# GAMERS' ACCEPTANCE MODEL OF ESPORTS – THE ROLES OF GRATIFICATION AND SERVICE MECHANISMS

LOH HOW ZHENG

MASTER OF PHILOSOPHY

FACULTY OF BUSINESS AND FINANCE
UNIVERSITI TUNKU ABDUL RAHMAN
AUGUST 2023

# GAMERS' ACCEPTANCE MODEL OF ESPORTS - THE ROLES OF GRATIFICATION AND SERVICE MECHANISMS

By

**LOH HOW ZHENG**

A thesis submitted to the Faculty of Business and Finance,
Universiti Tunku Abdul Rahman,
in partial fulfillment of the requirements for the degree of
Master of Philosophy
August 2023

## ABSTRACT

The existence of eSports represents a breakthrough sector among the gamers in Malaysia nowadays. However, current development of local eSports is not matured enough to support the growth of gamers' desires. This had led to lack of understanding and negative perception of non-gaming community towards eSports. Thus, this created the need to conduct this research to investigate what are the factors that influence gamers' intention to participate in eSports. The hypotheses were developed based on the Technology Acceptance Model (TAM). The Technology Acceptance Model (TAM) was extended by included the influence of gratification and service mechanisms. In addition, pre-test and pilot test were conducted before proceeding to full analysis. The target respondents were the students who are currently joining the video game clubs and societies of universities in Malaysia. A self-administered questionnaire using a quantitative method was distributed to the target respondents for data collection. The results obtained from the sample were analyse using Partial Least Square Structural Equation Modelling (PLS-SEM) for the measurement and structural model. Out of the survey questionnaires collected from the respondents, 453 sets of data were usable for the study. The results indicated that the relationship between gratification, perceived usefulness, perceived ease of use, attitude and intention were supported except the relationship between service mechanisms and perceived usefulness as well as ease of use were found unsupported. Gratification was positively associated with perceived usefulness and ease of use, which in turn affect the attitude and intention of gamers to participate in eSports. Attitude was positively mediated between perceived usefulness, ease of

use and intention. The finding of this study is able to provide valuable insights and scholars, policy makers, as well as social development to further improve the eSports sector by increasing the positive awareness about eSports activities.

Keywords: Malaysia, eSports, competitive video game, video gamers, gratification, service mechanisms, Technology Acceptance Model (TAM)

## ACKNOWLEDGEMENT

The researchers would like to thank those who have assisted me in completing this dissertation. First and foremost, I would like to express my appreciation for the supervision that was provided by my supervisors Ms. Seow Ai Na and Dr. Chang Jing Jing. With their professional guidance and direction, I am able to finish my dissertation successfully.

In addition, I would like to thank the examiners for providing me useful suggestions and advices in order to improve my dissertation.

Moreover, I would also like to thank the kind co-operation given by the respondents during the process of data collection. Their willingness to sacrifice their time to complete the surveys was much appreciated. Lastly, I would like to thank my family members and friends for their guidance, motivation, encouragement as well as financially support. Their continuous support has sustained me this far.

**APPROVAL SHEET**

This dissertation entitled "**GAMERS' ACCEPTANCE MODEL OF ESPORTS - THE ROLES OF GRATIFICATION AND SERVICE MECHANISMS**" was prepared by LOH HOW ZHENG and submitted as partial fulfillment of the requirements for the degree of Master of Philosophy at Universiti Tunku Abdul Rahman.

Approved by:

(Ms. Seow Ai Na)
Date: 9 August 2023
Main Supervisor
Department of Business and Public Administration
Faculty of Business and Finance
Universiti Tunku Abdul Rahman

(Dr. Chang Jing Jing)
Date: 9 August 2023
Co-supervisor
Department of Computer and Communication Technology
Faculty of Information and Communication Technology
Universiti Tunku Abdul Rahman

**SUBMISSION SHEET**

**FACULTY OF BUSINESS AND FINANCE**

**UNIVERSITI TUNKU ABDUL RAHMAN**

Date: 9 August 2023

**SUBMISSION OF DISSERTATION**

It is hereby certified that LOH HOW ZHENG (ID No: 20ABM00784) has completed this dissertation entitled "**GAMERS' ACCEPTANCE MODEL OF ESPORTS - THE ROLES OF GRATIFICATION AND SERVICE MECHANISMS**" under the supervision of Ms. Seow Ai Na from the Department of Business and Public Administration, Faculty of Business and Finance, and Dr Chang Jing Jing from the Department of Computer and Communication Technology, Faculty of Information and Communication Technology.

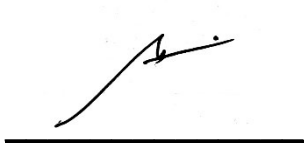
I understand that University will upload softcopy of my dissertation in pdf format into UTAR Institutional Repository, which may be made accessible to UTAR community and public.

Yours truly,

LOH HOW ZHENG

**DECLARATION**

I, LOH HOW ZHENG hereby declare that the dissertation is based on my original work except for quotations and citations which have been duly acknowledged. I also declare that it has not been previously or concurrently submitted for any other degree at UTAR or other institutions.



(LOH HOW ZHENG)

Date: 9 August 2023

## TABLE OF CONTENTS

**CHAPTER 5 DISCUSSION AND CONCLUSION**

## LIST OF TABLES

## LIST OF FIGURES

## LIST OF ABBREVIATIONS

| | |
|---|---|
| eSports | Electronic sports |
| VR | virtual reality |
| ESL | Electronic Sports League |
| LAN | Local Area Network |
| eSM | eSports Malaysia |
| EPIC | eSports Professional Industry Conference |
| PASAK | Pusat Aspirasi Anak Perak |
| MDEC | Malaysian Economy Corporation |
| MyCERT | Malaysia Computer Emergency Response Team |
| WHO | World Health Organisation |
| MMORPG | Massive Multiplayer Online Role-Playing Games |
| MOBA | Multiple Online Battle Arena |
| FPS | First-Person Shooter games |
| TPS | Third-Person Shooter games |
| RTS | Real-Time Strategy games |
| PUBG | Player Unknown's Battle Grounds |
| CS: GO | Counter-Strike: Global Offensive |
| WOW | World of Warcraft |
| LoL | League of Legend |

| | |
|---|---|
| NFL | National Football League |
| NBA | National Basketball Association |
| FIFA | Federation Internationale de Football Association (French) |
| TRA | Theory of Reasoned Action |
| TPB | Theory of Planned Behaviour |
| TAM | Technology Acceptance Model |
| PUS | Perceived Usefulness |
| PEU | Perceived Ease of Use |
| ATT | Attitude |
| INT | Intention |
| SM | Service Mechanisms |
| GRA | Gratification |
| AVE | Average Variance Extracted |
| CR | composite reliability |
| $R^2$ | goodness of fit |
| $f^2$ | effect size |
| $Q^2$ | predictive relevance |
| β | Beta |
| HTMT | Heterotrait-Monotrait |
| PLS-SEM | Partial Least Square – Structural Equation Modelling |

# CHAPTER ONE

# INTRODUCTION

## 1.0 Introduction

This chapter includes the discussion on research background, problem statement, research questions, research objectives, significance of the study, scope of study, definition of terms and organisation of the research.

## 1.1 Research Background

Over the last decade, eSports or also recognised as electronic sports, is a professional competitive gaming and entertainment sports either in the form of individuals or teams game playing that compete with each other for prize money. eSports began to gain prominence in the early 2000s and experienced an unexpected growth and turn out to be a world-renowned leisure activity (Bányai et al., 2019).

Based on the argument of Bányai et al. (2019), video game playing cannot be just recognised as the leisure or entertainment activities. Currently, there are small group of gamers play the game professionally and invest time and money to enhance their skills. Consequently, eSports can be defined as a physical activity in which gamers train and develop their mental and hand-eye

coordination skills while using game-based ICT (Bányai et al., 2019). Hence, what factors influence the gamers intention to participate eSports and their acceptance towards this sector is an important area of research.

### 1.1.1 The History and Evolution of eSports

Before competitive video gaming became popular, computer games were mainly single-player and were known as stand-alone games. Stand-alone game is a game played without dependent on internet connectivity or is played offline such as 'Tetris' and 'Solitaire' (Knutson, 2020). Eventually, the competitive video gaming cultural have been evolved from stand-alone games in October 1972. The first eSports event was organised at Stanford University by the students whose competed against each other on the game named 'Spacewar' (Gaming, 2018). Spacewar is a space combat video game that was first created in year 1962 (Gaming, 2018). It is recognised as the first digital computer game and was considered as one of the top 10 video game by the New York Times in year 2007 (Larch, 2019). In year 1980, the Space Invaders Championship which is the video game competition that attracted over 10,000 participants and gained great media attention (Consolazio, 2018). In year 1982, the amusement arcade operator Walter Day launched the 'Twin Galaxies National Scoreboard' which recognised as the first referee service for video games in USA (Larch, 2019).

In 1990s, video gaming was rise because of the development of internet and the world wide web. The internet brought a greater impact towards the competitive gaming structure in which it enables the instant messaging and

internet connectivity to be available to improve the connection between the gamers (Gaming, 2018). Furthermore, in year 1997, the 'Quake Game' from the Red Annihilation tournament was held and attracted about 2000 participants. It is broadly recognised as the first eSports event in the world. The grand prize for this tournament is a Ferrari from the lead developer of Quake (Gaming, 2018).

The next big step toward eSports comes in 2000s. video game and online game continued to increase in popularity. For instance, the Worldwide Web-games Championship was held by FUN Technologies which consisted 71 participants competed for a 1million dollar grand prize. However, there are just about dozen eSports events held internationally in 2000s; the number increased over 20 times by 2010 (Consolazio, 2018).

The growth of eSports tournaments greatly impacts not only the gamers, but the viewers and fans as well. One of the examples of famous tournament 'League of Legend Championship' had attracted over 43 million viewers in year 2016 and 60 million viewers in year 2017 (Consolazio, 2018). The global eSports showed the massive growth up until today. This massive popularity of eSports around the world had increase the number of events and the amount of prize money (Larch, 2019). Most importantly, the growth of eSports sectors had emerging from a small market to multi-billion market and increase the investment globally (Larch, 2019).

With the huge number of enthusiasts and gamers, eSports is having a cultural breakout in which the collaboration exists between the gaming industry

and film industry. This collaboration aims to provide both the viewers and gamers a great gaming experience and to boost the industry's revenue (Stewart, 2018). For instance, the special 'MX4D' Motion and Special Effects eSports Theatres or 'Hollywood eSports', was created by MediaMation, Inc. MediaMation Inc. is an entertainment systems integrator that specialise in interactive attractions technology, enabling the eSports spectators and audiences to have a better 4D cinema experience based on the movie's motion and special effects technology (Hollywood, 2019; MediaMation, n.d.).

Besides that, the coexistence between eSports industry and virtual reality (VR) device are emerging in burgeoning novel competitive sporting genre (Esports, 2020). The aims are to reduce the gap between traditional sports and video gaming and turn eSports into a more popular trend (Glitch, 2017). The most well-known example of eSports tournament in virtual reality is 'The VR League' which is part of the world largest eSports organisation, Electronic Sports League (ESL) (Khan, 2019).

### 1.1.2 Global eSports

eSports recognise as tournament level and interactive video games, their popularity is proved by the large amount of participants, audiences, media coverage, and organisers recognising eSports for considered as major sport competitions (Cunningham et al., 2018). Based on the report of Gough (2022), the growth of eSports market has attracted large amount of audiences in the recent years. Figure 1 resulted the number of global eSports audience has

increase from year 2020 to year 2022 with 435.7 million to 532 million respectively, and there are expected to achieve 640.8 million audiences in year 2025.

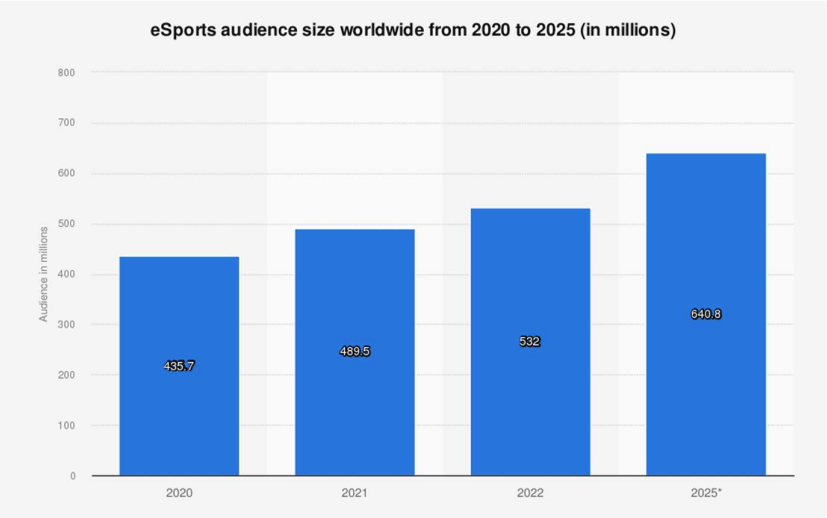



**Figure 1: Global eSports Audience Growth.**

**Source: Gough (2022)**

As traditional sports, eSports now have organised and recognised tournaments and can be played via Local Area Network (LAN) connection between technological devices, events that organised by sponsor, large amount of audience, and big prizes for the winners (Bányai et al., 2019). Moreover, due to the popularity of eSports, it is under consideration to the inclusion of Asia Olympic Council as a medal activitiy in the official program of China's 2022 Asian Games (Bányai et al., 2019).

In year 2017, the amount and the size of eSports tournaments have growth significantly with 588 major eSports events and the professional leagues

have been formed internationally with particularly strong existence in Asia, Europe, and North America (Bonnar et al., 2019). In order to fasten up the growth and development of business, consumer, and professional, eSports is being legitimized as an actual form of sporting competition (Bonnar et al., 2019).

Besides, in term of revenue generated from eSports, Figure 2 shows the global games market revenue per region in year 2022. According to McDonald (2023), the global games revenue per region had achieved total amount of 184.40 billion U.S. dollars. The Asia-Pacific recorded the highest contribution, following by the North America, Europe, Latin America, and the lowest is Middle East and Africa with percentage of 48%, 26%, 18%, 5% and 4% respectively.

