THAI CONSUMERS' PURCHASE INTENTION OF NON-FUNGIBLE TOKENS AS DIGITAL GOODS IN THE GAMING INDUSTRY

SARAL SUKCHAROENYINGYONG

A THESIS SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF MANAGEMENT COLLEGE OF MANAGEMENT MAHIDOL UNIVERSITY 2023

Thesis
entitled

THAI CONSUMERS' PURCHASE INTENTION OF NON-FUNGIBLE TOKENS AS DIGITAL GOODS IN THE GAMING INDUSTRY

was submitted to the College of Management, Mahidol University
for the degree of Master of Management
on
February 27, 2024

Saral Sukcharoenyingyong
.....
Mr. Saral Sukcharoenyingyong
Candidate

Randall Shannon
.....
Assoc. Prof. Randall Shannon,
Ph.D.
Advisor

.....
Assoc. Prof. Chanin Yoopetch,
Ph.D.
Chairperson

Vichita Ractham
.....
Assoc. Prof. Vichita Ractham,
Ph.D.
Dean
College of Management
Mahidol University

Suthawan C. Sato
.....
Suthawan Chirapanda Sato,
Ph.D.
Committee Member

ACKNOWLEDGEMENTS

I express my gratitude to Assoc. Prof Dr. Randall M. Shannon for a supervision with constructive feedback, technically input and all kind support all the time I need to complete this project. Dr. Randall inspires me to apply my casually interest in gaming into an academic practice that I never thought it would possible. A lack of his merciful and precise feedback will not get me make this grateful thesis that I am proud of.

My gratitude to all instructors at CMMU for memorable classes even we need to have hybrid studies during uncertain situations. The course provides insightful knowledge in business help me pave ways into new path of my dream. My thanks to everybody in CMMU also work hard to make sure that I, as a student, can contribute to our society in the future.

Especially thankful to my family for the support during the program. My 24B classmates provide positive environment that help me get through programs, both online and on-site. My workplace, Fiscal Policy Research Institute and Techsauce media co, ltd, let me continue my career even I need to leave for study. Finally, my gratitude to every online gamer community for your contribution to complete my program.

Saral Sukcharoenyingyong

THAI CONSUMERS' PURCHASE INTENTION OF NON-FUNGIBLE TOKENS AS DIGITAL GOODS IN THE GAMING INDUSTRY

SARAL SUKCHAROENYINGYONG 6449122

M.M. (Management Research)

THESIS ADVISORY COMMITTEE: ASSOC. PROF. RANDALL SHANNON, Ph.D., ASSOC. PROF. CHANIN YOOPETCH, Ph.D., SUTHAWAN CHIRAPANDA SATO, Ph.D.

ABSTRACT

This study investigates purchase intention in non-fungible token as a digital item in the gaming industry. The study covered three contexts that potentially become successful in the digital economy which are the gaming industry, the digital goods industry, and the NFT market as a part of the blockchain industry. This study aims to understand consumer value toward NFT in-game item as it has the potential to become a new business model in the gaming industry, but this model and topic related are controversial between developers, investors, and consumers. The study also aims to suggest practical solutions to businesses and regulators to improve business playing field. The study applies a quantitative method with the questionnaire on random respondents in Thailand. The questionnaire was developed by Consumer Value Theory. The result imply financial risk tolerance and social influence are key factors to drive purchase intention for NFT in-game item.

KEY WORDS: NON-FUNGIBLE TOKENS / GAMING INDUSTRY / IN-GAME ITEM / DIGITAL ITEM / PURCHASE INTENTION

62 pages

CONTENTS

CONTENTS (cont.)

LIST OF TABLES

LIST OF FIGURES

CHAPTER I
INTRODUCTION

1.1 Key Industry Background Summary

The gaming industry is one of the most potential media industries with 2023's revenue estimated at US$ 184 billion (Newzoo, 2023). The industry reported that its revenue had surpassed traditional media such as music and movie and might be the most important segment in the creative and digital economy (Belyaeva et al., 2022; Quast et al., 2021). The greatest category in the market is mobile gaming which has 52 per cent share of the market (Wijman, 2021).

Digital Goods is a product that customer can acquired and use in the digital environment which is cover various media form and can contain any digital information. Therefore, the goods also apply in social media and gaming business. The digital goods revenue was estimated US$67.4 billion and to exceed US$ 203.5 billion in 2028 (Global Virtual Goods Market Size 2023).

NFT become one of the most interesting blockchain application by its potential both in financial and practical. The NFT market value has exceed US$ 10 billion in May 2022 with a recognizable digital art piece value US$ 69 million sold (Highest NFT Price Stat - CoinMartketCap, 2022; Yang, 2021) before the collapse of cryptocurrencies market that make NFT became bear market with a transaction drop to US$ 4 million in April 2022 (NFTGo, 2023). Even though NFT were affected by the rise and fall of Cryptocurrency, but its ability to generate uniqueness on digital data encourage its value and made a new business model in the digital economy, especially in gaming area as a fundamental function of Play-to-Earn game and player-to-player marketplace.

Thailand gaming market was one of the biggest in Southeast Asia with a generated revenue over US$ 1 billion in 2020. Meanwhile, Southeast Asia gaming market revenue in 2019 was US$ 4.4 billion. Thai gamers mostly play game on mobile platform with 95 per cent of urban online population and the most-bought in-game purchase was in-game currencies, that can use to purchase items, characters and

additional feature in the game (Weustink, 2021). On the other hand, NFT also has opportunity in Thailand due to the investment by leading Thai corporates and Thai-founded NFT gaming startup with million-dollar funding globally. These reflect that Thailand market opportunity on gaming and NFT is promising because it has readiness on both demand and supply side.

1.2 Problem Statement

The gaming industry has the potential to become the largest in the media industry since it has already surpassed the music and movie industries. The industry combines best-practice creativeness and technology to perform business activities. NFT, meanwhile, has the potential for Cryptocurrency adoption and its practice. One of the most interesting NFT practices is gaming with the possibility to adapt to existing business models such as microtransactions and the marketplace or even create a new model such as NFT games or GameFi. The NFT in gaming is considered as a digital item attribute and Cryptocurrency's digital asset.

Thailand has promising opportunities on gaming industry and NFT in due to its development in demand and supply. Thailand's gaming market generated over billion dollars in 2020 by 32 million gamers and most bought item were in-game currencies (Weustink, 2021). This reflects Thai customers' purchase readiness in gaming market. Meanwhile, Cryptocurrency and NFT adoption has been increased in supply side with an investment into NFT project by Thai corporates and Thai-founded NFT gaming startup that received hundred million dollars in funding (Techsauce, 2022).

Even though many studies covered digital items and Cryptocurrency, there is still little research that explains NFT in the gaming context specifically. Especially purchase intention, a starting point on consumer behaviour, has not been investigated in this context. This study aims to investigate the purchase intention factor related to NFT digital items in the gaming industry in Thailand to understand how to apply appropriate technology, improve business practices and create new business models.

1.3 Research Objective

This quantitative research is to identify key factors influencing purchase intention on NFT items in the gaming industry in Thailand. Moreover, the study aims to investigate customer insights to suggest a business practice improvement or a new business model that will be potentially appropriate to NFT and Gaming market in Thailand.

1.4 Research Question

This study will question identifying key factors that influence NFT item purchase intention in gaming platforms and understand customer insight on purchase intention toward NFT goods in the context of gaming.

CHAPTER II
INDUSTRY BACKGROUND

2.1 Gaming Industry Overview in Global, Southeast Asia and Thailand

Gaming is an industry that displayed potential by its numbers. Since the market maintain itself during the pandemic with a US$ 184 billion revenue estimated in 2023 and the biggest category was mobile devices which has a 49 per cent share of the market (Newzoo, 2023). Quast et al (2021) believe the market's revenue had surpassed the traditional media such as movies and music which influence the media business for decades (Quast et al., 2021). In addition, Newzoo (2022) estimated that there were 3 billion game players globally in 2021 (Newzoo, 2022). In the global economy, the gaming industry is overlapping two industries: a digital industry and a creative industry. Belyaeva et al (2022) concluded that the industry influences the developments of new technology, solution, and business model and might be the most important segment in the creative and digital economy (Belyaeva et al., 2022).

The Southeast Asia market, including Thailand, was also influence by the global trend. Weustink (2020) reported that gaming industry in Southeast Asia generated revenue of US$ 4.4 billion in 2019 and the biggest revenue came from mobile platform at US$ 3.1 billion or over 70 per cent of the market. Meanwhile, the mobile platform player shared the largest margin across the region at 80 per cent of online population that play games, which is 82 per cent of all online population (Weustink, 2020). In addition, Weustink (2021) reported that Thailand is one of the highest profile game markets in the region with a revenue generated over billion dollars in 2020 from around 32 million gamers. The biggest gaming platform in Thailand was mobile gaming with 95 per cent of all urban online population. Moreover, Thai gamers' most spending was in-game currencies, that can use to purchase item or additional features in games (Weustink, 2021).

2.2 Digital Goods Market Overview and Opportunity

Digital goods referred to a product that is produced, offered, and acquired in a digital environment. Digital goods cover various information and media forms such as pictures, books, music and movies, thus playing huge roles in this period because nowadays people are focusing on experience and liquidity that digital goods can provide both (Atasoy & Morewedge, 2018). In addition, digital goods are included new media that are used to express and communicate in an online environment. Some past studies show digital goods primarily satisfied the social need of an individual in social networks and online games environment (Huang, 2012; Kim et al., 2011). Due to explanations, NFT relate to digital goods as it is a product that is produced, offered, and acquired in a digital environment.

The digital goods market was estimated to exceed US$ 203.5 billion in 2028 (Global Virtual Goods Market Size 2023). Although, an emerging metaverse trend in 2021 has accelerated the digital goods adoption on the supply side, including NFTs' promising growth, which might lead to a bigger valuation than this estimation.

2.3 Non-fungible Token

2.3.1 What is NFT

NFT or a non-fungible token is one application in blockchain technology, a distributed shared encrypted database (Writght & De Filippi, 2015). NFTs are in contrast to cryptocurrency even though they are fundamentally created with blockchain technology. Cryptocurrencies are designed to be fungible and must be traded equally across their networks, such as Bitcoin are having equal value across the Bitcoin network, even if people divided bitcoin into smaller tokens, it will have the same value as it is (Karandikar et al., 2021). However, NFT are designed to be non-fungible. In other words, each NFT token has its own value and price that make it cannot trade equally in the network or market. Although, both NFT and cryptocurrency can freely trade on its blockchain network database, and they can trade peer-to-peer as they are run on distributed database technology.

