > 0.25 large > 0.36	Large
Simpson's paradox ratio (SPR)	0.778	acceptable if > 0.7 ideally 1	Acceptable
R-squared contribution ratio (RSCR)	0.969	acceptable if > 0.9 ideally 1	Acceptable
Statistical suppression ratio (SSR)	1	acceptable if > 0.7	Acceptable
Nonlinear bivariate causality direction ratio (NLBCDR)	1	acceptable if > 0.7	Acceptable

< 0.001) indicating that on average, all the parameters measuring the relationships between the latent variables are significant at 95% confidence level; average block VIF (AVIF = 1.337) and average full collinearity VIF (AFVIF = 2.002) have ideal values (= 3.3) indicating that there are no multicollinearity problems; Tenenhaus goodness of fit (GoF = 0.544) is considered as large (= 0.36) indicating large explanatory power to the model; R-squared contribution ratio (RSCR=0.969) has acceptable value (>0.90) indicating that the model is free of negative contributions from R2; and Statistical suppression ratio (SSR=1.00) is acceptable (>= 0.7), indicating that at least 70% of the paths in the model is free of statistical suppression.

Model Fit Measures

The overall structural model was examined in this study using the computations obtained from model fit measures, presented in Figure 5, which indicate that the Structural Equation Modelling is a good fit for this

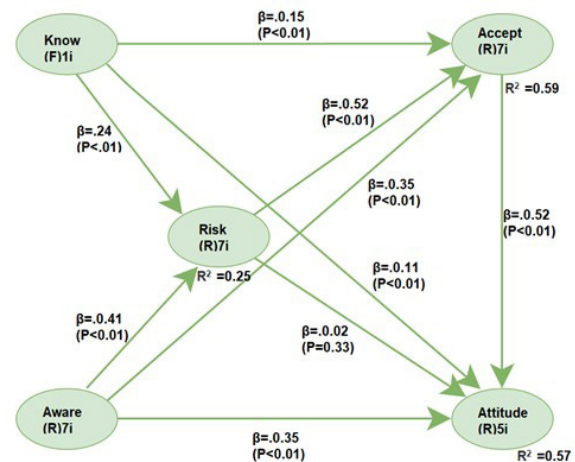


Figure 5: Hypothesized Model Test Results

study. As shown on Table 6, the fit and quality indices of the structural model in the study fell within acceptable limits (Kock, 2015). The average path coefficient (APC = 0.299;), average R-squared (ARS = 0.473), and average adjusted R-squared (AARS = 0.469) are all significant (p

Since the model fit is within the acceptable range, then it shows that it is in concurrence with path analysis such as multicollinearity, homoscedasticity, autocorrelation, and normality of errors.

Validity of Measuring Scale

The validity of each measuring scale used in this study was tested using confirmatory factor analysis (CFA). According to the general rule of thumb, a factor loading coefficient should have an absolute value of less than 0.30 to be considered significant and to remain as a component of the provided variable. (Brown, T. A., 2006; Grimm, L. G., & Yarnold, P. R., 1995 as cited in Costello, A. B. & Osborn, J. W., 2005).

Test of Research Hypotheses

Research hypotheses were examined in the study using structural equation modelling (SEM). The results are provided using path analysis measures as shown in the tables below.

Does financial literacy have an impact on perceived risks and benefits, acceptance, and attitude towards cryptocurrencies?

Table 7 illustrates the path analysis diagram presenting the

impact of financial literacy to mediating and dependent variables. Results indicate that financial literacy has a positive significant impact on risks and benefits (p -value < 0.001 , $\beta = 0.244$) and acceptability (p -value 0.001 , $\beta = 0.147$), while there is a negative impact on attitude (0.008 , $\beta = -0.1115$). The results mean that a higher level of financial literacy tends to have a higher level of acceptance and perceived risks towards cryptocurrencies but has a negative attitude towards cryptocurrencies.