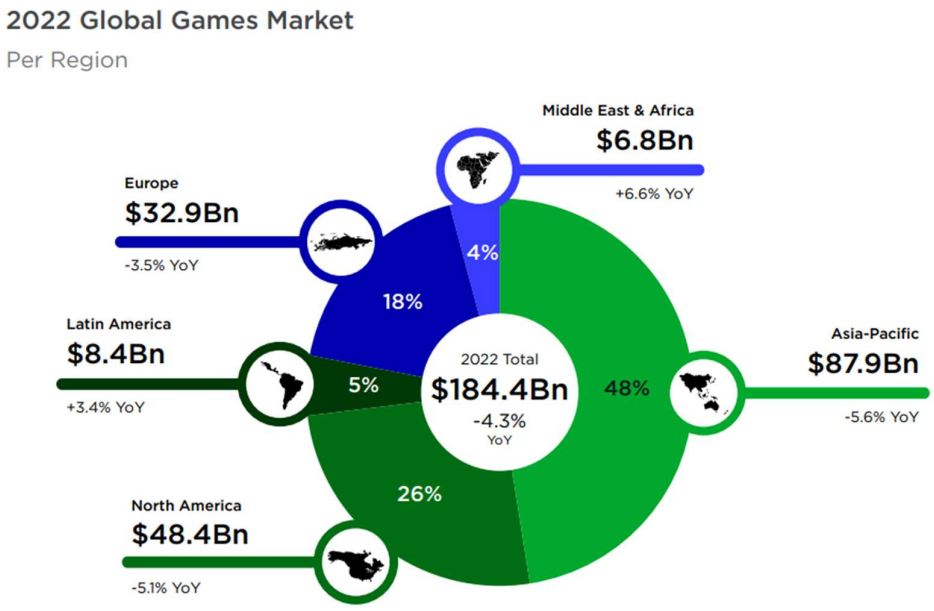



**Figure 2: Global Games Market Revenue Per Region.**

**Source: McDonald (2023)**

Meanwhile, based on Figure 3, the global eSports market revenue is increasing from year 2020 to year 2022, which recorded 996 million U.S dollars in year 2020 to 1384 million U.S. dollars in year 2022. Based on the estimates source, the market revenue is estimated to achieve 1866.2 million U.S. dollars in year 2025 (Newzoo, 2022).

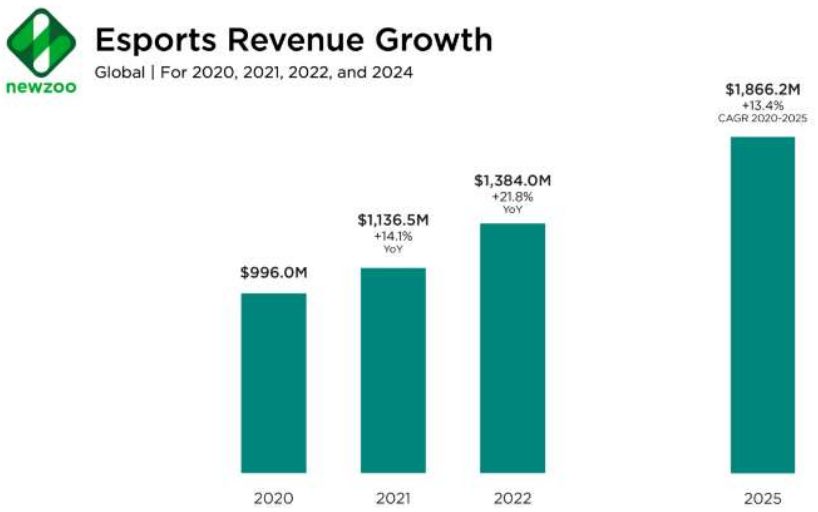



**Figure 3: Global eSports Market Revenue**

**Source: Newzoo (2022)**

Consequently, the tremendous growth of eSports had increase the number of gamers who recognised video game playing as opportunity to make financial living instead of engaging in hedonic game activity, it potentially alter the motivation of gaming (Bányai et al., 2019). Based on self-report from eSports gamers, eSports is considered to be serious leisure, enjoyable, intrinsically motivated, personal and social motivated, and competitive and recreationally need gratification (Bányai et al., 2019; Martonc, 2015; Seo, 2016; Thomas, 2015).

Moreover, the emerging of eSports has also developed an appearance on college and university and to obtaining official institutional recognition and status (Funk et al., 2018). For instance, universities in South Korea are recognising the eSports gamers as traditional players (Sorokanich, 2014). While in United States, the academic and athletic scholarship are offered by the colleges and universities to eSports gamers (Weller, 2016). Robert Morris University was the first university in United States to offer scholarship to eSports gamers (Moore, 2017). As such, many educators, students and administers intended to establish eSports team and club for the purpose of gaining immediate and long-term benefits.

Furthermore, in terms of gamers types, eSports and recreational gamers may distinct with each other in their gaming behaviour and motivation (Ma et al., 2013). The results of previous study indicate that eSports gamers play games more intensely than recreational gamers especially in terms of game playing duration. Besides, the eSports gamers are more motivated by game competitiveness, social and skill-development (Bányai, Griffith, et al., 2019).

### 1.1.3 Characteristics of eSports

All eSports competitions share numerous common important features which will motivate the gamers. These features consist of the needs for goal achievement, clear rules, environments that encourage creativity and strategic thinking, and systems of motivational feedback (Campbell et al., 2018). The structure of eSports has a competitive nature. It is all about distinct various teams

and individual gamers rivalling with each other and win the competition in a specific game. On the other hand, eSports can be regarded as a media form and it is a critical phenomenon to media consumption research. This is because its characteristics seem to contradict with the formed practices of media and sports consumption. The media consumption is largely accelerate by the media platforms such as Twitch and YouTube in order to form an attractive fan culture. (Sjöblom et al., 2019).

As an organised video game competitions, eSports consists of several genres (Pizzo et al., 2018). However, not all type of video games can be regarded as eSports games (Funk et al., 2018). There are some video game genres that are popular in eSports, such as Massive Multiplayer Online Role-Playing Games (MMORPG), Multiple Online Battle Arena (MOBA), First-Person Shooter games (FPS), Third-Person Shooter games (TPS), Real-Time Strategy games (RTS), Sport Simulation games, Fighting Action games, and the Battle Royale games (Jang & Byon, 2020). Table 1 shows the list of game genres and examples.

**Table 1: eSports Genres and Examples**

| Games types | Example of game |
|---|---|
| Battle Royale games | Player Unknown's Battle Grounds (PUBG) and Fortnite. |
| Fighting Action games | Street Fighter. |
| First-Person Shooter games (FPS) | Counter-Strike: Global Offensive (CS: GO), Call of Duty, and Overwatch. |
| Massive Multiplayer Online Role-Playing Games (MMORPG) | World of Warcraft (WOW). |
| Multiple Online Battle Arena (MOBA) | League of Legend (LoL), Dota 2, SMITE, and Overwatch. |
| Real-Time Strategy games (RTS) | StarCraft and WarCraft. |

| | |
|---|---|
| Sport Simulation games | Madden NFL (football game), National Basketball Association (NBA 2K), International Federation of Association Football (FIFA), and Rocket League. |
| Third-Person Shooter games (TPS) | Player Unknown's Battle Grounds (PUBG) and Fortnite. |

**Source: Jang and Byon (2020)**

### 1.1.4 eSports in Malaysia

With the popularity and development on eSports, it is undeniable that the global trend of eSports is going to surpass traditional sports, especially in the aspects of enthusiastic and revenue as the technology are growing rapidly. Similarly, these trends are also followed by Malaysia gaming community. The development of Malaysia eSports industry is experiencing a rapid growth with various eSports activities such as the ESL Genting, Selangor Cyber Games, Malaysia Cyber Games, and The Legends Circuit are well organised and structured as well as attractive incentives are offered.

The attractive scene has increased the interest of eSports enthusiasts to engage more in eSports activities. For instance, there were more than ten thousand eSports lovers and enthusiast involved in Malaysia Digital Creativity Festival 2021 (MYDCF21) which was the tournaments that organised by Malaysia Digital Economy Corporation (MDEC). As a result, this will increase the revenue of country and it is expected that local eSports industry will be improved further as well as being recognised in the future.

Competitive gaming has swiftly institutionalised with the development of national and international government bodies (Funk et al., 2018). Fortunately, Malaysia eSports has drawn the formal recognition and interest of policy makers and are currently within the control of the eSports Malaysia. For instance, there is a governing body who registered under Malaysian Sports Commission known as eSports Malaysia (eSM) that formed to regulate and govern the conduct of eSports in Malaysia (MIDA, 2019). Generally, through the official acknowledgement of the government, the interest of gamers as well as gaming community are appropriately structured and protected. Besides, this is also the initial step directing to the worldwide eSports acceptance as being recognised as other traditional sports. In year 2018, eSports industry in Malaysia grows continuously as more and more firms and potential individuals are quickly exploring this potential sector which helps in developing the country.

The growth of eSports has contributed economic advantages to Malaysia. For instance, video games segment had contributed 439.09 million U.S. dollars of revenue to Malaysia in year 2022 (Statista, 2023). Besides, Figure 4 indicate that video game revenue in Malaysia will continue to rise in the following year of 2023 and 2027 with the estimated amount of 486.16 million U.S. dollars and 655.86 million U.S. dollars respectively (Statista, 2023). The dramatic growth of gaming industries leads to the increasing popularity of video game communities towards virtual world and start-up their careers as video game makers (MIDA, 2019).

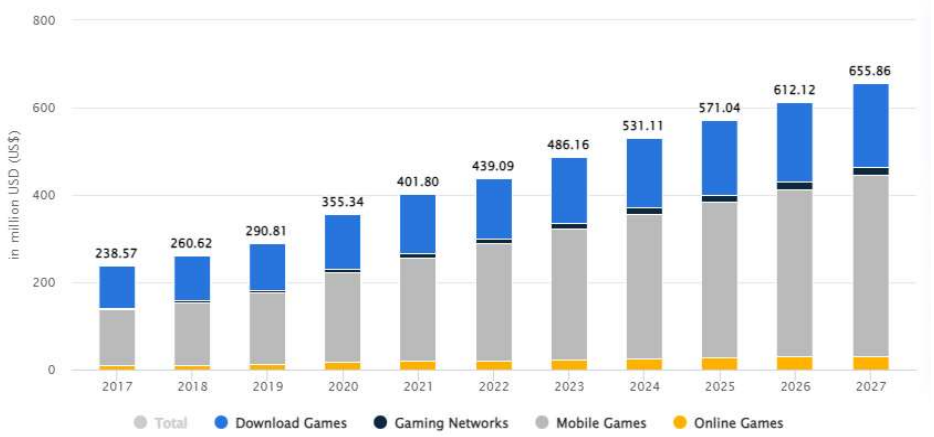



**Figure 4: Revenue of Video Game Segment in Malaysia**

**Source: Statista (2023)**

With the attractive revenue gaining by local eSports sector, the government has showed its support by allocating funds to develop local eSports industry through Ministry of Youth and Sports (KBS) (Collective, 2021). For example, the budget allocation in year 2021 was RM 15 million, RM 20 million in year 2022, and in year 2023 was RM 13 million (Rajan, 2022; TheStar, 2022). Through these fundings, the development of local eSports industry is levelling up. For instance, the largest eSports development centre in Southeast Asia namely Selangor eSports City is expected to be launched in year 2022 in Malaysia in order to create international level and trendy tournament (Collective, 2021). Several training programmes are to be featured by the Selangor eSports City such as academic, e-games, caster, virtual and entertainment-based programmes. As a results, local people can be more affordable to participate in these exclusive eSports events and more career opportunities will be provided (Lim, 2021).

Moreover, the emergence of eSports as a commercial factor in youth culture is considerably often describe as a popular culture phenomenon of global importance (Marelić & Vukušić, 2019; Yue, 2018). eSports now is not just a game, as it has the potential to improve as the new economic subsector which provides good returns for the eSports gamers, organisers and trainees. For instance, the EPIC Perak, which is stand for eSports Professional Industry Conference. It is the first eSports conference in Malaysia organised by "Pusat Aspirasi Anak Perak" (PASAK), a government agency under the Perak State Government (Farhan, 2019). The EPIC 2019 is held for a meeting of industry participants, government agencies, institutions and eSports players to encourage the development of eSports and increase the interest of talents which could enhance economic growth in the future (Malaymail, 2019).

Furthermore, due to the popularity of eSports among the youngsters, the collegiate eSports clubs and societies also exist in universities and colleges in Malaysia. For instance, Universiti Teknikal Malaysia Melaka (UTeM) Gamers Society, Kelab E-sukan PMKU from Politeknik Metro Kuantan (PMKU), Monash eSports Club form University Monash Malaysia and so on (Jho, 2018). University and college eSports club provide young generation or adolescents a great opportunity for personal or professional development in eSports.

Moving forward, as the gaming sectors in Malaysia have improved, there are more and more organisation and media are rapidly exploring on this creative industry. All of these parties are interested in aiding gamers to visit the websites

of video games more often, as well as how they can encourage the gamers to play more games.

Accordingly, in view of the growing attention for the games and the economic aspect of this situation, to comprehend the intention of the gamers to participate eSports and the attitude towards eSports has become a significant topic. Especially for marketers, game designers, organisations, policy makers and device developers. Intention to participate can be regarded as functions of confidence (Husain et al., 2021). The study of intention should be heavily emphasised as it provides implications for successful eSports development in future changing environment. For that reason, it is crucial to understand gamers' attitude and intention as this would impacts their future action as well as perception towards eSports participation.

Further, for scholars who conduct this field research, the possible findings on the factors that influence the gamers' intentions to participate eSports, and the factors affecting their attitude and the degree to which these factors affect the intentions, is very important and valuable for study. Currently, those relevant parties need to better understand the factors which inspire the intention of the gamers.

## 1.2 Problem Statements

There is no doubt that eSports itself contributes much to the wealth of Malaysia. Especially when government of Malaysia decided to allocate RM20 million to Malaysian Economy Corporation (MDEC) to improve local champions in developing digital content during the announcement of Budget 2022 (Ragu, 2021). However, Malaysia eSports is still in its immature state and government funding allocation is not evenly distributed. Muhammad "Flava" Farouq, the Head of Communications of eSports Malaysia, said that merely investing the money into the eSports industry probably difficult to make people treat eSports as respect as traditional sports, as eSports now in Malaysia is just started to grow without the appropriate amount of understanding and excitement about their attitude and intention to participate eSports (Zamri, 2019). In addition, the problems such as lack of understanding and improper focus of current eSports scene had also been acknowledged by one of the most recognised gamers in Malaysia, Mr Chai Yee Fung. He stated that eSports organisers and other relevant parties just emphasising solely on top tier tournaments, instead of having any appropriate service platform to train and perform their skills (Nair, 2019).

In term of service and game related mechanisms, since online game is an activity that uses internet connectivity, the privacy issue, security threats, and identity theft have greatly raised the concern among the internet users (Gangadharan, 2017). For instance, one of the popular game among the world 'Fortnite' with about 250 million registered gamers, the competitive nature of

Fortnite gamers become the main target for the inappropriate parties looking for profits by promise to help the players to win the game, but instead leads to deliver information and data loss (Winder, 2019). Meanwhile in Malaysia, based on Malaysia Computer Emergency Response Team (MyCERT) which is the analysts and specialists in the field of intrusion, malware and security research (CyberSecurity Malaysia, 2022). The MyCERT team served as a platform that provide information in handling and detecting information technology security threats in Malaysia (CyberSecurity Malaysia, 2022). Refer to Appendix A, B, C and D, the number of incidents based on online general incidents and botnet drones and malware infection in year 2020 and 2021 indicated large number of system security and malware issues in Malaysia. Consequently, many gamers have perceived unsatisfying about playing online game instead of getting to exciting and interesting due to the online cheating and security issues.