NFT is used for creating a unique sign for each token, a container for stored digital data that can be accessed on a blockchain network, which mean each token and contained data can be assigned unique price as a token's sign (Elzweig & Trautman, 2022). The NFTs' value are accepted by being an one-of-a kind digital goods on the blockchain network by combining unique signature on specific token with the token's public transaction record that is a blockchain's key function, thus make genuineness on specific digital good is provable and the tradable value is acceptable by people and the market (Wang et al., 2021).

NFT was officially founded on Ethereum, one of the biggest blockchain networks with a market value of US$ 252 billion in May 2022 (*Ethereum Market Cap*). The developers announced the NFT feature in the protocol ERC-721 and later updated it to the ERC-1155 in 2018 (*ERC-721*; *ERC-1155*). Creators can make digital media or any data an NFT by minting it into the blockchain network. The minting process is to upload the data into a cryptocurrency token on a blockchain network and can have tokens for sale, published or provided into any specific platform such as NFT marketplace (*NFT Minting*). Nowadays, many new and upcoming networks, such as Solana, flow by Dapper Lab and Binance Smart Chain, are developing their NFT application to serve usage demand by NFT creators and purchaser (Nadini et al., 2021). According to a past study, NFT has seven preferred functions which are verifiability, transparent execution, availability, tamper-resistance, usability, atomicity and tradability (Wang et al., 2021).

2.3.2 NFT Opportunities in the Market on a Global Scale

NFT is currently being applied to digital media with a huge movement within the market and related industries and became extremely popular along with the adoption of cryptocurrency in 2020 leading to a US$ 10 billion market capital value in May 2022 (Highest NFT Price Stat - CoinMartketCap, 2022). To date, the most recognizable NFT transaction is a digital art piece named "Everydays - The First 5000 Days", purchased for US$ 69 million in cryptocurrency in March 2021 and was the most expensive NFT art piece at the time (Yang, 2021).

The gaming industry also apply NFT as a fundamental of play-to-earn, along with playing it. The reward can be NFT items as a digital goods that can be used in the

game or an in-game Cryptocurrency; some NFT items and Cryptocurrency can be traded in the NFT marketplace or Cryptocurrency Exchange in which players can produce income by trading them into fiat money or government-issued currencies (Vidal-Tomás, 2022). One of the promising NFT games is Axie Infinity as it is claimed that daily user numbers spiked from 30,000 in April 2021 to 1 million in August 2021 with a daily transaction value worth US$ 30 million in July 2021 (Servando et al., 2021). However, De Jesus et al (2022) discuss that Axie Infinity were a double edged sword because even if it is an income source during the pandemic, it also stresses player to maintain consistency to get a daily quota for the reward, especially students who must spend time studying (De Jesus et al., 2022).

Another potential for NFT applications in gaming is skin trading marketplace and improving player-to-player trading both in the centralized game environment as many players are likely unbothered by NFT and CS:GO marketplace remain popular (Newzoo, 2022). Newzoo (2022) reported that many stakeholders and investors want to see NFT strategies as they see it as the next big thing. Although gamers in the AAA title negatively reacted toward this technology as some players backlashed Ubisoft on applying NFT in their multiplayer game. Newzoo (2022) concluded publishers might appease both parties by adding NFT or alike technology under a less controversial name.

NFT applications were also mentioned in Metaverse, a technology practice used to combine physical reality with digital virtuality with interactive technologies, as it is a full digital experience that needs non-fungible application to change into digital goods and create its economy. According to Mystakidis (2022), Metaverse is promising to transform various industries by converging various technology. For example, online learning on metaverse can improve experience, social connection with an interactive technology within metaverse (Mystakidis, 2022).

2.3.3 NFT market and application in Thailand

Businesses in Thailand also participate in the NFT trend to capture this emerging opportunity with Thai blockchain developers launching NFT marketplaces for Thai consumers, for example, Coral by KASIKORN X, Bitkub NFT by Bitkub and Zixel by Zipmex. In addition, Thai companies from various industries such as The Mall Group

Siam Piwat from the retail industry, and GMM Grammy from the media and entertainment industry have planned to apply NFT and blockchain technology to their core business. This movement increases the opportunity for Thai blockchain developers because these companies cannot develop an application by themselves. The Thai blockchain developers and providers, for example, Bitkub, KASIKORN X and Zipmex have announced their partnership with these companies to develop an NFT application for Thai consumers. Moreover, GuildFi, Thai-founded NFT game connector startup, received seed investment by Crypto-community investors at US$ 6 million and receive US$ 140 million by token launch auction in 2021 (Techsauce, 2022).

CHAPTER III
LITERATURE REVIEW

3.1 Dependent Variable

3.1.1 Purchase Intention

The purchase intention definition in this research is based on research and specific contexts included in this study. Purchase intention refers to the intention to purchase NFT digital goods that are provided in an online and offline game platform as digital goods produced, offered, and acquired to enhance user experience only in the game platform and limited to a digital environment. In the NFT game environment, customers can pay with in-game cryptocurrency to acquire NFT items as a part of in-game items.

Moreover, NFT can create unplayable item or digital merchandise, such as digital arts or collectable 3D digital figure, that customers can purchase for their appreciation. This application can help generate income for the game developer along with in-game item.

3.2 Theoretical Framework

Purchase intention is a pre-purchase process for customers who are planning to purchase goods. Many theories explained factors and motives underline the choice of customers. Two theories predicted customers' purchase intention. Starting with customer value theory, it is explained consumer behaviour in the choice to purchase a specific product is influenced by five individual values: Functional, Conditional, Social, Emotional and Epistemic (Sheth et al., 1991). Sheth et al (1991) concluded that this theory might use to predict, describe and explain consumption behaviour in any interest but with an individual context limitation.

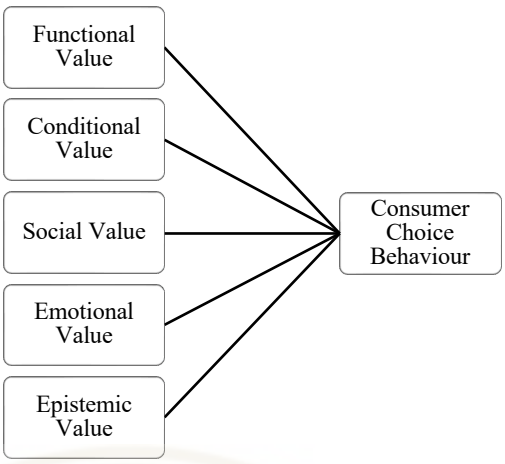

Figure 3.1 The five values influence consumer choice behaviour in Customer Value Theory (Sheth et al., 1991)

Purchase intention is also mentioned in the Theory of Planned Behaviour or TPB as it has been found to influence customer behaviour (Armitage & Conner, 2001). The theory explains that customers' purchase intention is influenced by Subjective Norm, Attitudes and Perceive Behavioral Control. Armitage & Connor (2001) stated that TPB can increase predictive power with an additional normative variable such as moral and descriptive norms.

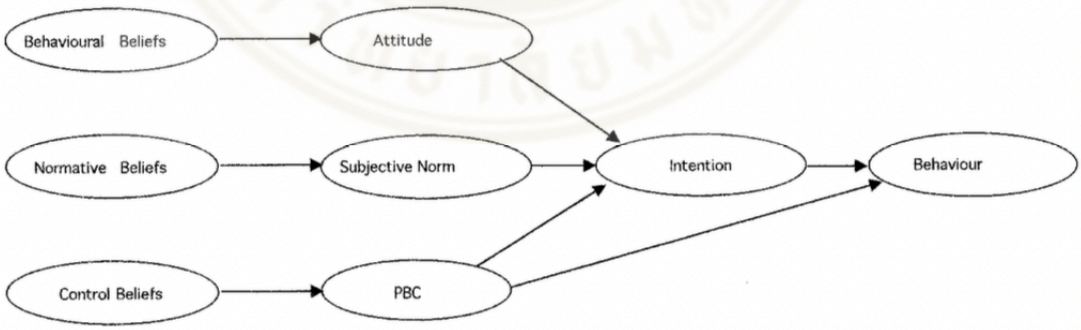

Figure 3.2 Theory of planned behaviour framework (Armitage & Conner, 2001)

This research is constructed on customer value theory for three reasons. First, customer value theory has been adopted by researchers in a digital context such as digital items (Kim et al., 2011), social media (Kaur et al., 2018) and online healthcare

services (Chakraborty & Paul, 2022). The theory is widely adapted to explain consumer intention based on specific value and provide a better investigation of internal customer purchase intention among the wide variety of choices. Secondly, many studies find at least one value from customer value theory strongly influences purchase intention in the context of digital goods, Cryptocurrency and even geography such as Asia. Even though some research is constructed by TPB, some factors are reasonably related to the values in Consumer Value Theory. Finally, the Consumer Value Theory is focused on the products and services values that are clearer to suggest in product development. NFT game is still a new concept and needs more evidence to improve the product, service and business model. On the other hand, TPB has various external factors that might provide less information on product development itself.

3.3 Independent Variables

3.3.1 Financial Risk Tolerance

Financial risk tolerance refers to a person's attitude toward risk on financial terms and is an important concept for the financial sector and customers (Hallanan et al, 2004). NFT items in NFT game are considered as a crypto-asset as it is necessary to earn income from the play-to-earn model and its potential to create a business model such as player-to-player trading and a marketplace which can generate player rewards. Stix (2021) found that those who have purchase intention in bitcoin are more willing to accept high financial risk (Stix, 2021). This factor included economic rationale as Hamari et al (2017) found and is seen to have a positive influence on how much people were willing to spend for in-game content on free-to-play games (Hamari et al., 2017).

3.3.2 Functional Quality

Functional quality is considered a functional value in the Theory of Consumer Value and refers to the perceived utility of NFT goods. The goods' utilities included individual characteristics or attributes, reliability, and durability (Kim et al., 2011). The functional quality of NFT goods in NFT games also refers to a performance expectation that will help the owner play a game easier. Hamari et al (2017) found that

players have the intention to purchase in-game content on a free-to-play game for unobstructed play (Hamari et al., 2017). A customization attribute with a digital item in the online game, considered functional quality, influences Thai-player purchase intention for a digital item in a free online game (Nichamon, 2021).