Table 7: Model Fit Indices

PATH			P-Value	Standardized Coefficient	Standard Error	Significance
Financial Literacy	-->	Acceptability	0.001	0.147	0.048	Significant
Financial Literacy	-->	Attitude	0.008	-0.115	0.048	Significant
Financial Literacy	-->	Risk and Benefits	<0.001	0.244	0.047	Significant

Does cryptocurrency awareness have an impact on perceived risks and benefits, acceptance, and attitude toward cryptocurrencies?

Subsequently, table 8 presents the path analysis for awareness. Results suggest that awareness has a positive significant impact on risks and benefits (p -value < 0.001 ,

$\beta = 0.414$), acceptability (p -value < 0.001 , $\beta = 0.354$), and attitude (p -value < 0.001 , $\beta = 0.147$). The results mean that a higher level of cryptocurrency awareness tends to have a higher level of acceptance, perceived risks, and attitude toward cryptocurrencies.

Table 8: Path Analysis (Awareness to Risks and Benefits, Acceptance and Attitude)

PATH			P-Value	Standardized Coefficient	Standard Error	Significance
Awareness	-->	Acceptability	<0.001	0.354	0.046	Significant
Awareness	-->	Attitude	<0.001	0.351	0.046	Significant
Awareness	-->	Risk and Benefits	<0.001	0.414	0.046	Significant

What is the impact of perceived risks and benefits on the acceptance and attitude toward cryptocurrencies?

Consequently, table 9 illustrates the path analysis for risks and benefits. Results imply that perceived risks and benefits have a positive significant impact on acceptability

(p -value < 0.001 , $\beta = 0.524$) but no significant influence on attitude (p -value 0.033 , $\beta = -0.021$). This result reveals that the higher level of perceived risks tends to have a higher level of acceptance.

Table 9: Path Analysis (Perceived Risks and Benefits to Acceptance and Attitude)

PATH			P-Value	Standardized Coefficient	Standard Error	Significance
Risk and Benefits	-->	Acceptability	<0.001	0.524	0.045	Significant
Risk and Benefits	-->	Attitude	0.33	-0.021	0.048	Not Significant

What is the impact of acceptance level on attitude toward cryptocurrencies?

Lastly, Table 10 represents the path analysis for acceptance and attitude. This result suggests that acceptance has a significant positive impact on attitude (p -value < 0.001 , $\beta = 0.521$). This means that attitude toward cryptocurrencies is affected by the level of acceptance of cryptocurrencies. Null hypotheses were tested in this study using Structural

Equation Modelling data analysis. Results of the study indicate that financial literacy has a positive significant impact on risks and benefits (p -value < 0.001 , $\beta = 0.244$) and acceptability level (p -value < 0.001 , $\beta = 0.147$), while a negative significant impact on attitude level (0.008 , $\beta = -0.1115$). Hence, results reject the null hypotheses Ho1a, Ho1b, and Ho1c. These further suggest that the higher level of financial literacy of the Filipino millennial tends

Table 10: Path Analysis (Acceptance to Attitude)

PATH			P-Value	Standardized Coefficient	Standard Error	Significance
Acceptability	-->	Attitude	<0.001	0.521	0.045	Significant

to have a higher level of acceptance of the existence of cryptocurrencies as a payment channel and investment vehicle. However, it also means a higher level of risk perception and undesirable attitude towards the use of cryptocurrency.

Subsequently, the outcomes also rejected the null hypotheses Ho2a, Ho2b, and Ho2c which means that cryptocurrency awareness has a positive significant impact on risks and benefits ($p\text{-value} < 0.001$, $\beta = 0.414$), acceptability ($p\text{-value} < 0.001$, $\beta = 0.354$), and attitude ($p\text{-value} < 0.001$, $\beta = 0.147$). These further suggest that the higher level of Filipino millennials' awareness of cryptocurrencies tends to have a higher level of acceptability, risk perception, and desirable attitude toward cryptocurrencies.