Furthermore, infrastructures in term of quality of internet connection also serve as the critical mechanism towards the gaming experience and intention (InMyArea, 2019). For instance, the internet speed in Malaysia is still not able to surpass those Asia Pacific regions such as Singapore, Taiwan, Hong Kong, Japan and New Zealand (Refer Figure 5). For that reason, it is pointed out that the online services and game mechanisms is a very important factors that requires encouraging to develop the intention and positive experience of the gamers when they play the games via online.

| | | | | |
|---|---|---|---|---|
| 23 | Slovakia | 29.45 | 00h 23m | -2 |
| 24 | Finland | 29.34 | 00h 23m | 0 |
| 25 | Canada | 28.76 | 00h 23m | 8 |
| 26 | Slovenia | 27.83 | 00h 24m | 2 |
| 27 | Germany | 24.64 | 00h 27m | -2 |
| 28 | Poland | 24.38 | 00h 28m | 4 |
| 29 | Ireland | 23.87 | 00h 28m | 7 |
| 30 | Malaysia | 23.86 | 00h 28m | 18 |
| 31 | Czechia | 23.27 | 00h 29m | -4 |
| 32 | Portugal | 22.75 | 00h 30m | -3 |

**Figure 5: Rank of Countries with Fastest (and Slowest) Internet in The World 2019**

**Source: Hananto (2019)**

In addition, the local eSports sector is still in developing stage and requires much efforts to enhance its value in the future. It is obvious that there is a gap exist between the one who earns a large amount of money and the one who strive for surviving. Specifically, the challenges such as the insufficiency of synergistic ecosystem, lack of monetary incentive and prioritisation of local contents and services ahead the growth of eSports in Malaysia (Investor, 2019). Current immature stage of ecosystem causes many of the incentives still not sufficiently developed and thought through. In addition, lack of monetary value of eSports players or teams, parental support, and acceptance have caused to the slow glow rate, as well as inhibit the grow of interest of future generation from participating eSports (Investor, 2019). As a result, these factors caused the outflow of top eSports players to other countries as to sustain their careers.

Furthermore, as eSports become more and more popular, there are many gamers tend to express extraordinary gaming habits with the purpose to further develop skills and abilities. One of the reason is to win the competition and fulfil their gratification needs (Murphy, 2009; Llorens, 2017). However, this has causes gaming addiction among the gamers, which was categorised as a disorder by World Health Organisation (WHO) (Augustin, 2019; Xiung, 2018). Likewise, there has also disagreement in providing eSports academic courses, mainly due to the gaming addiction, lack of time management and social skills among the gamers. Consequently, this gaming addiction lead to the negativity surrounding eSports in general and people perceived it negatively as not advantageous like other competitive sports (Xiung, 2018).

Currently, there is limited research on the eSports acceptance in Malaysia. In order to establish a study with sufficient information about eSports, it is crucial to conduct the study related to eSports that had yet to be explored or lack of understanding. Accordingly, the scarcity of relevant studies in Malaysia explains the need of this research to study the eSports participation intention of gamers. Hence, this study was carried out within the Malaysia eSports to empirically predict the relationship of the gamers' intention with individual determinants such as beliefs and attitudes towards eSports participation.

## 1.3 Objectives of the Research

### 1.3.1 General Objective

This study aims to examine the factors that affect perceived usefulness and ease of use of eSports, and to examine the relationship between perceived usefulness and ease of use and attitude towards eSports, and lastly evaluate the relationship between attitude and intention to participate in eSports. The mediation role of attitude between beliefs and intention towards eSports was evaluated as well.

### 1.3.2 Specific Objectives

1. To investigate the positive relationship between service mechanisms and gratification towards gamers' perceived usefulness and perceived ease of use of eSports.
2. To examine the positive relationship between gamer's perceived usefulness and perceived ease of use towards gamers' attitude in eSports.
3. To examine the positive relationship between gamers' attitude and intention to participate in eSports.
4. To evaluate the mediating effect of gamers' attitude on the relationship between perceived usefulness, perceived ease of use and intention to participate eSports.

## 1.4 Research Questions

1. To what extent does service mechanisms and gratification effect on gamers' perceived usefulness and perceived ease of use of eSports?
2. To what extent does perceived usefulness and perceived ease of use effect on gamers' attitude towards eSports participation?
3. To what extent does gamers' attitude affect their intention to participate eSports?
4. How does gamers' attitude mediate the relationship between perceived usefulness, perceived ease of use and intention to participate eSports?

## 1.5 Research Scope

This study focuses on the attitude and behaviour of gamers towards their intention to participate eSports in Malaysia. Several past researches used User Acceptance Model to study the behavioural intention in adopting technology and medias. In this study, Technology Acceptance Model (TAM) was used, together with two external variables which were service mechanisms and gratification, to examine the intention of gamers towards eSports participation. The research sample was the students who are engaging with universities eSports club or society in Malaysia. This population was targeted because there are large portion of eSports enthusiast and gamer population are university and college students and at this age range. Further, the target respondents are those who have certain level of gaming experience prior to the survey questionnaire.

## 1.6 Significance of Study

### 1.6.1 Contribution to Policies and Practices Recommendation

First and foremost, the findings of this study serve as an important criterion for the policy makers and other relevant parties that closely related and possess a strong influence in the field of eSports. The aim of this study is to provide an overview over the main parties in eSports industry and consider the need for regulation. In term of economic contribution, eSports industry had contributed large amount of revenue to the countries, the establishment and adaptation of new and proper rules and regulations is needed to keep in track with the rapid growth of eSports and to assure that eSports become a long-term sustainable business. Therefore, this is important for policy makers to understand the factors that drive gamers to participate eSports and thus enhance the degree of acceptance among them.

### 1.6.2 Contribution to Future Scholars and Researchers Understanding

With the growth of eSports and continued appearance of professional eSports tournament, there is huge potential and demand for novel scientific research targeted toward understanding the impacts that influence the attitude and intention of gamers. As such, this study expects to contribute to the insight on what forms positive attitude and behaviour of gamers, and how the gamers gratify their needs in the world of eSports. Besides, the findings can also provide academical knowledge to future scholars and serve as a guideline in conducting research that related to eSports. The concepts and findings of the study can be

used as references on such novel studies, where the future scholars will be able to enhance the study and provide contribution to such research topic effectively.

### 1.6.3 Contribution Management Thought

Contribution in eSports requiring management and marketing expertise linked to events, sponsorship, merchandise, affirmation, marketing, manpower, media and technology, governance, legal issues, and gamer well-being (Funk et al., 2018). Considering its massive growth, sports management and marketing agents are able to gain understanding on eSports development, apart from enhancing the attitude and acceptance of gamers toward eSports. Thus, current researcher expects that the findings could provide useful knowledge in term of leveraging and strengthening the positive perceptions of eSports gamers and engaging the gamers to participate eSports.

### 1.6.4 Contribution to Local eSports Industry

Lastly, with the popularity and massive growth of eSports, it can attract more foreign direct investment by improving the image of Malaysia's eSports and the international level talents. This is because the global eSports revenue has achieved the tremendous growth with the expectation in future growth. As such, the opportunities arise from eSports will directly bring much economic advantages to the respective parties to provide financial investment and support on eSports.

## 1.7 Definition of Terms

**Table 2: Definition of Terms**

| | | |
|---|---|---|
| eSports | "*A form of organised video game competition, has emerged as a global phenomenon*" | (Bonnar et al., 2019). |
| Perceived Usefulness | "*The degree to which a person believes that using a particular system would enhance his or her job performance*" | (Davis, 1989). |
| Perceived Ease of Use | "*The degree to which a person believes that using a particular system would be free of effort*" | (Davis, 1989). |
| Attitude | "*The degree to which a person has a favourable or unfavourable evaluation or appraisal of the behaviour in question*" | (Ajzen, 2002). |
| Intention | "*The degree to which a person has formulated conscious plans to perform or not perform some specified future behaviour*" | (Warshaw & Davis, 1985). |
| Service Mechanisms | "*Services that provided by game service provider to protect the online gamers' accounts and maintain rules adherent in order to provide better gaming experience in online gaming"* | (Lee, 2012). |
| Gratification | "*The fulfillment of a need through an activity such as media use*" | (Chiu & Huang, 2015). |
| Video Game | "*Interactive electronic games which aim primarily to entertain players by accessing virtual environment within specific rules and conditions that vary from game to game*" | (Quwaider et al., 2019). |

**Source: Developed for the research**

## 1.8 Chapter Layout

Chapter 1 provides a general view of the research topic. A brief research background and problem statement was presented in this chapter. Key problems were being emphasised in the statement of problem. The objectives of study and a series of hypothesis to be empirically tested in this research were developed based on the problem statement. Besides, the significance of the research is underlined.

In Chapter 2, the underlying theories that are associated to the research topic will be explained. Meanwhile, this chapter will explain extensively on the dependent and independent variables. Relevant journal articles will also be reviewed and studied. A proposed research framework will also be developed based on the framework studied by previous researchers.

Process of data collection will be explained in Chapter 3. This chapter includes explaining research and sampling design, data collection approach, research and construct instruments, data processing and analysis.

In Chapter 4, the result of this research will be revealed to analyse on the validity of the research. The demographic information of the targeted respondents as well as the answers of the respondents will be interpreted.

In Chapter 5, an overview of the research findings will be provided. Besides, the limitation found in the research and the recommendation for subsequent research will also be discussed.

## 1.9 Chapter Summary

In conclusion, the importance of eSports towards the development of Malaysia has been examined. Throughout this chapter, the main issues that are related to eSports have been identified and the research objectives as well as the hypothesis based on the variable had been developed.

# CHAPTER TWO

# LITERATURE REVIEW

## 2.0 Introduction

This chapter includes the explanation of the underlying theory, the definition, the terminology as well as the dimensions of the dependent and independent variables. The relationship between the dependent and independent variables was evaluated and a conceptual framework between the independent variables and dependent variables was developed to provide a clearer image for further investigation of the research objectives.

## 2.1 Review of literature

### 2.1.1 Defining eSports

Most often, eSports is recognised as "professional gaming", in which the computer games are played in a competitive way and within a rival setting (Wagner, 2006). Several literatures on eSports and definitions have been developed by various authors as shown in Table 3.

**Table 3: Definition of eSports From Past Studies**

| Author (s) | Definition |
|---|---|
| Bányai et al. (2019) | A professional type of video gaming activity where a small proportion of gamers are playing professionally and spends hours every day in mastering their skills. |
| Bonnar et al. (2019) | A form of organised video game competition that has emerged as a global phenomenon. |
| Pedraza-Ramirez et al. (2020) | Casual or organized competitive activity of playing specific video games that provide professional and/or personal development to the player. |
| Reitman et al. (2020) | eSports are often defined as games, as sports, or as mass entertainment. |
| Wattanapisit et al. (2020) | eSports are sports facilitated by electronic systems and in which players and teams interact in eSports activities through human–computer interfaces. |
| Cranmer et al. (2021) | Electronic sports (esports) involves competitive, organised or technologically enabled activities encompassing varying degrees of physicality, virtuality and technological immersion. |
| Zhang et al. (2022) | eSports transcends mere gaming as it can be considered a type of merge between electronic games, sports, business, and media. |

**Source: Developed for the research**

Based on Table 3, there is no general accepted definition for eSports. This is mainly due to the complex understanding of eSports industry as well as its combination of culture, business, technology, and sport (Cranmer et al., 2021). Initially, eSports is as " an area of sports activities in which people develop and train mental and physical abilities in the use of information and communication technologies" (Wagner, 2006). Additionally, since eSports are organised and structured events, the term 'organised' and 'professional' must be included in its definition. For instance, Bányai et al. (2019), Bonnar et al. (2019), Pedraza-Ramirez et al. (2020), Cranmer et al. (2021) were defined eSports as a form of organised video game that gamers play it in a professional way.

Furthermore, the main goal of eSports is not only the rivalry between the gamers, but it can be characterized as collaboration and entertainment activity (Cranmer et al., 2021). The casual gamers as well as the spectators are important as serious gamers in eSports industry (Cranmer et al., 2021). Reitman et al. (2020) and Zhang et al. (2022) described eSports as an mass entertainment and combination of business and media entertainment.

Therefore, for the current study, the researcher had referred to the definition of the authors based on Table 3, defines eSports as "a form of organised video game competition in terms of skill and professionalisation and entertainment activities that has emerge as global phenomenon with the use of information and communication technology".

### 2.1.2 Review of Past Studies of eSports

With the rapid development of the eSports sector in the last few years, numerous researches have emerged in the field of eSports. Several researches which were carried out have been listed in Table 4. For instance, one of the topics discussed the issues concerned with complementarity and perception between playing sports video games and traditional sports. In addition, a majority of the past studies were focused on the factors affecting spectatorship and viewership of the eSports events rather than the motivational factors which drive them to participate in eSports activities.

Although several past studies have concerned on the motivations and processes of eSports gameplay, but there are few researches that have integrated the external variables in a theoretical perspective to investigate and predict individual perceptions and intention toward an interactive eSports activity in Malaysia.

**Table 4: Summary of Related Studies in eSports**

| Author(s) | Published Title | Focus |
|---|---|---|
| Bányai et al. (2019) | The mediating effect of motivations between psychiatric distress and gaming disorder among eSport gamers and recreational gamers | Comparison between recreational gamers and eSports gamers based on severity of gaming disorder, game time, gaming motivations, and mental health. |
| García and Murillo, (2019) | Sports video games participation: what can we learn for esports? | Investigation of three issues associated with playing sports video game including its intensity, complementarity, and perception of individuals from the Survey of Sporting Habits in Spain 2015. |
| Neus et al. (2019) | Differences and similarities in motivation for offline and online eSports event consumption | Investigation of the differences between offline and online consumption of eSports based on Motivation Scale for Sports Consumption. |
| Sjöblom et al. (2019) | Digital athletics in analogue stadiums | Investigation of spectating behaviour differences between online spectating and live attendance of eSports events and gratification spectators obtain from eSports based on Motivation Scale for Sports Consumption. |

| | | |
|---|---|---|
| (Pedraza-Ramirez et al., 2020) | Setting the Scientific Stage for eSports Psychology: A Systematic Review Competitive | Summarized the empirical evidence addressing the psychological characteristics of both cognitive and game performance in esports, and to integrate esports in the field of sport psychology. |
| (Jang & Byon, 2020) | Antecedents of Esports Gameplay Intention: Genre as a Moderator | Examine the impact of eSports game genres have on the relationship that exists between antecedents and consumers' esports gameplay intention. |
| (Wattanapisit et al., 2020) | Public Health Perspectives on eSports | Introduce about the eSports industry and explained eSports-related health concerns among the public health sector. |
| (M. Wu et al., 2021) | Understanding Tilt in eSports: A Study on Young League of Legends Players. | Investigate the young players' conceptions of tilt, its causes, and its consequences among youth eSports gamers. |
| (Zhang et al., 2022) | Influence mechanism of tourists' impulsive behavior in E-sports tourism: Mediating role of arousal. | Examine the influence mechanism of e-sports tourists' impulsive behavior based on arousal theory and provides an in-depth theoretical basis for eSports tourism. |

**Source: Developed for the research.**

Currently, the growth of network and technology have provided numerous benefits to the gamers. However, the behavioural intention towards adoption does not naturally exist within gamers to participate in eSports directly. Besides, the internet is deliberately consumed, as users must make purposive selections about which service to use. (Silaban, 2018). In term of raising a large

number of eSports activities, satisfaction and performance of game content considered as the utmost critical factors in all entertainment services and systems (Koivisto & Hamari, 2019). Moreover, the hardware and software also regarded as vital impacts toward the usage intention of new medias and devices (Jang & Byon, 2019). This phenomenon has created the needs for current researcher to examine gamers' intention to participate in eSports. Hence, the perception and attitude of gamers towards eSports participation seems to be a significant topic to be conducted in this research.