3.3.3 Social Influence

Social influence is considered a social value in the Theory of Consumer Value and refers to individual perception of NFT goods influenced by people, organizations, or society. Self-image and positive relationship with other players are the social influences that have a positive relationship to purchase intention (Kim et al, 2011). Kim et al (2011) added that digital items can be used for self-expression, and influences people to purchase these items and use them on the online platform. This finding is supported by Hamari et al (2017) that social interaction has a positive influence on people spending in-game content on a free-to-play game (Hamari et al., 2017).

3.3.4 Appreciation

Appreciation is considered an emotional value according to the Theory of Consumer Value and refers to an individual's feeling toward NFT goods that might influence purchase intention. This includes personal views on aesthetics, preference, and taste. Kim et al (2011) found aesthetics and playfulness significantly influence the intention to purchase a digital item. Nichamon (2022) also found that Thai customers prefer to spend money on customized decoration items that can provide them an aesthetical experience.

3.3.5 Perceived Risk

Perceived risk as a topic has been associated with consumer behaviour research for over five decades. This has been used to investigate risk with various aspects of consumer behaviour with both subjective and objective concepts (Jacoby & Kaplan, 1972; Mitchell, 1999). In this research, perceived risk refers to a negative perception of NFT goods and their attribute. Nichamon (2022) found payment reliability has a positive influence on Thai in-game purchase intention. This finding is in contrast

in that if the payment platforms are unreliable, it might create a negative influence on purchase intention. Sukumaran et al (2022) found that perceived risk did not influence bitcoin adoption and investment intention among Malaysian retail investors. The result concerned retail investors who those millennials might lack awareness of perceived risk when expanding their technology or investment understanding and avoiding being victimized by cybercriminals and scammers.

3.4 Conceptual Framework

The Conceptual Framework developed from the theoretical framework of the Theory of Consumer Value. There are five independent variables to focus on which were adapted from past studies: Financial Risk Tolerance, Functional Quality, Social Influence, Appreciation and Perceived Risk.

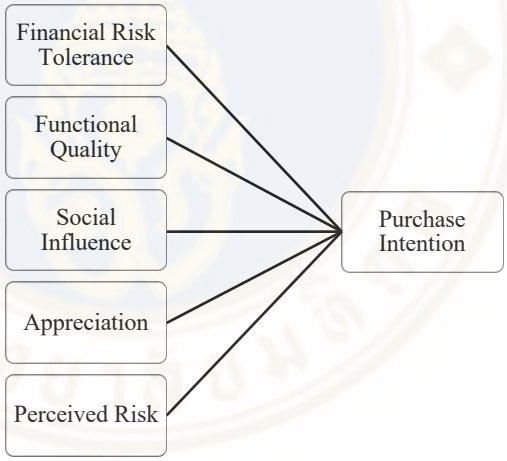

Figure 3.3 Conceptual Framework of Factors that influence Thai Consumers' purchase intention of Non-Fungible Tokens as a Digital Goods in the Gaming Industry

H.1 Financial Risk Tolerance has a positive influence on NFT in-game item purchase intention

H.2 Functional Quality has a positive influence on NFT in-game item purchase intention

H.3 Social Influence has a positive influence on NFT in-game item purchase intention

H.4 Appreciation has a positive influence on NFT in-game item purchase intention

H.5 Perceived Risk has a negative influence on NFT in-game item purchase intention

CHAPTER IV
RESEARCH PLAN AND METHODOLOGY

4.1 Research Design and Instrument

This study will apply quantitative research to explain key factors that influence customer purchase intention as many past studies applied quantitative research in the digital items and cryptocurrency context. The questionnaire will be developed from literature, theoretical studies and conceptual framework and will have five sections: starting with screening questions, general questions on gaming, specific factor questions, additional NFT questions and demographic questions. The questionnaire will use a 5-point Likert-type scale, 1 refers to strongly disagree and 5 refers to strongly agree, to identify each factor's effect on an individual respondent base on the conceptual framework.

4.2 Respondent Profile and Sample Size

This study's sample is Thai people of all ages, all genders, all locations and all education levels who have experience in buy virtual good on digital platforms in online games, offline games or social media platforms within past year.

This study will select a sample size minimum of 200 samples. Hair et al (2019) stated that 200 samples are an optimum amount for most multiple regression analyses (Hair et al., 2019).

4.3 Data Collection Plan

The questionnaire will be distributed through an online survey form and publish the access link on social network services. The questionnaire is mainly distributed to the Thai online community that focuses on gaming and any related area

for two weeks. The questionnaire will have both Thai and English to expand an opportunity to gather more respondents.

4.4 Analysis and Interpretation phase

The result from the questionnaire was collected in quantitative data. The data cleaning was applied to eliminate filtered out and grouping datasets by Microsoft Excel (Microsoft, 2022). The researcher implied Jamovi (Jamovi, 2021) statistic software for further quantitative analysis by investigating the differentiation between demographic and behavior, and the relation toward the factors. The T-test and one-way ANOVA were applied for the test of different. The regression analysis and factor analysis were used to investigate the impact of the factor statistically. Finally, the quantitative analysis result was concluded and interpreted to tangible recommendations in NFT digital item purchase intention in the gaming industry that includes commercial and regulation benefits.

CHAPTER V
RESULTS

5.1 Demographic and behavior of the respondents

The questionnaire was completed by a total of 251 respondents, out of which 210 respondents passed the screening question. Less than 5 percent of respondents skipped two gaming behavior questions, but this did not affect the reliability of the quantitative results and analysis, which will be discussed in an upcoming section.

Among the filtered-in respondents, the gender distribution was as follows: 116 males (55.2%), 71 females (33.8%), and 23 LGBTQ+ (11%). The age range was divided into two groups during the data cleaning process: 141 samples (67.1%) were under 31 years old, while 69 samples (32.9%) were over 31 years old. The respondents' education levels were also grouped into two categories: 139 samples (66.2%) had a bachelor's degree or lower, while 71 samples (33.8%) had a master's degree or higher.

The respondents had various occupations, with private company employees being the largest share at 89 samples (42.4%), followed by full-time students at 57 samples (27.1%). Government employees accounted for 24 samples (11.4%), while 15 individuals (7.1%) identified as freelance or self-employed, 14 as business owners (6.7%), and 11 as unemployed or retired (5.2%).

Regarding monthly income, 66 respondents (31.4%) reported earning less than 15,000 Baht, 50 (26.2%) reported earning 15,000-24,999 Baht, 35 (16.7%) reported earning 35,000-49,999 Baht, 34 (16.2%) reported earning over 50,000 Baht, and 20 (9.5%) reported earning 25,000-34,999 Baht.

As for marital status, 182 respondents (86.7%) reported being single, while 28 respondents (13.3%) reported being married. Lastly, in terms of demographics, 145 respondents (69%) reported living in Bangkok and 65 respondents (31%) reported living outside of Bangkok.

The gaming behavior of the respondents was collected and analyzed to identify their characteristics. This included their playing frequency and playing time per

session. Among the participants, 117 samples (55.7%) played games more than 5 times per week, 39 samples (18.6%) played games 3-5 times per week, 33 samples (15.7%) played games less than 5 times per week, and 21 samples (10%) played games 1-2 times per week. In terms of playing time per session, 72 samples (34.3%) played games for 1-2 hours, 58 samples (27.6%) played games for 3-4 hours, 41 samples (19.5%) played games for more than 4 hours, and 39 samples (18.6%) played games for less than 1 hour.

The preferred gaming devices of the respondents were also collected through a multiple-answer question, with a maximum of four devices per respondent. Among all the participants, 139 samples (66.2%) preferred playing games on mobile devices, 102 samples (48.6%) played games on Personal Computers, 50 samples (23.8%) played games on Home Game Consoles, and 31 samples (14.8%) played games on On-the-go game consoles.

The preferred game genre was collected through a multiple-answer question of one to three genre per respondent. From all 210 respondents, 103 respondents (49%) preferred Role-playing games, 96 respondents (45.7%) preferred Mobile games, 55 respondents (26.2%) preferred Shooting games, 76 respondents (36.2%) preferred Action/Adventure games, 58 respondents (27.6%) preferred Puzzle games, 30 respondents (14.3%) preferred Strategy games, 38 respondents (18.1%) preferred Casual simulation games, 13 respondents (6.2%) preferred Real-world simulation games, 23 respondents (11%) preferred Sport games, and 30 respondents (14.3%) preferred AR/VR games.

In the questionnaire, participants were asked a multiple-answer question about their behavior toward their favorite game franchise, where they could choose one to three preferred activities. This questionnaire had 7 missing data which reduce respondents to 203. Out of 203 respondents, 69 respondents (34%) chose to buy their favorite franchise's game titles as much as possible, 89 respondents (43.8%) chose to play their favorite franchise's games as much as possible, 47 respondents (23.2%) preferred to buy virtual products, and 49 respondents (24.1%) preferred to buy physical products. Additionally, 106 respondents (52.2%) chose to join fan communities, 54 respondents (26.6%) chose to join official communities, 122 respondents (60.1%) chose to consume content related to their favorite franchise, and 27 respondents (13.3%) chose to create content related to their favorite franchise. The participants also estimated the

level of participation in their favorite game franchise which distributed by level one as never involved to level five as highly involve. 17 respondents (8.1%) were level one, 22 respondents (10.5%) were level two, 61 respondents (29%) were level three, 69 respondents (32.9%) were level four, and 41 respondents (19.5%) were level five.

In terms of average spending per months on gaming related goods and services, 13 respondents (6.2%) spent more than 5,001 Baht per month, 51 respondents (24.3%) spent 1,001-5,000 Baht, 42 respondents (20%) spent 501-1,000 Baht, and 104 respondents (49.5%) spend less than 500 Baht. The survey also included a multiple-answer question where participants could choose one to three types of gaming goods, they had spent money on within a year. This questionnaire also had 1 missing value that make all participant number to 209. Among all 209 participants, 62 respondents (29.7%) bought game title, 64 respondents (30.6%) bought Digital Download Contents or DLCs, 98 respondents (46.9%) bought in-game items, 36 respondents (17.2%) bought in-game currencies, 45 respondents (21.5%) bought gaming gear, 37 respondents (17.7%) bought gaming merchandise, and 28 respondents (13.4%) did not buy any item related to the questionnaire this year.

Finally, the survey also aimed to assess respondents' understanding of cryptocurrency and NFTs. Out of the 210 respondents, 117 (55.7%) indicated that they understood the concept of cryptocurrency, while 69 (32.9%) knew the name but were not sure if they understood it, and 24 (11.4%) did not understand it at all. Regarding NFTs, 88 respondents (41.9%) indicated that they understood the concept, 77 (36.7%) knew the name but were unsure of the concept, and 45 (21.4%) did not understand it.