Moreover, the results illustrate that perceived risks and benefits have a positive significant impact on acceptability ($p\text{-value} < 0.001$, $\beta = 0.524$) but no significant impact on the level of attitude ($p\text{-value} = 0.033$, $\beta = -0.021$). These reveal that a higher level of risk perception tends to have a higher level of acceptability to cryptocurrencies. Hence, the null hypothesis Ho3a is rejected and the null hypothesis Ho3b is accepted.

Lastly, the data gathered suggest that acceptance has a significant positive impact on the attitude ($p\text{-value} < 0.001$, $\beta = 0.521$). This means that the attitude of Filipino millennials toward cryptocurrencies is affected by the level of acceptance of cryptocurrencies. Hence, the null hypothesis Ho4a is rejected.

CONCLUSION AND RECOMMENDATIONS

This study sought to assess the acceptability and attitude level towards a financial technology named cryptocurrencies. The proposed model was based on the diffusion of innovation theory and perceived risk theory models. Financial literacy, awareness, and perceived risks and benefits were also added as predictor variables specifically utilized for the analysis of financial technology acceptance and attitude toward the adoption of this new financial technology.

The results reveal that the acceptance level of Filipino millennials on cryptocurrencies is quite high, but the attitude level is undesirable. These findings are coherent to several literatures (Saeidi, 2020; Bajpai, 2019; Ciaian *et al.*, 2019). Hence, it is evident that Filipinos particularly, millennials accept the existence of cryptocurrencies in the financial system but are not mentally ready and cannot give their full trust to finally adopt this new financial technology. The study also found that financial literacy and cryptocurrency awareness play a significant role that affects the decision to accept and adopt cryptocurrency.

Cryptocurrency awareness positively influences consumers' acceptance and attitude to adopt it. This opposes the studies of cited literature (Bezhovski *et al.*, 2021; Doblas, 2019; Henry *et al.*, 2017; OECD, 2019) which emphasized the negative influence of awareness to adoption of cryptocurrencies. Usage of cryptocurrency is limited in developing economies due to a lack of

awareness (Eigbe, 2018; Presthusa & O'Malleyb, 2017; Smutny *et al.*, 2021; Tsanidis *et al.*, 2015). Hence, improving the awareness on this new technology and explaining each transaction procedure can significantly affect crypto users' behavioral intention to use it as a legitimate payment channel and investment vehicle. Moreover, the results also revealed that financial literacy has a positive correlation with the acceptance on the existence of cryptocurrencies. However, it cannot demonstrate the significant influence on the decision to finally adopt this new financial technology. Bitcoin studies in Spain (Oliva *et al.*, 2021) and in Netherlands (Eggink, 2020) yielded similar findings. This is because financial literacy enables the user to make better and independent financial decisions. In some circumstances, it may be beneficial not to invest, while in others, it may be best to invest.

In assessing variables that were not statistically significant, several criteria should be addressed. Given the current early stages of the development of cryptocurrencies in financial technology and their technological foundation (blockchain), it may appear surprising that perceived risk was not a relevant factor in the attitude toward the adoption of cryptocurrency. The main reason behind this present finding is the divergency in risk appetite. Some people can let go of the existing risks in using these cryptocurrencies in the hope to achieve the potential benefits of this technology, but others cannot.

It is undeniable that cryptocurrencies are here to stay and will play a significant role in the world's economy. In fact, this phenomenon is rapidly penetrating the financial system of almost all the countries in the world. Hence, it is necessary that potential users, investors, and even governments should equip themselves with extensive knowledge about cryptocurrencies. Hence, it is highly recommended that potential users and investors of cryptocurrencies use these findings as a reference when assessing the appropriate investment options while considering their own risk tolerance and financial objectives. It is further recommended that this study be used by academic leaders, and professors in the field of Finance, Economics, and Accounting to evaluate the potential inclusion of cryptocurrency study in their respective curricula in formal education to properly disseminate awareness on this phenomenon. This study will likewise support the Philippine government and policymakers in evaluating the possible extent of adopting this new technology. They can also use the information gathered in this study to assess the need for establishing new laws and policies to regulate the use of cryptocurrencies in the Philippines.

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