## 2.2 Theoretical Background

### 2.2.1 User Acceptance Theory

Acceptance often considered as a result variable in a process of psychology that the users go through when choosing something related to technology (Dillon & Morris, 1996). In this research, it is important to recognise the behaviour of gamers in the setting of technology acceptance. User Acceptance Models consists of three theoretical models, including the Theory of Reasoned Action (TRA), Theory of Planned Behaviour (TPB), and Technology Acceptance Model (TAM) which have been widely used to identify the factors that impacts the user acceptance of technology. Figure 6 shows the basic concept of user acceptance of information technology.

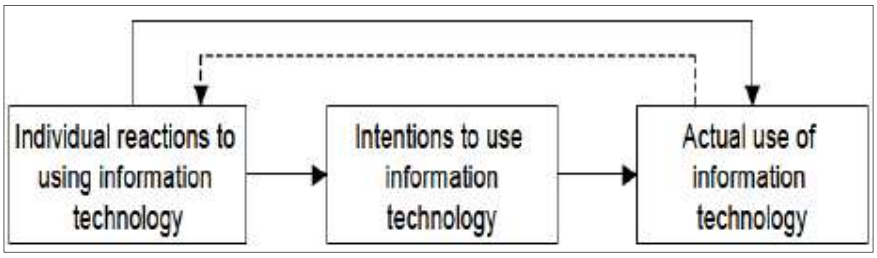



**Figure 6: Basic Concept Underlying User Acceptance Models**

**Source: Kocaleva et al. (2015)**

#### 2.2.1.1 Theory of Reasoned Action (TRA)

In Theory of Reasoned Action (TRA), behaviour is determined by behavioural intentions instead of predictability of the model to situations in which behaviour and intention are highly correlated (Ajzen & Fishbein, 1977; Yousafzai et al., 2010). Besides, a further condition of the Theory of Reasoned Action is that behaviour should be under volitional control (Ajzen & Fishbein, 1977). Therefore, Theory of Reasoned Action unsuccessful to predict situations in which individuals have lower volitional control level.

The Theory of Reasoned Action (TRA) is a famous theories that used to predict the behavioural intention and behaviour and it is useful for identifying strategies for changing behaviour (Madden et al., 1992). In other words, Theory of Reasoned Action is about identifying behavioural intention of attitudes of a person (Lai, 2017). Theory of Reasoned Action was established to have better understanding about the relationship between attitudes, intentions and behaviours (Madden et al., 1992).

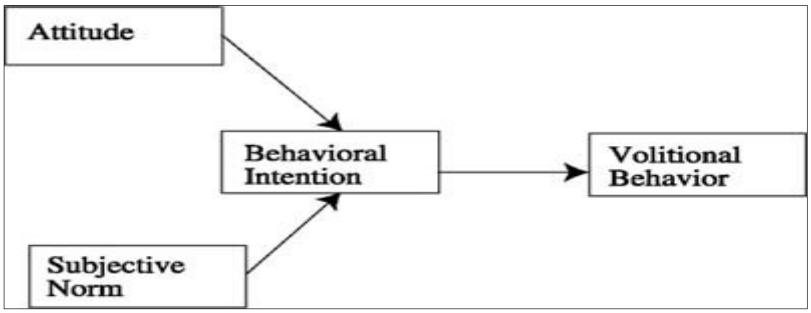



**Figure 7: Theory of Reasoned Action Model.**

**Source: Madden et al. (1992)**

### 2.2.1.2 Theory of Planned Behaviour (TPB)

In order to overcome the limitation of Theory of Reasoned Action in dealing with behaviours over which individual have lower level of volitional control, the Theory of Planned Behaviour (TPB) is developed to extends the Theory of Reasoned Action model proposes that volitional behaviour of an individual is a function of the intention to fulfil the behaviour and perceived behavioural control (Ajzen, 1991).

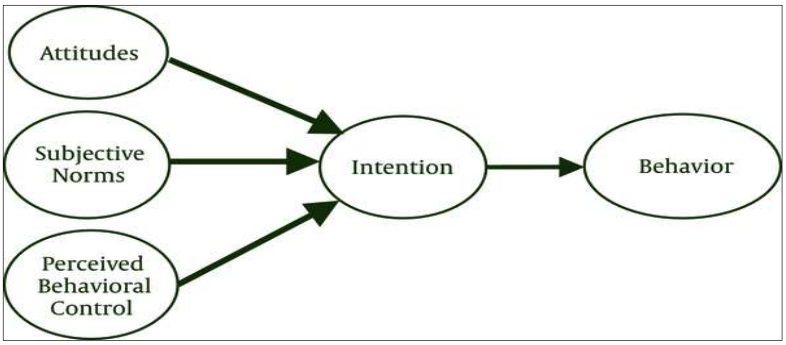



**Figure 8: Theory of Planned Behaviour Model.**

**Source: Ajzen (1991)**

Figure 8 indicate the Theory of Planned Behaviour model. Theory of Planned Behaviour model indicated that the people's action is leaded by three types of considerations, which are behavioural beliefs, normative beliefs, and control beliefs. Collectively, behavioural beliefs provide a favourable or unfavourable attitude direct to the intention; normative beliefs show an outcome in perception of social pressure or subjective norm; and control beliefs focus on the perceived behavioural control (Ajzen, 2002). In short, attitude towards the behaviour, subjective norm, and perception of behavioural control guide to the establishment of a behavioural intention (Ajzen, 2002).

Nevertheless, this theory do has its limitation, in which the social norm scales consists of very poor psychometric standpoint and may not cause any impact on behavioural intention, specifically when information system adoptions are fairly personal and voluntarism of individual usage (Cheng, 2018). As a result, Technological Acceptance Model is invented to specify the general determinants of user technology acceptance and thus can be used to explain and predict user behaviours across a wide range of end user computing technology.

#### 2.2.1.3 The Unified Theory of Acceptance and Use of Technology (UTAUT)

The Unified Theory of Acceptance and Use of Technology is an integrated model of the Theory of Planned Behaviour (TPB) and Technology Acceptance Model (TAM) (Nordhoff et al., 2020). This model is considered as the most comprehensive model that uses to predict and explain behavioural intention of an individual towards technology usage (Hassan et al., 2022).

UTAUT and UTAUT2 assume that the acceptance of technology is influenced by the effects of performance expectancy, effort expectancy, social influence, facilitating conditions, hedonic motivation, price value and habit (Nordhoff et al., 2020). The integrated models provided a greater improvement in the variance explained in technology usage and intention of an individual (Hassan et al., 2022).

However, UTAUT and UTAUT2 were found to be not suitable for this study. This is mainly due to the construct of attitude of an individual was omitted from the model, which served as a core variable in examining the motivation of an individual (Elkheshin & Saleeb, 2020). Hence, in this study, Technology Acceptance Model deems to be more appropriate to study gamers' behaviour.

#### 2.2.1.4 Technology Acceptance Model (TAM)

Over the past decade, Technological Acceptance Model has gained considerable attention from the researchers in the study of information system and technological field. Technology Acceptance Model is a modification of Theory of Reasoned Action (TRA) in which beliefs affect the attitude and ultimately shapes behavioural intention. Technological Acceptance Model is mainly use to predict and explain the users' acceptance and adoption of information system, information technology, and innovations and this model has been the subject of many studies since its establishment (Davis, 1986).

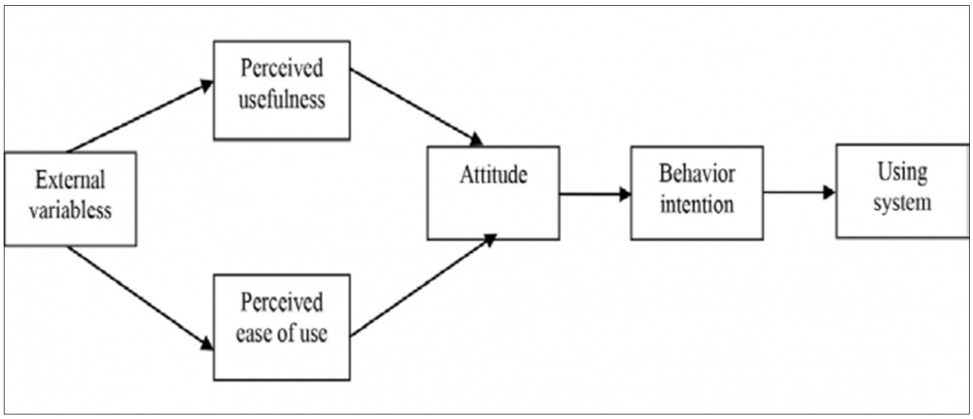



**Figure 9: Technology Acceptance Model .**

**Source: (Davis, 1989)**

Based on Figure 9, Technological Acceptance Model illustrates user motivation with three primary factors, which are perceived ease of use, perceived usefulness, and attitude toward intention to use. The perceived ease of use is referred to as "the degree to which using the technology will be free of effort" (Davis, 1989). Moreover, the perceived usefulness is defined as "the degree to which an individual believes that using a particular system would improve his or her performance" (Davis, 1989). Besides that, attitude towards adoption is defined as "the degree to which a person has a favourable or unfavourable evaluation or appraisal of the behaviour in question" (Ajzen, 2002). Lastly, intention to use or participate is based on the definition of behavioural intention and is referred to "the degree to which a person has formulated conscious plans to perform or not perform some specified future behaviour" (Warshaw & Davis, 1985). Both perceived ease of use and perceived usefulness affect the person's attitude toward using a system (Davis, 1985).

Furthermore, Technology Acceptance Model tends to be more predictive on the user acceptance behaviour towards particular technology and media. Generally, Technology Acceptance Model explains the issue about user's acceptance and use of media and technology by the relationship of belief-attitude-intention towards the technology.

Meanwhile, in term of parsimony capability, Technological Acceptance Model was found to be more favourable than Theory of Reasoned Action and Theory of Planned Behaviour (Cheng, 2018). In addition, Technological Acceptance Model was found to be more modest to apply than Theory of Planned Behaviour, and provides a more efficient way of collecting general data and information about a person's perception of technology (Cheng, 2018). Hence, Technology Acceptance Model is applied as the theoretical base in this study and it is appropriate to examine the intention of gamers to participate in eSports.

#### 2.2.1.5 Extended Technology Acceptance Model

Given the changes and development of technology and media, it is necessary to keep track with the changing preferences by continuous update the research model. Besides, the exclusion of external factors from Technology Acceptance Model does not provides specific information that can effectively lead to system development (Mathieson, 1991). The Technology Acceptance Model with specified external factors provides better explanation in term of

prediction of technology usage and also the rejection of using particular system by the users (Abdullah & Ward, 2016).

Based on the past findings, numerous researches have proven the validity of Technological Acceptance Model and extend the model across broad range of information technology as shown in Table 5, for instance e-learning (Baby & Kannammal, 2019), Telemedicine services (Kamal et al., 2020), teachers' technology adoption (Scherer et al., 2019), mobile library application (Rafique et al., 2020), Green Information Technology (Yoon, 2018), and many other researches that are related to technological field.

**Table 5: Summary of Technology Acceptance Model Used in Past Studies**

| Author | Published Title | Focus |
|---|---|---|
| Baby and Kannammal (2019) | Network Path Analysis for developing an enhanced TAM model: A user-centric e-learning perspective | Development of a user centric framework for e-learning technologies, comprising the variables of security, privacy and trust with the proposal of Network Path Analysis (NPA) algorithm. An extended TAM for user centric framework design of e-learning solutions is also developed in the study. |
| Kamal et al. (2020) | Investigating acceptance of telemedicine services through an extended technology acceptance model (TAM) | Investigation of the factors affecting the acceptance of telemedicine services among the rural population of Pakistan. |
| Rafique et al. (2020) | Investigating the Acceptance of Mobile Library Applications with an Extended | Investigation of the factors behind low acceptance and intention to use mobile library application (MLA). |

| | | |
|---|---|---|
| | Technology Acceptance Model (TAM) | |
| Scherer et al. (2019) | The technology acceptance model (TAM): A meta-analytic structural equation modeling approach to explaining teachers' adoption of digital technology in education | Investigation of the factors influencing teachers' technology adoption with the combination of meta-analysis with structural equation modelling approaches. |
| Yoon (2018) | Extending the TAM for Green IT: A normative perspective | Investigation of the acceptance of green IT by adding normative variables including descriptive, injunctive, and personal norms. |

**Source: Developed for the research.**

Accordingly, it is necessary to identify the external factors which can be used to provide better explanation and prediction on gamers' participation intention in eSports. Hence, the current research extended the basic Technology Acceptance Model through the inclusion of external factors that can affect both the critical beliefs such as perceived ease of use and perceived usefulness to explain and predict the gamers' attitude and intention towards eSports participation.

### 2.2.2 Elements of Technology Acceptance Model

#### 2.2.2.1 Intention to participate in eSports

According to Warshaw and Davis (1985), intention to behave refers to "the degree to which a person has formulated conscious plans to perform or not perform some specified future behaviour". In other words, it can be regarded as real action. This study employs the definition of intention based on Warshaw

and Davis (1985), which defines intention as “The degree to which a gamer has formulated conscious plans to perform or not perform some specified future behaviour such as participating in eSports tournament”. The term intention in adopting certain media or technology has been extensively studied in previous researches in different fields such as tourism virtual reality (Ja Kim et al., 2020), mobile wallet technology (Singh & Sinha, 2020), blockchain-based technology (Yang, 2019), librarian’s e-skills (Izuagbe et al., 2019), and mobile app shopping (Vahdat et al., 2020).

In the study of online gaming, the investigation of the intention and acceptance of gamers is important in order to have better understanding towards the gamers’ behaviour. The study of online games emphasises on the investigation of psychological factors that may affect gamers’ attitude and intention towards online games as this games have become tremendously famous in modern present society (Rafdinal & Qisthi, 2020). Besides, by responding to the trend of extensive online gaming activities and online gaming community interaction, Kim and Kim (2018) examined the online game engagement intention based on the perceived online justice and relational bonds. The study further discussed that part of an online gaming community regards as a platform for online member relationship development through game information and opinion sharing.

Similarly, in eSports context, the intention of gamer to play video game is of great interest by the game developers, sponsor, and game operators. It is because they can gain benefit considerably from better understandings of the

motivating factors behind gamers' intention (Ja Kim et al., 2020). Furthermore, it is also important for the industry merchants understand the gamers' intention thus further engaging the gamers to visit game websites more frequently (Ja Kim et al., 2020).