5.2 Test of difference

The researcher analyzes tests of different using the T-Test and ANOVA method based on the number of the group that were allocated to demographic and behavior questions and found 24 groups of demographic and behavior that have significantly different. The information will be discussing on 18 groups of t-test result and 6 groups of one-way ANOVA result below.

5.2.1 T-Tests Analysis

Table 5.1 Prefer to play game on PC in T-Test analysis

				Independent sample test	
Variable	**PC Gamer**	**Descriptive**		**t-test for Equality of Means**	
		Which one is your primary playing device	**Mean**	**t**	**Significance Two-Sided p**
Functional Quality	**Function 3**	Yes	3.167	2.099	0.037
		No	3.565		

Table 5.2 Prefer to play game on Mobile in T-Test analysis

				Independent sample test	
Variable	**Mobile**	**Descriptive**		**t-test for Equality of Means**	
		Which one is your primary playing device	**Mean**	**t**	**Significance Two-Sided p**
Functional Quality	**Function 1**	Yes	3.201	-2.618	0.01
		No	2.634		
Functional Quality	**Function 2**	Yes	3.281	4.201	<0.001
		No	2.408		
Functional Quality	**Function 3**	Yes	3.604	-3.384	<0.001
		No	2.915		
Social Influence	**Social Influence 1**	Yes	2.791	-2.468	0.015
		No	2.296		

Table 5.2 Prefer to play game on Mobile in T-Test analysis (Cont.)

				Independent sample test	
Variable	**Mobile**	**Descriptive**		**t-test for Equality of Means**	
		Which one is your primary playing device	**Mean**	**t**	**Significance Two-Sided p**
Social Influence	**Social Influence 2**	Yes	3.014	-3.226	0.002
		No	2.38		
Social Influence	**Social Influence 3**	Yes	2.705	-2.62	0.01
		No	2.197		
Social Influence	**Social Influence 4**	Yes	2.906	-2.797	0.006
		No	2.338		
Social Influence	**Social Influence 5**	Yes	2.885	-2.287	0.024
		No	2.437		

As table 5.1 and table 5.2 shown a difference (sig <0.015) between the gaming device preference. People who are not preferring to play game on PC are likely to influence by reliability of NFT item functional quality. In contrast, people who preferred to play game on mobile are likely to influence by quality of function and social influence.

Table 5.3 Prefer to play RPG game in T-Test analysis

Variable	RPG Game	Descriptive		Independent sample test	
				t-test for Equality of Means	
		Which genre that you prefer?	Mean	t	Significance Two-Sided p
Functional Quality	**Function 1**	Yes	2.74	2.665	0.008
		No	3.27		
Functional Quality	**Function 2**	Yes	2.63	3.517	<0.001
		No	3.33		
Functional Quality	**Function 3**	Yes	3.07	3.182	0.002
		No	3.66		
Social Influence	**Social Influence 1**	Yes	2.359	2.741	0.007
		No	2.879		
Social Influence	**Social Influence 2**	Yes	2.534	2.786	0.006
		No	3.056		
Social Influence	**Social Influence 3**	Yes	2.204	3.388	<0.001
		No	2.85		
Appreciation	**Appreciation 1**	Yes	3.15	2.173	0.031
		No	3.54		
Purchase Intention	**Purchase Intention 1**	Yes	1.99	2.924	0.004
		No	2.5		
Purchase Intention	**Purchase Intention 3**	Yes	1,99	2.704	0.007
		No	2.47		

People who preferred to play RPG game have no significant influence on any factor of buying NFT in-game item. However, people who are not prefer RPG game are likely to influence by functional quality, social influence and appreciation factors.

They are significantly influence on purchase intention of NFT in-game item and NFT arts as well.

Table 5.4 Prefer to play Mobile game in T-Test analysis

				Independent sample test	
Variable	**Mobile Game**	**Descriptive**		**t-test for Equality of Means**	
		Which genre that you prefer?	**Mean**	**t**	**Significance Two-Sided p**
Financial Risk Tolerance	**Fi_2**	Yes	3.365	-2.973	0.003
		No	2.851		
Financial Risk Tolerance	**Fi_3**	Yes	3.354	-2.516	0.013
		No	2.886		
Functional Quality	**Function 1**	Yes	3.25	-2.206	0.028
		No	2.807		
Functional Quality	**Function 2**	Yes	3.313	-3.03	0.003
		No	2.711		
Functional Quality	**Function 3**	Yes	3.656	-2.812	0.005
		No	3.132		
Social Influence	**Social Influence 2**	Yes	3.03	-2.251	0.025
		No	2.61		
Social Influence	**Social Influence 4**	Yes	2.979	-2.53	0.012
		No	2.491		
Appreciation	**Appreciation 3**	Yes	3.667	-2.062	0.04
		No	3.289		
Purchase Intention	**Purchase Intention 3**	Yes	2.438	-2.1	0.037
		No	2.719		

Mobile game preference players shown interesting result. They influence by financial risk tolerance, functional quality, social influence and appreciation. While the people who are not preferring to play mobile game does not significantly influence to an item but NFT art.

Table 5.5 Prefer to play Shooting Game in T-Test analysis

				Independent sample test	
Variable	**Shooting Game**	**Descriptive**		**t-test for Equality of Means**	
		Which genre that you prefer?	**Mean**	**t**	**Significance Two-Sided p**
Perceived Risk	**Risk 1**	Yes	4.109	-2.6	0.011
		No	3.684		
Perceived Risk	**Risk 2**	Yes	4.164	-2.705	0.008
		No	3.761		
Functional Quality	**Function 1**	Yes	2.655	2.015	0.047
		No	3.135		
Functional Quality	**Function 3**	Yes	3.036	2.006	0.048
		No	3.49		
Purchase Intention	**Purchase Intention 5**	Yes	2.545	-0.775	0.012
		No	2.387		

People who prefer to play shooting game are acknowledge perceived risk in higher mean score. They are also not influence by performance-related item but influence by reliable item. In purchase intention. They are likely to buy video game merchandise on an NFT form if it is introduced in the next 6 months.

Table 5.6 Prefer to play Action-Adventure Game in T-Test analysis

				Independent sample test	
Variable	**Action Adventure**	**Descriptive**		**t-test for Equality of Means**	
		Which genre that you prefer?	**Mean**	**t**	**Significance Two-Sided p**
Functional Quality	**Function 1**	Yes	2.684	2.436	0.016
		No	3.194		
Social Influence	**Social Influence 3**	Yes	2.276	2.008	0.046
		No	2.679		
Social Influence	**Social Influence 4**	Yes	2.408	2.391	0.018
		No	2.888		
Purchase Intention	**Purchase Intention 3**	Yes	1.974	2.205	0.029
		No	2.381		

The action-adventure game preference player is not influenced by any variable. However, people who are not prefer action adventure are influence by Functional Quality, Social Influence and likely to purchase NFT art piece in the next 6 months.

Table 5.7 Prefer to play Strategy Game in T-Test analysis

				Independent sample test	
Variable	**Strategy**	**Descriptive**		**t-test for Equality of Means**	
		Which genre that you prefer?	**Mean**	**t**	**Significance Two-Sided p**
Perceive Risk	**Risk 2**	Yes	3.794	-2.483	0.014
		No	4.033		
Functional Quality	**Function 3**	Yes	2.8	2.47	0.014
		No	3.467		

Strategy gamers are not influenced by any variable but non strategy gamers are likely to buy NFT item that reliable even they are believed that NFT item will not be recognized by their friend and communities.

Table 5.7 Prefer to play Strategy Game in T-Test analysis (Cont.)

				Independent sample test	
Variable	**AR/VR**	**Descriptive**		**t-test for Equality of Means**	
		Which genre that you prefer?	**Mean**	**t**	**Significance Two-Sided p**
Appreciation	**Appreciation 1**	Yes	3.867	-2.272	0.029
		No	3.261		
Appreciation	**Appreciation 2**	Yes	4.133	-2.073	0.044
		No	3.628		

Table 5.7 Prefer to play Strategy Game in T-Test analysis (Cont.)

				Independent sample test	
Variable	**AR/VR**	**Descriptive**		**t-test for Equality of Means**	
		Which genre that you prefer?	**Mean**	**t**	**Significance Two-Sided p**
Appreciation	**Appreciation 3**	Yes	3.967	-2.419	0.02
		No	3.378		

People who prefer AR/VR games are influenced by Appreciation factors. They are influenced to, but NFT that look aesthetically, satisfying their reference and contain attractive features.

Table 5.8 People who buy games as a contribution to their favorite game in T-Test analysis

				Independent sample test	
Variable	**Buy game as much as possible**	**Descriptive**		**t-test for Equality of Means**	
		How do you involve with your favorite game title?	**Mean**	**t**	**Significance Two-Sided p**
Financial Risk Tolerance	**Fi_2**	Yes	2.783	2.68	0.012
		No	3.276		
Financial Risk Tolerance	**Fi_3**	Yes	2.725	2.918	0.004
		No	3.321		

Table 5.8 People who buy games as a contribution to their favorite game in T-Test analysis (Cont.)

				Independent sample test	
Variable	**Buy game as much as possible**	**Descriptive**		**t-test for Equality of Means**	
		How do you involve with your favorite game title?	**Mean**	**t**	**Significance Two-Sided p**
Perceived Risk	**Risk 2**	Yes	4.145	-2.761	0.007
		No	3.724		
Functional Quality	**Function 2**	Yes	2.565	2.878	0.004
		No	3.179		
Functional Quality	**Function 3**	Yes	2.903	2.973	0.004
		No	3.567		
Appreciation	**Appreciation 2**	Yes	3.406	2.981	0.015
		No	3.873		
Appreciation	**Appreciation 3**	Yes	3.087	2.981	0.003
		No	3.664		
Purchase Intention	**Purchase Intention 3**	Yes	1.957	2.279	0.024
		No	2.388		

People can get involved with their favorite game in many ways and the way they get involved as a contribution to their favorite game are significantly influenced their purchase intention. Start with people who buy games for a contribution, they are less aware of financial risk tolerance, functional quality and appreciation compared to people who choose not to buy games as much as possible. They are also aware more on perceive risk in purchasing NFT in-game item and not likely to buy NFT art piece in the next 6 months.

Table 5.9 People who play games as a contribution to their favorite game in T-Test analysis

				Independent sample test	
Variable	**Play game as much as possible**	**Descriptive**		**t-test for Equality of Means**	
		How do you involve with your favorite game title?	**Mean**	**t**	**Significance Two-Sided p**
Functional Quality	**Function 2**	Yes	2.663	2.665	0.008
		No	3.211		

People who contribute to their favorite game by playing games as much as they can are not significantly influenced by any variable. However, people who are not involve this way are likely to be influence by NFT item that help them play game easily.