Moreover, based on Agag and El-Masry (2016), continuous participating in online community joint events assists the member in achieving common objectives and is an important element for community endurance. As a result, the participation of gamers in eSports is a critical factor that addresses the success of eSports sector in long term. Extensive participation indicates a higher degree of involvement in eSports, which may encourage better relationship between gamers, information sharing and instil conjoint behaviours.

However, to measure the actual behaviour of gamers is difficult, this research thus emphasises on the gamers intention to participate in eSports. Intentions often use to measure user behaviour in the setting of acceptance of technology (Alshurideh et al., 2019; Hu et al., 2019; Ifinedo, 2018; Saeed & Al-emran, 2018; Tawafak et al., 2018; Vanduhe, 2020). Further, user behavioural intentions is regards as users willingness to behave in a particular way, and there are a high association between behavioural intention and real behaviour (Zeng & Li, 2021; Abayomi et al., 2020). Therefore, this study focuses on the intention of gamer to participate as a critical indicator of the level of the participation of gamer in eSports

#### 2.2.2.2 Attitude Towards eSports

In Technological Acceptance Model, attitude towards adoption is defined as "the degree to which a person has a favourable or unfavourable evaluation or appraisal of the behaviour in question" (Ajzen, 2002). Ajzen and colleagues shown that the attitude of users toward a particular behaviour is significantly determined by both their assessments and cognitive beliefs (Ajzen, 2006; Ajzen & Fishbein, 1977). This study employed the definition of attitude proposed by Ajzen (1991), where attitude is defined as "the degree of positive or negative feelings about participating eSports".

Explaining and predicting users' behaviours and attitudes is one of the utmost critical studies in the fields of information systems. In term of theoretical perspective, the Theory of Reasoned Action illustrates the significant association among specific behaviours and attitudes of a person. Since the development of Theory of Reasoned Action, the significant connection among individual's behaviours and intention to use a particular services or systems have been confirmed (Ajzen, 1991; Ajzen & Fishbein, 1977; Park et al., 2014). Furthermore, Technology Acceptance Model researches also used this theory to define attitude.

Moreover, the evolvement of digital games is appearing from solitary setting into a very popular, sociable and collaborative experience. The foundation of successful innovation execution is to address the issue about beliefs and attitude towards technology adoption. Bovermann et al. (2018)

asserted that survey regarding 'attitude to gaming' serves as an effective instrument to study and analyse gamer behaviour.

Attitude serves as an important factor that mediates the degree of people behaviour and intention by the effect of people beliefs and other external variables. In other words, when people perceived the usefulness and ease of use of certain technologies or medias will make positive attitude towards it so form the occurrence of attitude will mediate the intention or behaviour of an individual to adopt innovative technologies or medias. For instance, based on Bananuka et al. (2019), the mediation role of attitude is confirmed and successfully mediated the association between subjective norm and intention to use Islamic banking. Besides, Pahlevan et al. (2018) proved that money attitude significantly mediated the relationship between over-use of social networking sites on online buying intention. Additionally, Bouteraa and Banking (2020) also confirmed the effective mediation role of attitude in explaining the intention of user to adopt Islamic will.

As a result, when comes to the context of eSport, it can be assumed that the relationship of beliefs and intention to participate eSports will mediated by the effect of attitude by applying TAM model. Since attitude serves as a function of beliefs, gamers will only participate in eSports when they perceived the positivity of eSports and leads to positive outcome. Hence, the evaluation of gamers' attitude serves as a significant factor that affect gamers' intention to participate in eSports.

#### 2.2.2.3 Perceived Usefulness

Based on the Technological Acceptance Model, perceived usefulness is defined as "the degree to which an individual believes that using a particular technology or system will assist in improving his or her performance" (Davis, 1989). Similarly, Davis et al. (1992) defined perceived usefulness as "a person's expectation that using the computer will result in improved job performance". By applying the definition of Davis (1989) to current study, the perceived usefulness is defines as "A gamer's expectation that playing video games will result in achieving the purpose of playing game".

Based on technology acceptance studies, Huang (2018) discovered that perceived usefulness often serves as a reasonable determining factor of students' intention to play educational games as the game can provide entertainment for students. Besides, Sánchez-mena et al. (2018) indicated that perceived usefulness is one of the important drivers or antecedents for the users to accept video game. In term of usefulness, they focused on the aspects of performance of an individual or personal productivity. Other than gaming field, Ayesha et al. (2020) indicated that perceived usefulness is an important factor that affects acceptance of telemedicine service when the service is able to lead to better outcomes. Furthermore, Sepasgozar et al. (2019) pointed out perceived usefulness of urban service technology (UST) is a critical determinant to the intention of citizens towards the technology. Based on the literatures of past researches, this study expects that the gamers will possess positive perception and be more intended to participate in eSports only when they perceive that

playing video game will provide better outcomes such as enjoyment, making friends, performance improvement and so on.

#### 2.2.2.4 Perceived Ease of Use

The Technology Acceptance Model proposes perceived ease of use as one of the important constructs in the model. Originally, perceived ease of use is defined as "the degree that using a specific technology will be free from effort" (Davis, 1989). In current study, based on the definition of Davis (1989), which perceived ease of use as "The degree that playing video games will be free from effort".

Previous scholars revealed that perceived ease of use serves as a important factor to the motivations of students in playing educational game as the game is easy to play and the rules of the game can be easily understood (Huang, 2018). Ayesha et al. (2020) acknowledged that if the telemedicine service is to be perceived that it is easy to use and understand by the users, the people will be motivated to use the services. Moreover, it is believes that perceived ease of use of online learning environment (OLE) activities would significantly impacted students' attitude toward using the system (Estriegana et al., 2019).

Based on the past findings, it implies that the terms of ease of use can be a critical determinant of user behaviour. Hence, it is expected that an individual

who interested in eSports may be motivated to participate in eSports when the video game is easy to play and control.

### 2.2.3 External Variables in Technology Acceptance Model

Technology Acceptance Model provide a fundamental way for outlining the influence of external factors on the two main beliefs, attitudes, and intentions. In view of the problem statements discussed in the previous chapter, the issues of game services such as internet connectivity and security issue, as well as the negativity surrounding of eSports have been highlighted. Hence, this study will focus on two external variables which are service mechanisms and gratification. It is expected that these two variables might bring greater impacts towards the perception and intention of gamers to participate in eSports.

#### 2.2.3.1 Service Mechanisms

Service mechanisms refers to the services offered by game service providers to safeguard gamers' accounts and comply with the rules with the purpose of guarantee better video gaming experience (Lee, 2012). In the studies of information technology, media and technology access and quality act as significant factors that affect the perception and behaviour of users (Rita et al., 2019; Wu et al., 2010). In the context of technological use, the use of technology by individual and their willingness are related to the technology condition and situation such as internet connection and the accessibility of digital devices (Kim et al., 2019). For instance, when gamer intends to play an online game, he or she

need a fast internet connection to access the game and connect with other gamers. As a result, the gamers need a proper and high quality of technological devices and mechanisms which enable them to have a good gaming experience and perception.

Service mechanisms are recognised as the mechanisms that cannot be applied as ordinary method as the basic technological channel. Instead, it is more effective when applied as mechanisms that consists of resources, consumers, rules and regulations, safety assurance, and incentives Wu et al. (2010). Furthermore, according to Wu et al. (2010), service mechanisms can also be served as critical antecedent which included incentives, security, as well as impartiality which likely to enhance the problems of internet connectivity, customer experience, security and equality.

Incentive can be recognised as effective motivational tool that used in video games in assisting to increase the interest and engagement of the video gamers in addition to maintain their continuance usage (Wu et al. 2018). The situation factors, for instance incentives and opportunities that offered by the service provider can be an influential factor that motivate people to achieve certain goals. (Wu et al., 2018). Furthermore, security concern is refer to the perception of technology user or the gamer towards the video games' security, for instance the important personal data, integrity, applications, and software accessibility that required the preservation of security services that launched by game service provider (Chang et al., 2022). Finally, fairness can be represented

as the perceived quality that occurs through the social judgment stage, which is associated with justified behavior in a given situation (Rasooli et al., 2019).

#### 2.2.3.2 Gratification

Gratification is defined as "the fulfilment of a need through an activity or technology and media use" (Athwal et al., 2019). The concept of gratification is relevant to a person's reactions to experience of media use, which in turn can affect further motivation for media use. Gratification is defined as user acceptance of latest and innovative technology and is also refers to the degree of comfort when using that technology (Chen, 2018). In other words, gratification is the feeling of pleasure an individual have when one performs a desired action and go through a positive result (Chen, 2018). In eSports context, the needs for gratification can be linked to the motivation of a video gamer to participate in eSports and this relationship has been proved that there is a mutual relationship.

The gratification factor is applicable for predicting the influence of gratification on intention of consumer to use certain technology devices or services (Ja Kim et al., 2020). In the current research, gratification can be defined as "the need derives from participating in eSports, such as the needs for enjoyment and social". According to previous studies, Wu et al. (2010) further classified three type of gamer's motivation, including social interaction, social presence and enjoyment. Enjoyment can be defined based on the concept of entertainment as the degree to which the internet-based media is enjoyable to the users. Media entertainment served as an important factors to the users' need for

enjoyable-seeking activities and visual satisfaction (Heravi et al., 2018). Thus, the current research expect that the enjoyment found in participating eSports will affect a gamers' intention to involve it. Social interaction and social presence are defined as the psychological sense of physical interaction and establishment of personal connections with others through media or technology (Ulrike & Brooks, 2019). With regard to eSports, the gamers are connected with their family, friends and others in the virtual world. Therefore, the current study expects that the higher the degree of gratification, intention of a person to participate eSports will increase.

## 2.3 Hypothesis Development

### 2.3.1 Relationship between service mechanisms and perceived usefulness and perceived ease of use of video games

Previous study asserted that the game mechanism and game thinking which applied in gamification is provided by the service providers to the customers. In terms of usefulness of gaming mechanisms, It can help users solve problems, contribute to themselves, enhance their immersion and subjective acceptance, and ultimately, motivate users to participate virtual corporate social responsibility (CSR) games (Jun et al., 2020). In addition, the study suggested that game incentive mechanisms serve as the most critical factors to increase user's intention to participate virtual CSR games. Moreover, internet mechanisms of electronic shopping are developed to reduce risk and uncertainty, improve understanding of seller and buyer, security and privacy assurance, provide customer feedback, and enhance the value of seller and buyer about the

products and services (Liu & Tang, 2018). From this finding, it can be assumed that when the user perceives the performance of the system and do not need much effort to understand it, the intention of the user to use the particular system will increase. Furthermore, Rafique et al. (2020) also hypothesised that the system quality has a significant influence on both perceived usefulness and ease of use in the study of mobile library application.

Service mechanisms are served as a vital antecedent of the video gamers faithfulness (Li et al., 2018). Game service providers ought to offer better products or services for the purpose of gaining gamers loyalty. For example, they can remove the structures that majority gamers are not interested, such as the recognition of opportunity behaviour, deterrence of fraud and fake account. Whilst, eSports involving human-computer interaction which used to monitor the states of game of software or system (Hamari & Sjöblom, 2017), it is undeniable that service mechanisms serve as an important antecedent to drive the intention and behaviour of gamers. Thus, based on the argument above, the ideas of usefulness and ease of use in service mechanisms is important in construction the positive perception of eSports and engaging the gamers to take part in eSports. therefore, the below hypotheses were developed:

H1: There is a positive relationship between service mechanisms and perceived usefulness of video games.

H2: There is a positive relationship between service mechanisms and perceived ease of use of video games.

### 2.3.2 Relationship between gratification and perceived usefulness and perceived ease of use video games

Gratifications approach assists in predicting how media can be used to satisfy the needs of consumers with different aims (Heravi et al., 2018). The convenience and accessibility of media are considered important between the relationship of technological structure and consumer. Nevertheless, the gratification and intention are considered as important factors of media use related to the mutual interaction between consumer (Ma, 2021).

As a media and technology, eSports are ideal for this research where the gamers can play the game to satisfy their desires and purposes. For instance, Ja et al. (2019) indicated that there are multiple purposes for the customers to use mobile devices which the users feel it is useful, including information search, relationship maintenance, style, spending time, and playfulness. Besides, Bailey, et al. (2018) concluded that social influence and perceived enjoyment were positively and significantly related to perceived usefulness of social media. Similarly, Alalwan et al. (2018) proved the significant association between perceived enjoyment and usefulness of purchase via mobile internet among customer in Saudi Arabia. Besides, Camilleri and Falzon (2021) combined the Uses and Gratification approach and Technology Acceptance Model in predicting users' intention to adopt online streaming services. The result indicated that motivation for ritualized use and instrumental use are as well as perceived usefulness and perceived ease of use are positively related to the intention to use online streaming technologies as the technologies allowed them

to gain better streaming experience and satisfy the need for hedonic. Further, Li et al. (2018) stated that usage intention and continuance usage of mobile social applications are significantly influence by social and enjoyment motivation as well as perceived usefulness and perceived ease of use.

In the context of eSports, when gamers gratified their desires of social and pleasure from participating eSports, the gamers will have a high tendency to forget the struggle related to real live and spend more time on video gaming. Hence, it can be predicted that gratification may positively influence perceived usefulness and ease of use. Hence, the following hypotheses were formed:

H3: There is a positive relationship between gratification and perceived usefulness of video games.

H4: There is a positive relationship between gratification and perceived ease of use of video games.

### 2.3.3 Relationship between perceived usefulness and perceived ease of use and attitude towards eSports

Perceived usefulness and ease of use served as critical constructs in Technology Acceptance Model. There are various studies associating attitude in the Technology Acceptance Model that have proved the significant association between perceived usefulness, perceived ease of use and attitude. For instance, Kasilingam (2020) indicated that the relationship between perceived usefulness

and ease of use and attitude is significantly supported in explaining the intention of users in using mobile social network chatbots shopping. Estriegana et al. (2019) also confirmed the significant relationship between perceived usefulness and ease of use, attitude toward using, and behavioural intention to use technology of online learning environment. Furthermore, Kang and Namkung (2019) mentioned that perceived usefulness, perceived ease of use and attitude were important determinant in explaining predicting user's technology usage behaviour and intention.

Based on the above discussion, the significant connection amongst beliefs and attitude can be applied in the context of eSports. Since eSports are competitive in nature, this study assumes the beliefs of an individual can positively impact the attitude of gamers towards eSports. In other words, when eSports games enable the improvement of gamers' gaming performance and the games can be easily handled and understood, the gamers will have a positive attitude towards eSports. Therefore, according to the finding of previous studies, two hypotheses were constructed as following:

H5: There is a positive relationship between perceived usefulness and attitude towards eSports.

H6: There is a positive relationship between perceived ease of use and attitude towards eSports.

### 2.3.4 Relationship between attitude towards eSports and intention to participate eSports

Technology Acceptance Model proposes that attitude is related to important beliefs which an individual has about the outcomes of a given behaviour and his or her assessment of those outcomes (Kang & Namkung, 2019). Numerous researches have shown that attitude is significantly related to the intention of using media and technology. For instance, Chen et al. (2017) supported the positive relationship between attitude and intention of user in playing mobile social games in China. In addition, in the study of Lee (2009), the results revealed that both attitude and intention in playing online game were significantly affected by the feeling of fun and pleasurable. This result highlights that if the attitude of gamers is favourable towards online game playing, the gamers will be more intended to participate in it. Besides, it was also found that attitude have a significant influence towards behaviours of social media users (Bailey et al., 2018).

Based on the past studies, the gamers' intention to participate eSports can be predicted and explained by gamers' attitude towards eSports. Therefore, in the context of eSports, when gamers form a positive attitude towards eSports, they will intend to participate eSports activity. Thus, the current study posited a hypothesis as below:

H7: There is a positive relationship between attitude towards eSports and intention to participate eSports.

### 2.3.5 Attitude towards eSports mediates the relationship between perceived usefulness, perceived ease of use and intention to participate eSports

The role of attitude of a technology user serves as an important indicator in determining intention to adopt certain technology or media. Several studies have hypothesised and proved the indirect effect or mediating role of attitude in explaining the people behaviour and intention. For instance, Rehman and Shaikh (2020) revealed that attitude is significantly mediates the relationship between perceived usefulness and ease of use and intention to use Mobile Banking. Besides that, Koththagoda and Herath (2018) have also confirmed the significant relationship between perceived usefulness, ease of use and intention by the mediation of attitude in the setting of customer online purchase intention. Furthermore, Bervell et al. (2020) revealed that attitude becomes a major determinant and mediator in explaining the significant relationship between technological use factors and behavioural intention for Learning Management System (LMS) enabled blended learning.

Based on the above discussions, the significant association between beliefs, attitude and intention can be applied in eSports context. Also, in the study of behavioural intention, attitude is recognised as a common variable that impacts the willingness of people behaviour. As such, attitude is chosen as the mediator in this study. Hereafter, this study posited the hypothesis as below.

H8a: Attitude towards eSports mediates the relationship between perceived usefulness and intention to participate eSports.

H8b: Attitude towards eSports mediates the relationship between perceived ease of use and intention to participate eSports.

## 2.4 Proposed Model of Study

Figure 10 illustrates a conceptual framework using the concept of Technology Acceptance Model including two external factors, namely service mechanisms and gratification. The framework proposed that eSports participation intention is influence by two critical beliefs, perceived usefulness and perceived ease of use with the mediation role of attitude. In addition, perceived usefulness and perceived ease of use are affected by services mechanisms and gratification. Last but not least, the relationship between intention to participate eSports and perceived usefulness and ease of use is mediates by attitude towards eSports.

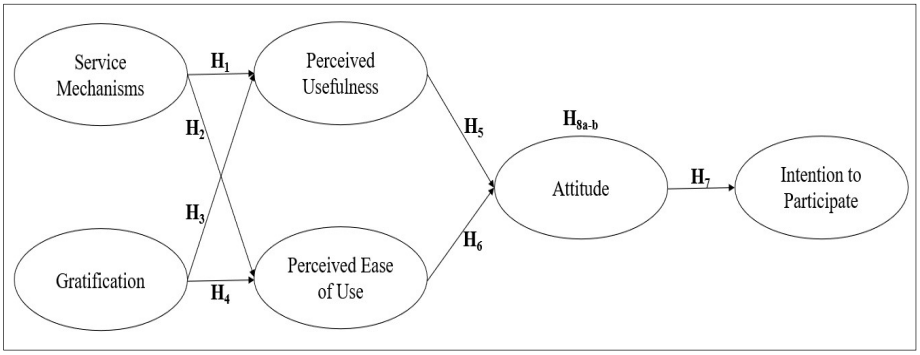



**Figure 10: Proposed Model of Study**

## 2.5 Chapter Summary

Dependent and independent variables have been clearly explained in this chapter. Based on the literature review and several relevant theoretical frameworks, conceptual framework has been developed and proposed to further investigate the relationship between the variables.

# CHAPTER THREE

# RESEARCH METHODOLOGY

## 3.0 Introduction

This chapter discussed the research methodology which included the research design, data collection methods, sampling design, research instruments, construct instruments, data processing, and data analysis in order to collect appropriate and relevant data for this study.

## 3.1 Research Design

The purpose of this study is to develop a feasible model for understanding how beliefs, attitude can influence the intention of gamers on eSports tournament. As the developed hypotheses identify important constructs and relationship between these variables, deductive reasoning is applied in this study for the aims at testing a set of hypotheses using a relevant methodology (Janiszewski & Osselaer, 2021). Quantitative method employs a descriptive research approach is considered as the most appropriate method for this study. The purposes is to validate the relationships and to establish generalisations that contribute to the theory (Villiers et al., 2019). Besides, it is reported that quantitative method allow researchers to measure the significance of the relationship between variables with statistical prove (Villiers et al., 2019). In

addition, the research design is categorised as cross-sectional research design (Jordan & Troth, 2019). It is applied to receive or collect information on a specific circumstances at a single point in time (Jordan & Troth, 2019). In this study, the data was collected from the respondents at one point in time and analysed with numerical data or statistical results by using SmartPLS software. Besides, the validity and reliability of the variables will be examined.

### 3.2 Data Collection Methods

Primary data collection approach was applied in this study to collect useful information. This method allows the researcher to obtain the latest data or information from the target respondents and make sure that the data is up-to-date to current situation (Franzitta et al., 2020). This study proposes specific research questions and hypotheses concerning the relationship between service mechanisms, gratification and perception and intention of gamers toward eSports. Hence, primary data is critical as it generates specific information to this research with the purpose of verifying the developed hypotheses.

Primary data was collected using a self-administered questionnaire from the target respondents (Braun et al., 2021). By doing this, it is able to ensure that the study is free from interviewer bias (Braun et al., 2021). Besides, it is an effective and efficient method in reaching target respondents (Braun et al., 2021). In addition, adequate time was given to the respondents to complete the questionnaire. Furthermore, this method allows large sample size to be collected which make the results more dependable and reliable (Tran & Khuc, 2021).

## 3.3 Sampling Design

### 3.3.1 Population of Study

The targeted population was the students who are in their tertiary education and they are now engaging to video game activities. This population was chosen because according to Pew Internet Research, there are 70 percent of college students are playing video games (Weaver, 2019). Furthermore, a huge number of eSports enthusiasts are university students (Zamri, 2019b). In addition, eSports are popular among adolescents and younger demographic especially individuals with college-age between 21 to 35 years old (Keiper et al., 2017). As a result, university students serve as a critical criterion in the field of eSports as they are mature in mind and able to provide reliable information regarding the eSports in Malaysia.

### 3.3.2 Sampling Location

The sampling locations of this study included nine states of Malaysia, consisting of Pulau Pinang, Pahang, Perak, Kuala Lumpur, Selangor, Melaka, Johor, Sabah and Sarawak. This is because there are universities that offer video game club and society for students in the respective states. Table 6 shows the summary of number of universities (with video game clubs and societies) located in each state of Malaysia.

**Table 6: Number of Universities in Each State of Malaysia**

| States of Malaysia | Number of University |
|---|---|
| Johor | 2 |
| Kuala Lumpur | 5 |
| Melaka | 4 |
| Pahang | 2 |
| Perak | 2 |
| Pulau Pinang | 1 |
| Sabah | 1 |
| Sarawak | 2 |
| Selangor | 13 |

### 3.3.3 Sampling Frame

This study focused on the university students who are currently in their higher education in the university and are currently a member of video game clubs and societies. Table 7 shows the list of universities with video game clubs and societies and its locations.

**Table 7: List of Universities, Clubs and Societies, and Locations**

| No. | University | Club and Society | Location |
|---|---|---|---|
| 1. | University of Southampton Malaysia Campus | USMC Esports Club | Johor |
| 2. | Universiti Tun Hussein Onn (UTHM) | UTHM Esports Club | Johor |
| 3 | Asia Pacific University (APU) | APU Esports Club | Kuala Lumpur |
| 4. | INTI International College Kuala Lumpur | INTI KL Esports Club | Kuala Lumpur |
| 5. | UCSI University Malaysia | UCSI Reborn Esport Club | Kuala Lumpur |
| 6. | Universiti Kuala Lumpur (UniKL) | UniKL Esports Club | Kuala Lumpur |
| 7. | Universiti Tun Abdul Razak | Unirazak Esports Club | Kuala Lumpur |
| 8. | Multimedia University Melaka (MMU Melaka) | E-Games Club | Melaka |
| 9. | Politeknik Merlimau Melaka | Poly Merlimau Esports Club | Melaka |

| | | | |
|---|---|---|---|
| 10. | UiTM Melaka | UiTM Melaka Esports Club | Melaka |
| 11. | Universiti Teknikal Malaysia Melaka (UTeM) | UTem Gamers Society | Melaka |
| 12. | Politeknik METrO Kuantan (PMKU) | Kelab E-sukan PMKU | Pahang |
| 13. | Universiti Islam Antarabangsa Malaysia (IIUM) | IIUM Esports Club | Pahang |
| 14. | Universiti Pendidikan Sultan Idris (UPSI) | UPSI Esports Club | Perak |
| 15. | Universiti Tunku Abdul Rahman (Kampar) | UTAR Kampar Esports & Game Development Club (UKEC) | Perak |
| 16. | KDU University College | KDU Esports Club | Pulau Pinang |
| 17. | Universiti Malaysia Sabah | UMS Esports Club | Sabah |
| 18. | Curtin University Malaysia (Curtin Malaysia) | Curtin Esports Club | Sarawak |
| 19. | Universiti Malaysia Sarawak (Unimas) | UNIMAS Esports | Sarawak |
| 20. | City University | City University Esports Club | Selangor |
| 21. | Kolej Universiti Poly-Tech MARA | KUPTM Esports Club | Selangor |
| 22. | INTI International University & Colleges | INTI Esports Club | Selangor |
| 23. | Management and Science University (MSU) | MSU Esports Club | Selangor |
| 24. | Monash University Malaysia | Monash Esports Club | Selangor |
| 25. | Multimedia University Cyberjaya (MMU Cyberjaya) | MMU Esports Club | Selangor |
| 26. | Universiti Kebangsaan Malaysia (UKM) | UKM Esports Club | Selangor |
| 27. | Universiti Selangor (UNISEL) | UNISEL E-Sports Club – UEC | Selangor |
| 28. | Universiti Tenaga Nasional (UNITEN) | UNITEN Esport Club | Selangor |
| 29. | Universiti Tunku Abdul Rahman (Sungai Long) | UTAR Esports & Game Dev Club (Sungai Long Campus) | Selangor |
| 30. | SEGi University | Gamers Alliance SEGi | Selangor |
| 31. | Sunway University and Sunway College | Sunway Esports Club | Selangor |
| 32. | Taylor's University (Lakeside Campus) | Taylor's University Esports Club | Selangor |

**Source: Jho (2018)**

### 3.3.4 Sampling Element

The sampling elements of this research were the students who are currently have joined the university video game clubs and societies in Malaysia. The respondents were selected randomly from the target universities, and the respondents were targeted because majority of gamers are between 18 to 35 years old and their educational level is consistent with the relevant literature (Molinillo et al., 2018; Rudolf et al., 2020; Sjöblom et al., 2019).

### 3.3.5 Sampling Technique

A probability sampling technique were considered an appropriate method for this study. This is due to the fact that university students who are currently participating in video game club and society have possess gaming knowledge which has an equal chance of being chosen in the sample. Further, a simple random sampling method was employed in this study. All the university with video game clubs and societies and its location were identified. Sample was selected randomly from these universities. After that, questionnaires were distributed to the target respondents using google form through online survey from social media platform such as the Facebook page of targeted university video game clubs and societies. The sample was selected using random number table or a computer program. Several screening questions were asked concerning eSports activity, for instance, membership in video game clubs and societies, gamers activity level and participation in eSports tournament. These

characteristics help to identify potential eSports gamers who may have the intention to participate in eSports tournaments.

### 3.3.6 Sampling Size

The sample size of this study is calculated by using G-Power 3.1.9.2 software presented by Faul et al. (2009). Based on Cohen (1992), the current study follows the suggestion of Cohen (1992) in fixing the power at 0.80 which is a convention proposed for general measurement. According to the past studies in the field of computer in human behaviour, (Brailovskaia et al., 2020; Kim & Jae, 2019; Tang & Zhang, 2018) who determine the sample size by using G-Power software, the same Alpha level of 0.05 and the power of 0.80 was applied in their research, but with dissimilar effect size and number of predictors.

The effect size comprised of small, medium and large which are $f^2$= 0.02, 0.15, and 0.35 respectively. Cohen proposed that medium effect size which is $f^2$=0.15 is appropriate as it would be able to roughly measure the average amount of observed effects in the variation of 122 fields. Cohen (1992) further argues that a medium effect size able to obtain the result that would likely be "visible to the naked eye of a careful observer"

Hence, by calculating the sample size based on the above suggestions, the current study used the effect size, d= 0.15, $\alpha$ = 0.05 and Power = 0.80, the minimum sample size is 92 (n=92). A total of 550 questionnaires were disseminated to the targeted respondents for this study. According to Hill (1998),

a sample of 500 reassures that sample error will not be more than 10% of standard deviation, about 98% of the time.

## 3.4 Research Instruments

### 3.4.1 Pre-test

Pre-test was carried out in this study before the pilot study. The aim of carry out pre-test is to make sure that the surveys is well-designed and understandable by all the respondents. Pre-test involved four experts which consisted of professional eSports gamers who possess good gaming experience in eSports and academicians who are knowledgeable in the field of computer in human behaviour research. During pretest, questionnaires were distributed to the respondents and the respondents provided their answers and comments on the survey questionnaires. Overall, the feedback from the respondents was satisfied and the questionnaire was used for full data collection. The respondents' information was kept private and not revealed to the public.

### 3.4.2 Pilot Study

A pilot test was carried out after completion of pre-test. The questionnaire will be corrected and edited based on the results of pilot study. The reason of conducting pilot test is that it might give preliminary warning about which research questions could fail, whether the research instructions are followed, and to ensure that the survey methods or instruments are appropriate and simplified (Teijlingen & Hundley, 2014). A total number of 30 sets of

questionnaires were sufficient to conduct a pilot study (Jeanne et al., 2022; Shorey et al., 2021). After that, the data collected for pilot test were tested in terms of reliability and validity by using SmartPLS software and analysed further.

The survey questionnaire was distributed to 30 respondents for the purpose of pilot-test. Based on the results as illustrated in Table 8, the Cronbach' Alpha analysis showed that all of the variables were considered good level of reliability. For the analysis of Composite Reliability, all the variables resulted an acceptable range in which the values were greater than 0.7. While for the analysis of Average Variance Extracted (AVE), all the variables showed good AVE which exceeded the value of 0.5.