Table 5.10 People who buy virtual goods as a contribution to their favorite game in T-Test analysis

				Independent sample test	
Variable	**Buy virtual goods**	**Descriptive**		**t-test for Equality of Means**	
		How do you involve with your favorite game title?	**Mean**	**t**	**Significance Two-Sided p**
Purchase Intention	**Purchase Intention 1**	Yes	2.723	-2.551	0.013
		No	2.128		

Table 5.10 People who buy virtual goods as a contribution to their favorite game in T-Test analysis (Cont.)

				Independent sample test	
Variable	**Buy virtual goods**	**Descriptive**		**t-test for Equality of Means**	
		How do you involve with your favorite game title?	**Mean**	**t**	**Significance Two-Sided p**
Purchase Intention	**Purchase Intention 3**	Yes	2.596	-2.004	0.049
		No	2.135		

People also buy goods as a contribution to their favorite game. Investigating virtual goods preferences buyers, they are significantly interested in NFT in-game item and NFT art piece within 6 months. In contrast, people who buy physical items are not significantly influenced by any variable.

Table 5.11 People who create related content as a contribution to their favorite game in T-Test analysis

				Independent sample test	
Variable	**Create related content**	**Descriptive**		**t-test for Equality of Means**	
		How do you involve with your favorite game title?	**Mean**	**t**	**Significance Two-Sided p**
Perceive Risk	**Risk 2**	Yes	4.222	-2.167	0.037
		No	3.813		

Table 5.11 People who buy create related content as a contribution to their favorite game in T-Test analysis (Cont.)

				Independent sample test	
Variable	**Create related content**	**Descriptive**		**t-test for Equality of Means**	
		How do you involve with your favorite game title?	**Mean**	**t**	**Significance Two-Sided p**
Perceive Risk	**Risk 3**	Yes	4.37	-2.439	0.018
		No	4.023		
Appreciation	**Appreciation 1**	Yes	4.037	-2.909	0.004
		No	3.244		
Appreciation	**Appreciation 2**	Yes	4.259	-2.359	0.019
		No	3.631		
Purchase Intention	**Purchase Intention 5**	Yes	2.358	-2.191	0.036
		No	3		

People who contribute by creating content are significantly influenced by perceive risk and appreciation. They are not influence in purchasing NFT form of video game merchandise within the next 6 months. Related to content creators, people who choose to view or consume contents as contribution are not significantly influence by any variables.

Table 5.12 Spending on game title in T-Test analysis

				Independent sample test	
Variable	**Game title**	**Descriptive**		**t-test for Equality of Means**	
		Other than your gaming device, what is your most spending for gaming in the past year?	**Mean**	**t**	**Significance Two-Sided p**
Functional Quality	**Function 1**	Yes	2.435	3.604	<0.001
		No	3.245		
Functional Quality	**Function 2**	Yes	2.371	3.934	<0.001
		No	3.231		
Functional Quality	**Function 3**	Yes	2.839	3.572	<0.001
		No	3.585		
Social Influence	**Social Influence 1**	Yes	2.274	2.346	0.021
		No	2.762		
Social Influence	**Social Influence 4**	Yes	2.323	2.64	0.009
		No	2.871		
Social Influence	**Social Influence 5**	Yes	2.339	2.774	0.006
		No	2.891		
Appreciation	**Appreciation 1**	Yes	3.048	2.088	0.039
		No	3.469		
Appreciation	**Appreciation 2**	Yes	3.85	2.619	0.009
		No	3.339		
Appreciation	**Appreciation 3**	Yes	3.145	2.202	0.03
		No	3.592		
Purchase Intention	**Purchase Intention 1**	Yes	1.952	2.201	0.029
		No	2.381		

Table 5.12 Spending on game title in T-Test analysis (Cont.)

				Independent sample test	
Variable	**Game title**	**Descriptive**		**t-test for Equality of Means**	
		Other than your gaming device, what is your most spending for gaming in the past year?	**Mean**	**t**	**Significance Two-Sided p**
Purchase Intention	**Purchase Intention 3**	Yes	1.806	3.245	0.002
		No	2.415		
Purchase Intention	**Purchase Intention 5**	Yes	2.097	2.391	0.018
		No	2.571		

Purchasing activities on gaming related products also shown different in some variables. Start with people who purchase game title within a year are less significantly influence by functional quality, social influence, appreciation and purchase intention compared to people who did not purchase game title within a year.

Table 5.13 Spending on Digital Download Content (DLC) in T-Test analysis

				Independent sample test	
Variable	**DLC**	**Descriptive**		**t-test for Equality of Means**	
		Other than your gaming device, what is your most spending for gaming in the past year?	**Mean**	**t**	**Significance Two-Sided p**
Functional Quality	**Function 1**	Yes	2.531	3.108	0.002
		No	3.214		

Table 5.13 Spending on Digital Download Content (DLC) in T-Test analysis (Cont.)

				Independent sample test	
Variable	**DLC**	**Descriptive**		**t-test for Equality of Means**	
		Other than your gaming device, what is your most spending for gaming in the past year?	**Mean**	**t**	**Significance Two-Sided p**
Functional Quality	**Function 2**	Yes	2.469	3.271	0.001
		No	3.2		
Functional Quality	**Function 3**	Yes	3.047	2.092	0.039
		No	3.503		

People who spending on digital download content (DLC) within a year are influenced by lesser variable compared to game title. People who purchase DLC are less influence by functional quality compared to people who are not.

Table 5.14 Spending on in-game items in T-Test analysis

				Independent sample test	
Variable	**In-game Item**	**Descriptive**		**t-test for Equality of Means**	
		Other than your gaming device, what is your most spending for gaming in the past year?	**Mean**	**t**	**Significance Two-Sided p**
Financial Risk Tolerance	**Fi_1**	Yes	3.224	-3.127	0.002
		No	2.685		

Table 5.14 Spending on in-game items in T-Test analysis (Cont.)

				Independent sample test	
Variable	**In-game Item**	**Descriptive**		**t-test for Equality of Means**	
		Other than your gaming device, what is your most spending for gaming in the past year?	**Mean**	**t**	**Significance Two-Sided p**
Financial Risk Tolerance	**Fi_2**	Yes	3.316	-2.547	0.012
		No	2.874		
Financial Risk Tolerance	**Fi_3**	Yes	3.367	-2.752	0.006
		No	2.856		
Perceive Risk	**Risk 2**	Yes	3.643	3.007	0.003
		No	4.072		
Functional Quality	**Function 1**	Yes	3.337	-3.13	0.002
		No	2.712		
Functional Quality	**Function 2**	Yes	3.327	-3.334	0.001
		No	2.667		
Functional Quality	**Function 3**	Yes	3.704	-3.455	<0.001
		No	3.063		
Social Influence	**Social Influence 1**	Yes	2.878	-2.572	0.011
		No	2.387		
Social Influence	**Social Influence 4**	Yes	3.071	-3.564	<0.001
		No	2.387		
Appreciation	**Appreciation 1**	Yes	3.592	-2.554	0.011
		No	3.126		
Appreciation	**Appreciation 2**	Yes	3.969	-2.874	0.004
		No	3.459		

Table 5.14 Spending on in-game items in T-Test analysis (Cont.)

				Independent sample test	
		Descriptive		t-test for Equality of Means	
Variable	In-game Item	Other than your gaming device, what is your most spending for gaming in the past year?	Mean	t	Significance Two-Sided p
Appreciation	Appreciation 3	Yes	3.694	-2.435	0.016
		No	3.252		
Purchase Intention	Purchase Intention 1	Yes	2.592	-3.611	<0.001
		No	1.955		
Purchase Intention	Purchase Intention 2	Yes	2.857	-2.445	0.015
		No	2.405		
Purchase Intention	Purchase Intention 3	Yes	2.52	-3.026	0.003
		No	1.982		
Purchase Intention	Purchase Intention 5	Yes	2.673	-2.562	0.011
		No	2.216		

In-game items are nearly identical to an NFT in-game item, which is the main theme of the study. The significance of differences between people who purchase in-game items are influenced by factors such as financial risk tolerance, functional quality, social influence, appreciation and purchase intention. On the other hand, perceived risk influences people who are not purchase in-game item more that people who purchased.

Table 5.15 Spending on in-game currency in T-Test analysis

				Independent sample test	
Variable	**In-game currency**	**Descriptive**		**t-test for Equality of Means**	
		Other than your gaming device, what is your most spending for gaming in the past year?	**Mean**	**t**	**Significance Two-Sided p**
Appreciation	**Appreciation 1**	Yes	3.833	-2.58	0.013
		No	3.243		

Purchasing in-game currency found only one significantly difference among participants. People who tend to buy in-game currency are more likely to be influence by appreciation factor.

Table 5.16 Spending on gaming gear in T-Test analysis

				Independent sample test	
Variable	**Gaming Gear**	**Descriptive**		**t-test for Equality of Means**	
		Other than your gaming device, what is your most spending for gaming in the past year?	**Mean**	**t**	**Significance Two-Sided p**
Purchase Intention	**Purchase Intention 4**	Yes	2.978	-2.488	0.015
		No	2.402		

People who spending on gaming gear are likely to be influenced by purchase intention factor.

Table 5.17 No spending on any gaming related this year in T-Test analysis

				Independent sample test	
Variable	**Did not but anything this year**	**Descriptive**		**t-test for Equality of Means**	
		Other than your gaming device, what is your most spending for gaming in the past year?	**Mean**	**t**	**Significance Two-Sided p**
Financial Risk Tolerance	**Fi_1**	Yes	2.393	2.687	0.011
		No	3.022		
Purchase Intention	**Purchase Intention 2**	Yes	1.964	2.801	0.006
		No	2.718		

People who did not buy any gaming stuff related this year are significantly difference compared to who buy stuff in a year. They are less influenced by financial risk tolerance and purchase intention.