**Table 8: Results of Pilot Test**

| Construct | Cronbach's Alpha | Composite Reliability (CR) | AVE |
|---|---|---|---|
| Service mechanisms | 0.796 | 0.844 | 0.644 |
| Gratification | 0.871 | 0.884 | 0.718 |
| Perceived usefulness | 0.910 | 0.936 | 0.787 |
| Perceived ease of use | 0.826 | 0.877 | 0.588 |
| Attitude | 0.790 | 0.856 | 0.545 |
| Intention | 0.867 | 0.909 | 0.715 |

### 3.5 Survey Administration

The online survey form was sent to the video game clubs and societies members via email from July 2020 to April 2021. The first step of the data collection was to obtained a permission from the leader or chairperson of the

video game clubs and societies through sending mail to their Facebook page and email address. However, out of 32 universities or colleges, there were only 25 universities or colleges replied. The data collection process was continued after the permission is obtained. The leader or chairperson of eSports clubs and societies were then distributed questionnaires to their group members who are also joining the respective clubs and societies. The next step was to updating the progress of completing the survey from time to time. After filtering process, there were only 453 responses were found to be usable for further data analysis.

### 3.6 Construct Instrument

#### 3.6.1 Origin of Construct

A structural self-administered questionnaire was designed by adapting the items from past studies to ensure content validity. There are nine items each for service mechanisms and gratification. The items used to measure service mechanisms and gratification were adapted from Wu et al. (2010). Services mechanisms were measured in terms of incentives, security, and fairness. As for gratification, the construct will be measured in terms of social presence, enjoyment, and social interaction.

The constructs of perceived usefulness were adopted from Davis (1989) and Hsu and Lu (2004); perceived ease of use were adopted from Chen et al. (2017), Davis (1989) and San-martín et al. (2020); attitude from Chen et al. (2017) and Huang (2018); and intention from Lee (2009**),** Lima et al. (2017) and Pantouw and Aruan (2019). Table 9 to Table 14 shows the construct origin for

all variables that were consisted in this study and their corresponding items. A full set of questionnaires is attached in Appendix E.

**Table 9: The Origin Construct of Service Mechanisms and the Corresponding Items**

| Factors | Corresponding items | Item sources |
|---|---|---|
| **Incentive** | The game service provider offers incentives for continued play. | (Wu et al., 2010) |
| | I get rewarded for my continued participation. | (Wu et al., 2010) |
| **Security** | I feel the game service provider can offer the security on data transformation. | (Wu et al., 2010) |
| | I feel the game service provider can protect the gamers' privacy. | (Wu et al., 2010) |
| | When playing the video game, I feel the internet connection is of good quality and stable. | (Wu et al., 2010) |
| **Fairness** | If a vital problem occurs, the game service provider in charge will compensate the loss. | (Wu et al., 2010) |
| | While playing the video game, I assume the rewards given meet the efforts I put into. | (Wu et al., 2010) |
| | The game service provider will penalise the gamers who use cheating program. | (Wu et al., 2010) |

**Source: developed for the research**

**Table 10: The Origin Construct of Gratification and the Corresponding Items**

| Factors | Corresponding items | Item sources |
|---|---|---|
| **Social Presence** | When interact with other video gamers, I am able to show what kind of person I really am. | (Wu et al., 2010) |
| | I trust that other video gamers will assist me if I need help. | (Wu et al., 2010) |
| | When I see that other gamer are confused, I offer help. | (Wu et al., 2010) |
| **Enjoyment** | Playing the video game is exciting. | (Wu et al., 2010) |
| | Playing the video game gives me lots of pleasure. | (Wu et al., 2010) |
| | I enjoy playing the video game. | (Wu et al., 2010) |
| **Social Interaction** | My video gaming friends understand me better than other people. | (Wu et al., 2010) |
| | I open up more to people involved in playing video game. | (Wu et al., 2010) |
| | Going for video game has make it easier for me to make friends. | (Wu et al., 2010) |

**Source: Developed for the research**

**Table 11: The Origin Construct of Perceived Usefulness and the Corresponding Items**

| No | Corresponding items | Item sources |
|---|---|---|
| The purpose of playing video games include enjoyment, making friends, having fun and etc. In your opinion, video game is useful because: | | |
| **1** | It enables me to accomplish the purpose of playing game more quickly. | (Hsu & Lu, 2004) |
| **2** | It enables me to fulfil the purpose of playing game effectively. | (Hsu & Lu, 2004) |
| **3** | It enables me to satisfy the purpose of playing game easier. | (Hsu & Lu, 2004) |
| **4** | It assists me when I feel stress and or have problem. | (Davis, 1989) |

**Source: Developed for the research**

**Table 12: The Origin Construct of Perceived Ease of Use and the Corresponding Items**

| No | Corresponding items | Item sources |
|---|---|---|
| **1** | Learning to play video games is easy for me. | (Davis, 1989) |
| **2** | It is easy for me to become skilful in video games. | (Davis, 1989) |
| **3** | I know how to solve most of the gaming problems that arise during playing. | (San-martín et al., 2020) |
| **4** | It is easy for me to master the video games. | (Chen et al., 2017) |
| **5** | My interaction on video game is clear and understandable. | (Davis, 1989) |

**Source: Developed for the research**

**Table 13: The Origin Construct of Attitude and the Corresponding Items**

| No | Corresponding items | Item sources |
|---|---|---|
| **1** | I am interested in video game. | (Huang, 2018) |
| **2** | I feel good about video game. | (Chen et al., 2017) |
| **3** | I feel pleasant when playing video games. | (Lai & Li, 2005) |
| **4** | Video game is a good leisure activity. | (Chen et al., 2017) |
| **5** | Overall, my attitude towards video gaming is favourable. | (Lai & Li, 2005) |

**Source: Developed for the research**

**Table 14: The Origin Construct of Intention to Participate eSports and the Corresponding Items**

| No | Corresponding items | Item sources |
|---|---|---|
| **1** | I intend to take part in eSports for the near future. | (Lima et al., 2017) |
| **2** | I plan to participate in eSports actively. | (Lima et al., 2017) |

| | | |
|---|---|---|
| **3** | I believe I will participate in eSports with my team member. | (Pantouw & Aruan, 2019) |
| **4** | I am willing to recommend others to participate in eSports. | (Lee, 2009) |

**Source: Developed for the research**

### 3.6.2 Scale of Measurement

Based on Sekaran & Bougie (2010), scale of measurement is refer as a instrument or tool that use to measure the variable by classifying and quantifying the variables. Specifically, scale of measurement is divided into three types which are nominal scale, ordinal scale and interval scale.

#### 3.6.2.1 Nominal Scale

Nominal scale is a system of allocating number symbols to events for the purpose of labelling them. The allocation of number cannot be recognised with an ordered scale. Instead, it is just a convenient label for particular events and do not have quantitative value. Nominal scales offer convenient methods of identifying people, objects and events (Schreiber, 2021). The level of measurement of nominal scale is not strong as its result has no order or distance relationship and without the basis of arithmetic (Schreiber, 2021). In this study, nominal scale is used to identify the gender, races, profession, marital status, types of video game playing, places of playing video game, and network connection. An example of nominal scale in current study is shown in Figure 11:

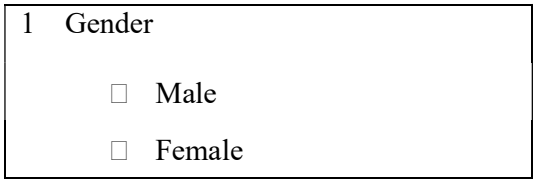



**Figure 11: Example of Nominal Scale**

### 3.6.2.2 Ordinal Scale

Normally, ordinal scale is used when the level of ordered scale is the lowest (Arvidsson, 2019). It places the objects or events in order, but do not make the intervals of the scale identical based on some rule (Schreiber, 2021). Besides, ordinal scales involve rank orders and are often applied in study relating to qualitative nature (Anjana & Prasad, 2021). As such, the application of ordinal scale indicates a word of 'more than', 'less than', or 'equal' whereas the people are not able to know how much larger or smaller. In this study, ordinal scale was used to determine the educational level and age group. A sample of ordinal scale of this study is shown in Figure 12:

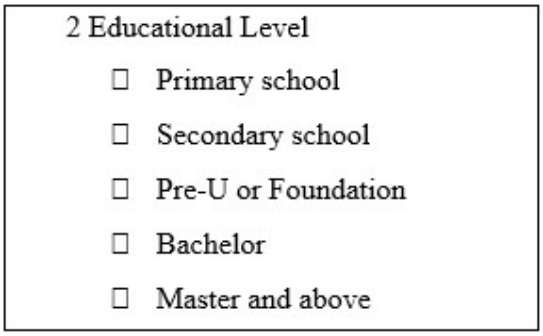



**Figure 12: Example of Ordinal Scale**

### 3.6.2.3 Interval Scale

Interval scale includes both nominal and ordinal characteristics (Bhandari, 2022). Interval scales can possess an arbitrary zero, but do not have an exact confirmation or determination of what may be described an absolute zero or the unique origin (Anjana & Prasad, 2021). In this study, the interval scale of the instrument items was used and measured by using five-point Likert scale (Boone & Boone, 2012) with one representing strongly disagree (1=SD), two for disagree (2=D), three for neutral (3=N), four for agree (4=A), and 5 for strongly agree (5=SA). Bouranta & Chitiris (2009) suggested that using five-point Likert scale seems to be less confusing and can improve response rate. Likewise, Verma & Sachdev (2004) acknowledged that a five-point Likert scale has been most suggested by the researchers as it would reduce the level of frustration of the respondents and thus enhance the response rate and quality. An example of interval scale is shown in Figure 13:

| Strongly Disagree (SD) | Disagree (D) | Neutral (N) | Agree (A) | Strongly Agree (SA) |
|---|---|---|---|---|
| 1 | **2** | **3** | **4** | **5** |

| No. | | SD | D | N | A | SA |
|---|---|---|---|---|---|---|
| 1 | The game service provider offers incentives for continued play. | 1 | 2 | 3 | 4 | 5 |

**Figure 13: Example of Interval Scale**

## 3.7 Data Processing

First step of data processing is to structure and prepare of data for analysis (Lester et al., 2020). Specifically, data processing includes several procedures, involving data checking, editing, coding, and transcribing form collected data (Ismudianto & Haryanto, 2019). To overcome the issue of missing data, deletion approach were applied (Emmanuel et al., 2021). Data cleaning serve as an important part of pre-processing step which can be used to reduce inconsistencies, missing value and its problem (Mneimneh et al., 2021). Ignoring techniques are widely applied and tend to be default techniques for overcome the problem of missing data (Houari et al., 2014).

### 3.7.1 Data Checking

Data checking is essential and it assure that the scholars to make adjustment and amendment on the questionnaire before it can be fully carried out. The blunder that identified were adjusted after carried out pilot test.

### 3.7.2 Data Editing

Data editing is a critical procedure to ensure the information is accurate, complete, consistence and achieve the best level of quality before coding and assign to storage (Zikmund et al., 2010). Through editing the figures, survey questions with ambiguous responds or ignored by the respondents were removed.

The usable data were kept for further coding process in order to confirm the reliability of the research.

### 3.7.3 Data Coding

Data coding defines as number allocation to responses of target respondents before proceeding into database (Sekaran & Bougie, 2010).

### 3.7.4 Data Transcribing

Data transcribing will be the last procedure in processing the data. Under this stage, the usable data were coded and then transfer into SmartPLS software. SmartPLS software is employed to produce the results for analysis. The aim of employing SmartPLS software is to conduct data analysis and arithmetical test in order to generate more reliable outcomes concerning the objective of this study.

## 3.8 Data Analysis

In this study, PLS-SEM (Partial Least Square – Structural Equation Modelling) was employed to analyse the data obtained and evaluate on measurement model and structural model. This method is applied because it can be used when the sample size is small and when the models are extremely complex (Sarstedt et al., 2017). Furthermore, PLS-SEM is broadly recognised for its remarkable advantages in behavioural research (Yazdi et al., 2017) as well

as assists in understanding the relationship among sets of observed variables (Yazdi et al., 2017).

Furthermore, based on the prior researches of Coltman et al. (2008) and Burke et al. (2003) on the study of reflective and formative measurement models, the constructs in this study were regarded as reflective indicator model. This is because the direction of causality is pointed from the constructs to the measures. Besides, the changes in construct are subjected the alteration in the indicators which mean the indicators share a common meaning and are interchangeable. Thus, a reflective model was used in this study.

Moreover, the validity of measurement model was tested using bootstrapping method and the structural model was tested using PLS algorithm method (Anderson & Gerbing, 1988; Chin, 2010). For the purpose of validating the measurement model, the validity and reliability were examined. Moreover, for the assessment of structural model, the goodness of fit ($R^2$), path coefficients and t-statistics were examined.

### 3.8.1 Measurement Model Evaluation

Convergent and discriminant validity were tested in order to evaluate the measurement model. Convergent validity is defined as "the degree to which multiple items to measure the same concept is in agreement"(Amin et al., 2016).

In assessing the convergent validity, factor loadings, average variances extracted (AVE) and composite reliability (CR) were examined (Sarstedt et al., 2017). The minimum value of factor loadings must be 0.70, AVE must be 0.5, and CR must be 0.70 (Sarstedt et al., 2017). However, item with factor loadings within 0.400 to 0.707 will not be eliminated if the AVE value of specific construct is exceeding the minimum threshold value of 0.5 (Sarstedt et al., 2017).

Furthermore, discriminant validity was tested to assure that each underlying construct differed from each other within the identical measurement model (Sarstedt et al., 2017). discriminant validity was tested by contrasting the square root of the AVE and the correlations between constructs (Fornell & Larcker, 1981). The discriminant validity was achieved when the square root of AVE of each latent construct exceeds the correlation value in the same row and column.

### 3.8.2 Structural Model Equation

The structural model explains the relationship between constructs or latent variables that are hypothesised in the research model (Sarstedt et al., 2017). The goodness of fit ($R^2$), beta and t-statistic values were tested to investigate the structural model (Sarstedt et al., 2017). Both $R^2$ and the path coefficients showed how well the hypothesised model is supported by the data (Sarstedt et al., 2017). in addition, the significance of each hypothesis was examined by using effect size ($f^2$) (Sarstedt et al., 2017). Table 15 shows three levels of effect size ($f^2$) (Cohen, 1988).

**Table 15: Levels of Effect Size ($f^2$)**

| Levels of effect size | $f^2$ |
|---|---|
| Large | 0.35 |
| Medium | 0.15 |
| Small | 0.02 |

**Source: Cohen (1988)**

## 3.9 Ethical Consideration

Before initiating the research, the application of ethical clearance from UTAR Scientific and Ethical Review Committee (SERC) was made to assure that the research is carried out in a responsible and ethically way to human or animal subjects. Moreover, before distributing questionnaire to the target respondents, the respondents was informed by the researcher about the purpose of this study and its contribution to eSports industry in Malaysia. During the process of data collection, the researcher was provided a clear explanation about the purpose of this research and obtain their agreement in participating this survey. Further, the personal information of the respondents was protected and the privacy and confidentiality of the questionnaire was informed to the respondents as well.

## 3.10 Chapter Summary

In conclusion, primary data was used to obtain relevant information. Besides, sampling designed and construct of measurement were discussed in this chapter and the questionnaires will be distributed to the respondents. Before the

pilot test is conducted to test the reliability between variables, pre-test will be conducted in order to ensure that the questionnaires are well-designed.