5.2.2 one-way ANOVA

Table 5.18 Play Frequency in One-Way ANOVA analysis

Variable	Play frequency		Descriptive	ANOVA		Multiple Comparison (Post-Hoc)	
			Mean	F	Sig.	Mean Difference	Sig.
Purchase Intention	Purchase Intention 3	More than 5 time per week	1.932	5.263	0.003	-0.795	0.008
		Less than once a week	2.727				
Purchase Intention	Purchase Intention 3	More than 5 time per week	1.932	5.263	0.003	-0.925	0.011
		1-2 time per week	2.857				

Table 5.19 Playing time in one session in One-Way ANOVA analysis

Variable	Playing time in a Session		Descriptive	ANOVA		Multiple Comparison (Post-Hoc)	
			Mean	F	Sig.	Mean Difference	Sig.
Financial Risk Tolerance	Fi_3	More than 4 hours	2.537	4.976	0.003	-0.997	0.002
		3-4 Hours	3.534				

Table 5.18 and Table 5.19 showed significant differences in the playing behavior of participants. The lesser playing behavior per week are likely to be influenced by purchase intention. On playing time per session, people who play 3-4 hours are likely to influence by financial risk tolerance compared to people who play more than 4 hours.

Table 5.20 Level of Participation in One-Way ANOVA analysis

Variable	Level of Participation		Descriptive	ANOVA		Multiple Comparison (Post-Hoc)	
			Mean	F	Sig.	Mean Difference	Sig.
Financial Risk Tolerance	Fi_1	Never Involve (Lv1)	2.176	4.849	0.002	-1.07	0.013
		Lv4	3.246				
Financial Risk Tolerance	Fi_1	Never Involve (Lv1)	2.176	4.849	0.002	-1.019	0.036
		Highly Involve (Lv5)	3.195				
Financial Risk Tolerance	Fi_1	Lv2	2.364	4.849	0.002	-0.882	0.031
		Lv4	3.246				
Perceived Risk	Risk 1	Lv2	3.591	6.857	<0.001	-0.872	0.024
		Highly Involve (Lv5)	4.463				

Table 5.20 Level of Participation in One-Way ANOVA analysis (Cont.)

Variable	Level of Participation		Descriptive	ANOVA		Multiple Comparison (Post-Hoc)	
			Mean	F	Sig.	Mean Difference	Sig.
Perceived Risk	Risk 1	Lv3	3.541	6.857	<0.001	-0.922	<0.001
		Highly Involve (Lv5)	4.463				
Perceived Risk	Risk 1	Lv4	3.754	6.857	<0.001	-0.709	0.007
		Highly Involve (Lv5)	4.463				
Perceived Risk	Risk 2	Never Involve (Lv1)	3.294	2.811	0.033	-0.95	0.013
		Highly Involve (Lv5)	4.244				
Perceived Risk	Risk 4	Lv2	3.682	6.691	<0.001	-0.781	0.034
		Highly Involve (Lv5)	4.463				
Perceived Risk	Risk 4	Lv3	3.672	6.691	<0.001	-0.791	0.002
		Highly Involve (Lv5)	4.463				

Table 5.20 Level of Participation in One-Way ANOVA analysis (Cont.)

Variable	Level of Participation		Descriptive	ANOVA		Multiple Comparison (Post-Hoc)	
			Mean	F	Sig.	Mean Difference	Sig.
Perceived Risk	Risk 4	Lv4	3.768	6.691	<0.001	-0.695	0.006
		Highly Involve (Lv5)	4.463				
Purchase Intention	Purchase Intention 1	Lv2	1.591	6.723	<0.001	-0.897	0.013
		Highly Involve (Lv5)	2.488				
Purchase Intention	Purchase Intention 2	Never Involve (Lv1)	2.176	10.523	<0.001	-0.922	0.027
		Highly Involve (Lv5)	3.098				
Purchase Intention	Purchase Intention 2	Lv2	1.591	10.523	<0.001	-0.966	<0.001
		Lv3	2.557				
Purchase Intention	Purchase Intention 2	Lv2	1.591	10.523	<0.001	-1.264	<0.001
		Lv4	2.855				
Purchase Intention	Purchase Intention 2	Lv2	1.591	10.523	<0.001	-1.507	<0.001
		Highly Involve (Lv5)	3.098				

Table 5.20 Level of Participation in One-Way ANOVA analysis (Cont.)

Variable	Level of Participation		Descriptive	ANOVA		Multiple Comparison (Post-Hoc)	
			Mean	F	Sig.	Mean Difference	Sig.
Purchase Intention	Purchase Intention 5	Lv2	1.727	4.863	0.002	-1.005	0.027
		Highly Involve (Lv5)	2.732				

Table 5.20 showed differences on level of participation in most variable. Participants who assume that they have high participation (Level 4 or Level 5) are likely to be influenced by financial risk tolerance, perceived risk and purchase intention compared to lower participation level (Level 3 and less).

Table 5.21 Average Spending per Month in One-Way ANOVA analysis

Variable	Average spending		Descriptive	ANOVA		Multiple Comparison (Post-Hoc)	
			Mean	F	Sig.	Mean Difference	Sig.
Financial Risk Tolerance	Fi_1	Less than 500 THB	2.74	4.062	0.012	-0.952	0.049
		More than 5,000 THB	3.692				
Purchase Intention	Purchase Intention 2	Less than 500 THB	2.26	6.025	0.001	-1.125	0.019
		More than 5,000 THB	3.385				

Table 5.21 Average Spending per Month in One-Way ANOVA analysis (Cont.)

Variable	Average spending		Descriptive	ANOVA		Multiple Comparison (Post-Hoc)	
			Mean	F	Sig.	Mean Difference	Sig.
Purchase Intention	Purchase Intention 2	Less than 500 THB	2.26	6.025	0.001	-0.74	0.006
		1,000-5,000 THB	3				

People with higher spending are likely to be influenced by financial risk tolerance and purchase intention. People who spend more that 5,000 Baht per month are influenced by financial risk tolerance and purchase intention with higher mean score.

Table 5.21 Understanding Cryptocurrencies in One-Way ANOVA analysis (Cont.)

Variable	Understand Cryptocurrency		Descriptive	ANOVA		Multiple Comparison (Post-Hoc)	
			Mean	F	Sig.	Mean Difference	Sig.
Perceived Risk	Risk 2	Yes	4.026	4.317	0.018	0.693	0.008
		No	3.333				
Perceived Risk	Risk 4	Yes	3.983	3.318	0.043	0.608	0.027
		No	3.375				
Purchase Intention	Purchase Intention 4	Yes	2.829	9.026	<0.001	1.037	0.002
		No	1.792				

Knowledge on cryptocurrency is one of our key interests since the topic is related to the function of cryptocurrency technology. Participant who declares on understanding cryptocurrency are influenced by perceived risk and purchase intention compared to other who declare no understanding in this technology. Moreover, understanding participants have high mean score on perceived risk, thus can state that they are more aware of risk on purchase cryptocurrencies, NFT item and any related items.

Table 5.22 Gender in One-Way ANOVA analysis

Variable	**Gender**		**Descriptive**	**ANOVA**		**Multiple Comparison (Post-Hoc)**	
			Mean	F	Sig.	Mean Difference	Sig.
Financial Risk Tolerance	Fi_1	Male	2.733	4.116	0.021	-0.563	0.017
		Female	3.296				
Perceived Risk	Risk 2	Male	4.112	7.968	<0.001	0.563	<0.001
		Female	3.549				
Functional Quality	Function 1	Male	2.552	15.438	<0.001	-1.096	<0.001
		Female	3.648				
Functional Quality	Function 1	Male	2.552	15.438	<0.001	-0.796	0.033
		LGBTQ+	3.348				
Functional Quality	Function 2	Male	2.56	12.984	<0.001	-1.003	<0.001
		Female	3.563				
Functional Quality	Function 2	Male	2.56	12.984	<0.001	-0.788	0.038
		LGBTQ+	3.348				
Functional Quality	Function 3	Male	3.058	9.207	<0.001	-0.787	<0.001
		Female	3.845				
Social Influence	Social Influence 1	Male	2.259	9.526	<0.001	-0.783	<0.001
		Female	3.042				

Table 5.22 Gender in One-Way ANOVA analysis (Cont.)

Variable	Gender		Descriptive	ANOVA		Multiple Comparison (Post-Hoc)	
			Mean	F	Sig.	Mean Difference	Sig.
Social Influence	Social Influence 1	Male	2.259	6.618	<0.001	-0.915	0.009
		LGBTQ+	3.174				
Social Influence	Social Influence 2	Male	2.466	8.977	<0.001	-0.816	<0.001
		Female	3.282				
Social Influence	Social Influence 3	Male	2.224	6.618	0.003	-0.706	0.002
		Female	2.93				
Social Influence	Social Influence 4	Male	2.353	9.127	<0.001	-0.816	<0.001
		Female	3.169				
Social Influence	Social Influence 4	Male	2.353	9.127	<0.001	-0.777	0.035
		LGBTQ+	3.13				
Social Influence	Social Influence 5	Male	2.379	9.947	<0.001	-0.86	<0.001
		Female	3.239				
Appreciation	Appreciation 1	Male	3.026	8.711	<0.001	-0.706	0.001
		Female	3.732				
Appreciation	Appreciation 1	Male	3.026	8.711	<0.001	-0.757	0.029
		LGBTQ+	3.783				
Appreciation	Appreciation 2	Male	3.431	6.208	0.003	-0.583	0.008
		Female	4.014				
Appreciation	Appreciation 3	Male	3.06	14.525	<0.001	-0.94	<0.001
		Female	4				
Appreciation	Appreciation 3	Male	3.06	14.525	<0.001	-0.866	0.022
		LGBTQ+	3.926				
Purchase Intention	Purchase Intention 1	Male	1.931	8.518	<0.001	-0.759	<0.001
		Female	2.69				

Table 5.22 Gender in One-Way ANOVA analysis (Cont.)

Variable	Gender		Descriptive	ANOVA		Multiple Comparison (Post-Hoc)	
			Mean	F	Sig.	Mean Difference	Sig.
Purchase Intention	Purchase Intention 3	Male	1.931	1.718	<0.001	-0.745	<0.001
		Female	2.676				
Purchase Intention	Purchase Intention 5	Male	2.172	5.294	0.008	-0.654	0.014
		Female	2.826				

Finally in test of different, Participant's genders show significant different in various variable. In conclusion, female participants are significantly influenced by financial risk tolerance, functional quality, social influence, appreciation and purchase intention compared to male. LGBTQ+ are significantly influenced by functional quality, social influence, and appreciation compared to male. LGBTQ+ does not has significant different compared to female. On the other hand, male participants are influence significantly by perceived risk compared to female participant.

5.3 Factor Analysis

The researcher applied exploratory factor analysis with principal axis extraction and oblimin rotation method. Based on analysis, the researcher found new variables' construction from factor loading over 0.5 and uniqueness less than 0.6 on perceived risk and financial risk tolerance covariates. The new construct has reliability analysis' Cronbach's alpha score at 0.932.

Table 5.23 Result of Factor Analysis using Principal Component Analysis

Factor Group 1 Social Influence

Cronbach's alpha score at 0.930

Factor code	Factor	Factor Loading	Uniqueness
Social Influence 1	1. I will purchase the same NFT in-game item as my friend has.	0.746	0.254
Social Influence 2	2. I will purchase a popular NFT in game item in an online community	0.763	0.21
Social Influence 3	3. I will purchase the same NFT in-game item as my favorite influencer has.	0.836	0.268
Social Influence 4	4. I will purchase an NFT in-game item if it improves my self-image to others.	0.815	0.251
Social Influence 5	5. I will purchase an NFT in-game item if it helps me enhance my relationship to others.	0.834	0.295

Factor Group 2 Appreciation

Cronbach's alpha score at 0.926

Factor code	Factor	Factor Loading	Uniqueness
Appreciation 1	1. I will purchase an NFT in-game item that is aesthetically appealing.	0.905	0.185
Appreciation 2	2. I will purchase an NFT in-game item that satisfy my taste/reference.	0.845	0.190
Appreciation 3	3. I will purchase an NFT in-game item that has attractive aesthetic feature.	0.817	0.175

Table 5.23 Result of Factor Analysis using Principal Component Analysis (Cont.)

Factor Group 3 Functional Quality

Cronbach's alpha score at 0.924

Factor code	**Factor**	**Factor Loading**	**Uniqueness**
Function 1	1. I can buy an NFT in-game good if it improves my playing performance/ability.	0.781	0.135
Function 2	2. I can buy an NFT in-game good if it helps me play game easier.	0.911	0.070
Function 3	3. I can buy an NFT in-game good if its performance is reliable.	0.546	0.321

Factor Group 4 Financial Risk Tolerance

Cronbach's alpha score at 0.906

Factor code	**Factor**	**Factor Loading**	**Uniqueness**
Fi_1	1. I can accept risk on buying NFT in-game goods	0.781	0.135
Fi_2	2. I can purchase more NFT goods if it generates more financial incentive even it has a chance to loss.	0.911	0.07
Fi_3	3. I can purchase more NFT goods if it increases opportunity to achieve long-term financial goal even it has a chance to loss.	0.546	0.321

Table 5.23 Result of Factor Analysis using Principal Component Analysis (Cont.)

Factor Group 5 Perceived Risk

Cronbach's alpha score at 0.727

Factor code	Factor	Factor Loading	Uniqueness
Risk 1	1. There are possibilities that NFT in-game item will not work because system crash/malfunction.	0.755	0.424
Risk 2	2. There are possibilities that NFT in-game item will not be recognized by my friend or communities.	0.724	0.458

5.4 Regression Analysis

The researcher conducts regression analysis from Factor Analysis' result to find the relation between independent variables and a dependent variable according to the hypothesis framework by combining each variable's mean score from questionnaire and make the value into a variable before performing a regression analysis with 95 percent of confidence interval in JAMOVI.

Table 5.24 Regression analysis

Dependent Variable: Purchase Intention

R square: 0.606

#	Independent Variables	Estimate	T	P
1	Social Influence	0.359	5.795	< .001
2	Appreciation	-0.02	-0.36	0.719
3	Functional Quality	0.028	0.453	0.651
4	Financial Risk Tolerance	0.415	6.815	< .001
5	Perceived Risk	-0.018	-0.351	0.726

The analysis indicates only two significant independent variables which are financial risk tolerance and social influence with p-values below 0.001. The social influence has a positive coefficient score at 0.359 and the financial risk tolerance has a positive coefficient score at 0.415 which is adequate influence on a dependent variable. Other insignificant factors such as functional quality have positive coefficient score, and perceived risk and appreciation have negative coefficient score. The R square of the model is at 0.606 which can consider that the model reliability is acceptable.

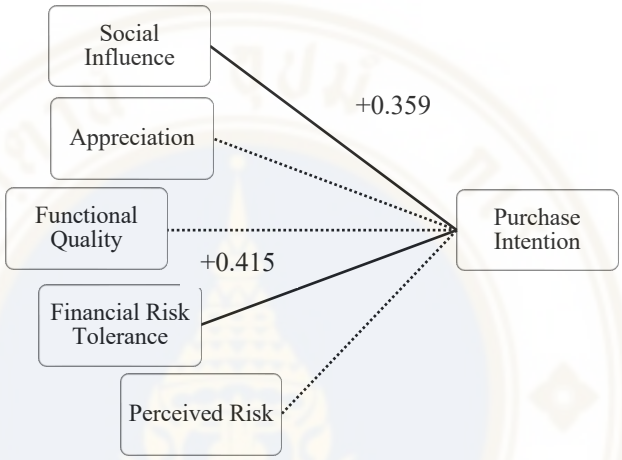

Figure 5.1 Factors' relationships based on regression analysis

CHAPTER 6
CONCLUSION AND SCOPE OF WORK IN THE FUTURE

6.1 Discussion

6.1.1 Financial Risk Tolerance

According to Literature Review, financial tolerance has positive influence to purchase intention on Cryptocurrency (Stix, 2021) and game content on a free game (Hamari et al., 2017). Even though our factor analysis has drop questions about high-risk financial asset tolerance, our quantitative finding also showed a relation between financial risk tolerance and purchase intention in the same way. Moreover, the test of different also found that financial risk tolerance influences in-game items purchasing past year. Highly participated gamers, more playing time per session and high spending per month gamer are likely to be influenced by financial risk tolerance. We also found that female participants are likely to be influenced by financial risk tolerance compared to male and LGBTQ+. These findings are important to marketers, business developer, and even regulators to create positive involvement to the industry.

6.1.2 Functional Quality

Our literature found that functional quality are positively influence purchase intention on in-game item on free online game (Hamari et al., 2017) (Nichamon, 2021). However, our regression analysis showed difference result with insignificant relationship between function quality and purchase intention. The tests of different, in contrast, showed that mobile phone game preferences players are likely to be influnce by functional quality. The functional qualtiy also influence in-game item purchasing past year. Lastly, LGBTQ+ and female are likely to be influence by functional quality compared to male.

6.1.3 Social Influence

Social influence is a factor that found significant to purchase intention in digital item (Kim et al, 2011).and in game content in a free-to-play game (Hamari et al., 2017), according to the literature. Our quantitative finding also found significant positive influence from social influence to purchase intention. Moreover, the tests of different show deeper understanding on how the factor influence on participants' behavior. Participants who prefer to have mobile device as a primary game device, prefer to play mobile game and purchase in-game item in the past year are influenced by social influence factors. Female and LGBTQ+ participants are likely to be influenced by social influence as well.

6.1.4 Appreciation

According to the literature review, appreciation has significant influence purchase intention (Kim et al, 2011) (Nichamon, 2021). Our qunatitative, however, showed difference result compare to the literature since regression analysis showed insignificant negative relationship between appreciation and purchase intention. On the other hand, the tests of diffent also showed some significant influence by appreciation. Participants who prefer playing mobile games and AR/VR, purchase in-game item and in-game currencies and create content for favorite game title are influenced by appreciation factors. Gender of participants also showed different as Female and LGBTQ+ participants are likely to be influence by appreciation.

6.1.5 Perceived Risk

Our literature showed that perceived risk has negative relation to in-game item purchase intention (Nichamon, 2021). Our factor analysis has been eliminate questions about risk on information and fraud and regression analysis show insigificant negative relationship between perceived risk and purchase intention. However, the test of different show some significant different that worth mentioned. Participants who prefer shooting game, but their favorite game title as much as posible, create content about their favorite game title, highly involve in their favorite title and have clear understand cryptocurrency are significantly influenced by perceived risk. Moreoever,

male participants are likely to be more influence by perceived risk compare to female and LGBTQ+.

6.2 Conclusion

This quantitative research is to identify key factors influencing purchase intention on NFT items in the gaming industry in Thailand. Moreover, the study aims to investigate customer insights to suggest a business practice improvement or a new business model that will be potentially appropriate to NFT and Gaming market in Thailand.

According to the first objective on identify key factors influencing purchase intention on NFT item in the gaming industry in Thailand. The regression analysis found that purchase intention has a positive relationship with financial risk tolerance and social influence. The financial risk tolerance can indicate that customers who concerned less about financial situation are likely to have intention to buy NFT in-game item. On the other hand, extrinsic motivation such as marketing, influencers, and friends also influence intention to purchase NFT in-game item as well.

The result also succeeds in a second objective on investigating consumer insight on intention to buy NFT in-game items. Participants who spend more time on playing games, spend more money on in-game items and more participate in gaming community have more intention to purchase NFT in-game item. Mobile game preference players are likely to have more financial risk tolerance and social influence, so NFT in-game items can start emerging in mobile games first and gain more traction here before expanding to other platforms.

The study also found that female and LGBTQ+ are likely to interest in purchase NFT in-game items since they are likely to be influence by social influence more than male. The marketer and game developer should start exploring opportunity for NFT in-game item with female and LGBTQ+. On the other hands, regulators should aware that female and LGBTQ+ has less perceived risk compared to male, so they needed to be informed strictly when involve with the services and related.

6.3 Recommendation

The researcher has recommendations for 3 key stakeholders in the gaming industry. First, the marketer who works to promote any commercialized product, service and activity in the industry. Next is game creators who create the product that can apply this research finding to develop the product and service. Lastly, the regulators who have a huge role in balancing industry growth and social impact.

Firstly, marketers should focus on using gaming influencers (for example: streamers, content creators etc.) to promote any commercial as social influence is the main factor to purchase intention and streamers' influence can considered as an extrinsic motivation. The researcher also found that people who create content which potentially are an influencer are likely to be influenced by appreciation since their career relies on showing interesting stuff to people. So, the marketer should provide good-looking products to streamers and let them show it before launching as a preview. These will influence content creators' appreciations and consumers' social influences simultaneously. Moreover, marketers can target female game player who highly participate in their favourite gaming community and have high average spending on in-game items to purchase NFT in-game items. The enthusiasts are likely to be influenced by financial risk tolerance, another significantly positive influence factor to purchase intention. The marketer can apply high price-high value on NFT in-game items to gravitated enthusiasts that have positive attitude toward risk and value in finance and expected them to be more intention to purchase.

Secondly, the researcher suggest that game creator can consider NFT in-game item as a business model in gaming but with limited genre and scope of device. As the result found, there are two recommendations to leverage NFT in-game item business model. First recommend is on game genre. Game creator should avoid applying NFT in-game item into RPG, shooting game and Action Adventure and intensively focuses on mobile game genre. According to the results, the preferred participants have negative interest in social influence, functional quality, and appreciation. Thus, make it hard to influence them to be in-game item purchasers. On the other hand, mobile game preferences are positively influenced by significant independent factors. So, game creators could create casual mobile games that do not require high level of skill or tactic to attract player into the game. A second recommendation is on game feature and

function. The game can provide value-added in-game items that help people willing to use it, for example, an item that helps them play easier or with more proficient. The item can leverage NFT's attribute by making it limited and tradable or lendable between players. The game can collect trade fees as an income to operate the game and business. Another feature to consider is that the ability to collect interesting content to let players share to external platform directly, especially when player acquire NFT in-game item that worth mentioned. According to discussions, social influence is a positive influence independent factor. An easy to share to players' social circle can positively attract people to buy items.

Finally, this study can help regulators understand more about gaming industries and NFT in-game item business model to prevent negative impact toward industry and society. The researcher's recommendation is to focus on awareness of perceived risk. The result showed that perceived risk has negative influence toward purchase intention although it is not significant in this study. The gaming industry, NFT and even in-game items are the tools for inappropriate business such as the scammer has using in-game item to attract victims. The regulators can promote responsibility across industry with three recommendations. Firstly, regulators should force game publishers to inform players about the benefit and risk when purchasing in-game items responsibly. Preventing unwilling purchases can be the first step for sustainable way to gain more participants. Secondly, regulators should enforce publishers to ensure that the transaction must always function on the suitable term and publisher must have clear and customer-centric policy when the system does not function. This solution will ensure that business and industry can operate under standard and increase participation. Third, regulators should enforce publishers and developers to have or apply scam prevention policies. The publishers and developers must work with regulator and enforcement agencies on observation irregular transaction strictly and willingly solve issue when incidents occur.

6.4 Limitation

As the researcher is doing this research on NFT in-game item for game player in Thailand. We found 4 limitations.

First, this study cannot confirm that Thai game players' spending behaviors according to their location and income level. The researcher believe that each location and each level of income might have different behavior in gaming consumption and in-game item purchase. The further studies can investigate more on location and income level to generate more insight that can generated market plan and industry support regulation properly.

Secondly, this study cannot explore the effect in each game genre specifically. After collected data as planned, the researcher believed that game genre can affect game player spending behavior since each genre has specific need in item usage. To investigate more effect between specific game genre, future studies may need more participants or focuses on genres in the first place.

Thirdly, the understanding of NFT cannot represent intention to purchase NFT in-game item as the researcher cannot find significant relationship between completely understand of NFT and purchase intention. The researcher believe that people should have proper knowledge on the products before they have intention to purchase, so this limitation is worth exploring to understand customers' behavior toward virtual products.

Finally, this study has limited understanding of perceived risk in purchasing NFT in-game item. As the result found insignificant negative influence from perceived risk toward purchase intention. The researcher suggests focusing exclusively on perceived risk effect toward purchase intention in the future studies.

REFERENCES

Armitage, C. J., & Conner, M. (2001). Efficacy of the theory of planned behaviour: A meta-analytic review. *British journal of social psychology*, *40*(4), 471-499.

Atasoy, O., & Morewedge, C. K. (2018). Digital goods are valued less than physical goods. *Journal of consumer research*, *44*(6), 1343-1357.

Belyaeva, Z., Petrosyan, A., & Shams, S. M. R. (2022). Stakeholder data analysis in the video gaming industry: implications for regional development. *EuroMed Journal of Business*, *ahead-of-print*(ahead-of-print). https://doi.org/10.1108/EMJB-10-2021-0150

Chakraborty, D., & Paul, J. (2022). Healthcare apps' purchase intention: A consumption values perspective. *Technovation*, 102481. https://doi.org/10.1016/j.technovation.2022.102481

De Jesus, S. B., Austria, D., Marcelo, D. R., Ocampo, C., Tibudan, A. J., & Tus, J. (2022). Play-to-Earn: A Qualitative Analysis of the Experiences and Challenges Faced By Axie Infinity Online Gamers Amidst the COVID-19 Pandemic.

Elzweig, B., & Trautman, L. J. (2022). When Does a Nonfungible Token (NFT) Become a Security? *Georgia State University Law Review, Forthcoming*.

ERC-721. https://ethereum.org/en/developers/docs/standards/tokens/erc-721/

ERC-1155. https://ethereum.org/en/developers/docs/standards/tokens/erc-1155/

Ethereum Market Cap. Retrieved 17 May 2022 from https://coinmarketcap.com/currencies/ethereum/

Global Virtual Goods Market Size (2023). Adroit Market Research. https://www.adroitmarketresearch.com/industry-reports/virtual-goods-market

Hair, J. F., Black, W., Babin, B., & Anderson, R. (2019). *Multivariate data analysis (Eighth Edi)*.

REFERENCES (cont.)

Hamari, J., Alha, K., Järvelä, S., Kivikangas, J. M., Koivisto, J., & Paavilainen, J. (2017). Why do players buy in-game content? An empirical study on concrete purchase motivations. *Computers in Human Behavior*, *68*, 538-546. https://doi.org/10.1016/j.chb.2016.11.045

Highest NFT Price Stat - CoinMartketCap. (2022). Retrieved 17 May 2022 from https://coinmarketcap.com/nft/

Huang, E. (2012). Online experiences and virtual goods purchase intention. *Internet Research*.

Jacoby, J., & Kaplan, L. B. (1972). The components of perceived risk. *ACR special volumes*. https://www.acrwebsite.org/volumes/12016/volumes%20/sv02/SV-02

Jamovi. (2021). *Jamovi*. In (Version 2.2) The Jamovi Project. https://www.jamovi.org

Karandikar, N., Chakravorty, A., & Rong, C. (2021). Blockchain Based Transaction System with Fungible and Non-Fungible Tokens for a Community-Based Energy Infrastructure. *Sensors (Basel)*, *21*(11). https://doi.org/10.3390/s21113822

Kaur, P., Dhir, A., Rajala, R., & Dwivedi, Y. (2018). Why people use online social media brand communities: A consumption value theory perspective. *Online Information Review*.

Kim, H.-W., Gupta, S., & Koh, J. (2011). Investigating the intention to purchase digital items in social networking communities: A customer value perspective. *Information & Management*, *48*(6), 228-234.

Microsoft. (2022). *Microsoft Excel*. In https://office.microsoft.com/excel

Mitchell, V. W. (1999). Consumer perceived risk: conceptualisations and models. *European Journal of marketing*.

Mystakidis, S. (2022). Metaverse. *Encyclopedia*, *2*(1), 486-497.

REFERENCES (cont.)

Nadini, M., Alessandretti, L., Di Giacinto, F., Martino, M., Aiello, L. M., & Baronchelli, A. (2021). Mapping the NFT revolution: market trends, trade networks, and visual features. *Sci Rep*, *11*(1), 20902. https://doi.org/10.1038/s41598-021-00053-8

Newzoo. (2022). *Newzoo's 2022 Trends to Watch in Games, Esports, Cloud, and the Metaverse*. https://newzoo.com/insights/trend-reports/gaming-industry-trends-2022-report-games-esports-gamestreaming-cloud-metaverse

Newzoo. (2023, October 2023). *Global Games Market Report* https://newzoo.com/resources/trend-reports/newzoo-global-games-market-report-2023-free-version

NFT Minting. https://www.sofi.com/learn/content/what-is-nft-minting/

NFTGo. (2023). *2023 NFT Market Analysis: An Insider Look*. CoinMarketCap. https://coinmarketcap.com/academy/article/2023-nft-market-analysis:-an-insider-look

Nichamon, L. (2021). *FACTORS INFLUENCING VIRTUAL ITEMS PURCHASE INTENTION WITHIN FREE-TO-PLAY ONLINE GAME IN THAILAND* Mahidol University].

Quast, J., Bruning, C., & Deo, S. (2021). *This Opportunity for Investors Is Bigger Than Movies and Music Combined* https://www.nasdaq.com/articles/this-opportunity-for-investors-is-bigger-than-movies-and-music-combined-2021-10-03

Servando, K., Sayson, I., & Bloomberg. (2021). *The jobless turn to crypto video game for financial relief*. Retrieved 7 June 2022 from https://fortune.com/2021/08/25/crypto-video-game-axie-infinity-crypto-traders-unemployed/

Sheth, J. N., Newman, B. I., & Gross, B. L. (1991). Why we buy what we buy: A theory of consumption values. *Journal of business research*, *22*(2), 159-170.

Stix, H. (2021). Ownership and purchase intention of crypto-assets: survey results. *Empirica*, *48*(1), 65-99.

REFERENCES (cont.)

Techsauce. (2022). *Techsauce Startup Year-in Review 2021* เผยภาพรวมสถานการณ์ *Startup* ไทยรายอุตสาหกรรม (*Part 2)*. Techsauce Media co,ltd. Retrieved 12 May 2022 from https://techsauce.co/tech-and-biz/startup-ecosytem-report-2021-part-2

Vidal-Tomás, D. (2022). The new crypto niche: NFTs, play-to-earn, and metaverse tokens.

Wang, Q., Li, R., Wang, Q., & Chen, S. (2021). Non-fungible token (NFT): Overview, evaluation, opportunities and challenges. *arXiv preprint arXiv:2105.07447*.

Weustink, J. (2020). *Gaming in Southeast Asia: The Playing, Spending & Viewing Behavior of a Fast-Growing Games Market*. Newzoo. Retrieved 8 Jun 2022 from https://newzoo.com/insights/articles/southeast-asia-games-market-esports-game-streaming-spending-playing-engagement

Weustink, J. (2021). *Insights into Thailand's Games Market and Its Gamers*. Retrieved 26 June 2022 from https://newzoo.com/insights/articles/insights-into-thailands-games-market-and-its-gamers

Wijman, T. (2021). *The Games Market and Beyond in 2021: The Year in Numbers*. newzoo.com. Retrieved 8 Jun 2022 from https://newzoo.com/insights/articles/the-games-market-in-2021-the-year-in-numbers-esports-cloud-gaming/

Writght, A., & De Filippi, P. (2015). Decentralized Blockchain Technology and the Rise of Lex Cryptographia.

Yang, L. (2021). *Facts About 'Everydays: The First 5000 Days' - World's Most Expensive NFT*. https://knowinsiders.com. Retrieved 12 May 2022 from https://knowinsiders.com/facts-about-everydays-the-first-5000-days-worlds-most-expensive-nft-33698.html