# CHAPTER FOUR

# DATA ANALYSIS

## 4.0 Introduction

This chapter shows the respondent profiles which included the gender, race, educational level, year of study, field of study, video game playing experience and frequency of video game playing time. Besides, the results based on the evaluation of measurement model and structural model were also presented in this chapter.

## 4.1 Response Rate

A total of 550 questionnaires were distributed through mail and online messaging to the university or college eSports clubs and societies. Out of the 550 questionnaires distributed to the clubs and societies, there were only 514 collected. The response rate for the study was about 93.45%. The response rate is deemed to be sufficient for the study as it was more than minimum value of 30% which suggested by Sekaran and Bougie (2016).

The questionnaires were then filtered based on certain criteria, such as missing value and repeated answer. After the filtering process, there were only 453 usable responses. This sample size deems to be appropriated as it exceeds

the minimum required sample size of 92 based on the calculation of G-Power 3.1.9.2 software with the effect size $f^2$=0.15, α = 0.05 and Power = 0.80. Furthermore, this study also fulfilled the general rules of thumb in determining the sample size proposed by Bujang et al. (2018), on which the appropriate sample size for most research is larger than 30 and less than 500. Hence, the sample size of 453 is appropriate. The results of the analysis were computed using SmartPLS software version 3.3.3.

## 4.2 Demographic Profiles of the Respondents

The demographic profiles of the respondents were analysed and summarised in the forms of tables and charts as shown in Table 16. Firstly, the gender information indicated 376 respondents or 83% of the total respondents were male while female recorded for the remaining 77 female respondents or 17%. The respondents involved in this study indicated a gender unbalanced. This may be due to the underrepresented of female video gamers in video game industry which cause the disproportion between them (Xuejing et al., 2022). Besides, for the respondents' ethnic group, majority of the respondents were Chinese which involved 208 or 45.91% respondents. The following was Malay which amounted 158 or 34.88%. The third category was Indian at 63 or 13.91% respondents. Lastly, other type of ethnic group was 24 or 5.30%.

In addition, in term of educational level, majority of the respondents were Undergraduate at 353 or 77.92%. The following was Foundation which records 61 or 13.47%, Master degree at 24 or 5.30%, and Doctorate degree at 15 or

3.31%. While for the year of study, the largest portion of target respondents were Second Year with the number of 171 or 37.75%. The second was First Year student at 167 or 36.86%. The smallest was Third Year students which record 115 or 25.39% of respondents. Additionally, most of the respondents were from the field of Computing and Information Technology (IT) with the number of 146 or 32.23%. The second largest was Arts and Design at 108 or 23.84%. The third was Business and Finance at 97 or 21.41%. The follow was Other field of study at 58 or 12.80%, Engineering and Engineering Trades at 13 or 2.87%, Science (Life Science/Physical Science/Applied Science) at 10 or 2.21%, Communication and Broadcasting at 9 or 1.99%, Law at 8 or 1.77%, and the lesser was Agriculture, Forestry, Fishery, and Veterinary which amounted 4 or 0.88%.

Based on video game playing experience of the respondents, the majority of respondents had over 7 years of video game playing experience which recorded 244 or 53.86% respondents. The second was 6-7 years at 137 or 30.24%. The third was 4-5 years at 72 or 15.89%. In term of frequency of video game playing time, most of the respondents play video game for more than 20 times a week which recorded 304 or 67.11% respondents. Second was 16-20 times a week at 124 or 27.37%. The third was 11-15 times a week at 25 or 5.52%. However, the target respondents or the gamers does possess a game habit that the frequency of their game playing time is not less than 10 times a week.

**Table 16: Demographic Profiles of the Respondents**

| Variable | Classification | Frequency | Percentage |
|---|---|---|---|
| Gender | Male | 376 | 83% |
| | Female | 77 | 17% |
| Race | Chinese | 208 | 45.91% |
| | Malay | 158 | 34.88% |
| | Indian | 63 | 13.91% |
| | Other | 24 | 5.30% |
| Educational Level | Foundation | 61 | 13.47% |
| | Undergraduate | 353 | 77.92% |
| | Master's degree | 24 | 5.30% |
| | Doctorate degree | 15 | 3.31% |
| Year of Study | First Year | 167 | 36.86% |
| | Second Year | 171 | 37.75% |
| | Third Year | 115 | 25.39% |
| Field of Study | Agriculture, Forestry, Fishery, and Veterinary | 4 | 0.88% |
| | Arts and Design | 108 | 23.84% |
| | Business and Finance | 97 | 21.41% |
| | Communication and Broadcasting | 9 | 1.99% |
| | Computing and Information Technology (IT) | 146 | 32.23% |
| | Engineering and Engineering Trades | 13 | 2.87% |
| | Law | 8 | 1.77% |
| | Science (Life Science/Physical Science/Applied Science) | 10 | 2.21% |
| | Other | 58 | 12.80% |
| Video game playing experience | 4-5 years | 72 | 15.89% |
| | 6-7 years | 137 | 30.24% |
| | More than 7 years | 244 | 53.86% |
| Frequency of video game playing time | 11-15 times a week | 25 | 5.52% |
| | 16-20 times a week | 124 | 27.37% |
| | More than 20 times a week | 304 | 67.11% |

## 4.3 Data Analysis and Results

The data is analysed using the Partial Least Square Structural Equation Modelling (PLS-SEM). The reasons why PLS-SEM is chosen because the analysis is focused on investigating theoretical framework from a prediction perspective, the structural model is complicated and involves many constructs and variables, objective of the study is to clarify increasing complexity with the extension of existing theories, the path model involves reflectively examined constructs, the study is based on secondary data, and study requires latent variable scores for time-to-time analyses (Hair et al., 2019).

### 4.3.1 Evaluation of Measurement Model

In evaluating the reliability of the constructs, convergent validity, discriminant validity, and reliability of multiple-item scales are to be analysed in this study.

#### 4.3.1.1 Convergent Validity

Convergent validity is the degree to which the construct converges to justify the items' variance. The factor loadings of each item and average variance extracted (AVE) are used as the matrices for assessing the convergent validity of each construct. In term of factor loadings, the acceptable range is 0.70 and above. While an acceptable range for AVE is 0.50 or higher meaning that the construct illustrates at least 50 per cent of the variances. Based on Table 17, the

factor loadings of all items are larger than the minimum threshold which is 0.70 and also reached the recommended threshold AVE value of 0.50. Hence, all the questions were still remained in this study.

Additionally, reliability of the constructs was evaluated based on Composite Reliability (CR). Composite Reliability (CR) is defined as "the degree to which items are free from random error and hence generate consistent result". Generally, high value of CR indicates higher level of reliability. Based on Table 17, the CR of all items are larger than the recommended cut-off value of 0.70. Therefore, convergent validity is acceptable in this study.

**Table 17: Assessment of Convergent Validity**

| Constructs | Item | Factor Loading | Average Variance Extracted (AVE) | Composite Reliability (CR) |
|---|---|---|---|---|
| Incentives | INC1 | 0.897 | 0.802 | 0.890 |
| | INC2 | 0.894 | | |
| Security | SEC1 | 0.836 | 0.681 | 0.865 |
| | SEC2 | 0.863 | | |
| | SEC3 | 0.775 | | |
| Fairness | FRS1 | 0.752 | 0.611 | 0.825 |
| | FRS2 | 0.812 | | |
| | FRS3 | 0.779 | | |
| Social Presence | SOP1 | 0.814 | 0.652 | 0.849 |
| | SOP2 | 0.790 | | |
| | SOP3 | 0.818 | | |
| Enjoyment | ENJ1 | 0.879 | 0.758 | 0.904 |
| | ENJ2 | 0.846 | | |
| | ENJ3 | 0.887 | | |
| Social Interaction | SOI1 | 0.831 | 0.739 | 0.895 |
| | SOI2 | 0.876 | | |
| | SOI3 | 0.871 | | |
| Perceived Usefulness | PUS1 | 0.878 | 0.769 | 0.930 |
| | PUS2 | 0.893 | | |
| | PUS3 | 0.890 | | |

| | | | | |
|---|---|---|---|---|
| | PUS4 | 0.846 | | |
| Perceived Ease of Use | PEU1 | 0.813 | 0.668 | 0.909 |
| | PEU2 | 0.761 | | |
| | PEU3 | 0.815 | | |
| | PEU4 | 0.861 | | |
| | PEU5 | 0.833 | | |
| Attitude | ATT1 | 0.795 | 0.619 | 0.890 |
| | ATT2 | 0.807 | | |
| | ATT3 | 0.794 | | |
| | ATT4 | 0.747 | | |
| | ATT5 | 0.789 | | |
| Intention to Participate | INT1 | 0.864 | 0.738 | 0.918 |
| | INT2 | 0.860 | | |
| | INT3 | 0.875 | | |
| | INT4 | 0.837 | | |

**Note: INC = Incentives; SEC = Security; FRS = Fairness; SOP = Social Presence; ENJ = Enjoyment; SOI = Social Interaction; PUS = Perceived Usefulness; PEU = Perceived Ease of Use; ATT = Attitude; INT = Intention to Participate**

#### 4.3.1.2 Discriminant Validity

In term of discriminant validity, it is defined as "the extent to which a construct is empirically distinct from other constructs in the structural model". As a metric for the discriminant validity, Heterotrait-Monotrait (HTMT) ratio which proposed by Henseler et al. (2015) defined as "the mean value of the item correlations across constructs relative to the mean of the average correlations for the items measuring the same construct". Henseler et al. (2015) suggested a threshold value above 0.90 is considered high and discriminant validity is not present. Based on Table 18, the HTMT ratio resulted none of the constructs are higher than 0.90. Hence, the discriminant validity is present in this study.

**Table 18: Discriminant Validity - Heterotrait-Monotrait Ratio (HTMT)**

| Constructs | SM | GRA | PUS | PEU | ATT | INT |
|---|---|---|---|---|---|---|
| SM | | | | | | |
| GRA | 0.737 | | | | | |
| PUS | 0.557 | 0.768 | | | | |
| PEU | 0.397 | 0.535 | 0.572 | | | |
| ATT | 0.449 | 0.466 | 0.470 | 0.722 | | |
| INT | 0.387 | 0.484 | 0.465 | 0.624 | 0.699 | |

**Note: SM = Service Mechanisms; GRA = Gratification; PUS = Perceived Usefulness; PEU = Perceived Ease of Use; ATT = Attitude; INT = Intention to Participate**

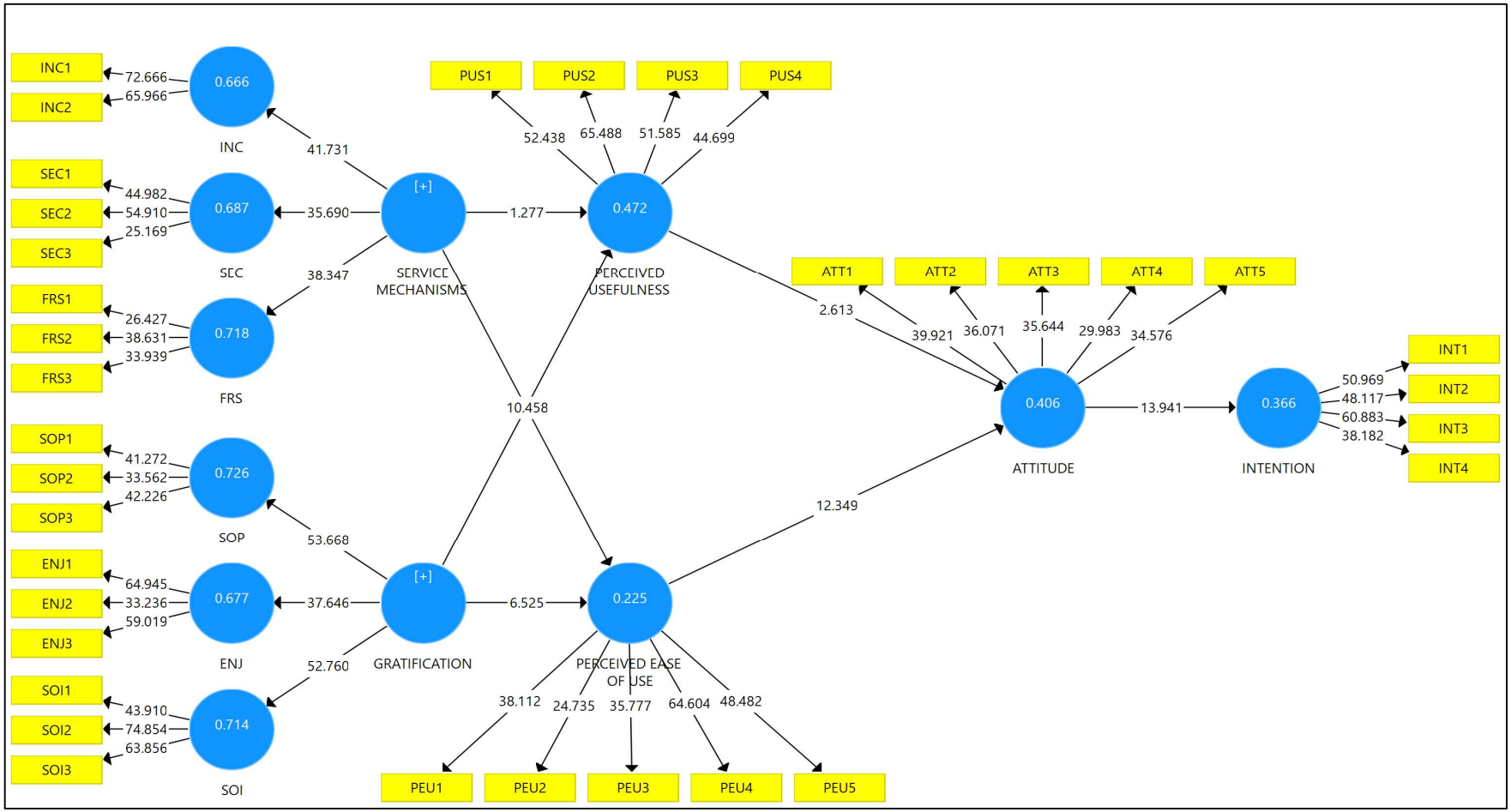



**Figure 14: Structural Model of The Research**

### 4.3.2 Evaluation of Structural Model

The association among constructs and latent variables were analysed by the assessment of structural model (Work et al., 2014). Bootstrapping analysis with 5000 resamples is used to explain the structural model. Figure 14 indicates the structural model of this research.

#### 4.3.2.1 Multicollinearity Analysis

In this study, a full collinearity assessment was carried out to investigate the existence of common method bias (CMB). A VIF that larger than the threshold value of 3.3 indicated that the model was affected by common method bias (Kock, 2015). Table 19 shows that the VIF for each construct are less than the minimum threshold value of 3.3 which range from 1.000 to 1.660. Hence, the latent constructs were free from common method bias.

**Table 19: Collinearity for Latent Constructs**

| | VIF INC | VIF ATT | VIF PUS | VIF PEU |
|---|---|---|---|---|
| PUS | | 1.348 | | |
| PEU | | 1.348 | | |
| ATT | 1.000 | | | |
| GRA | | | 1.660 | 1.660 |
| SM | | | 1.660 | 1.660 |

**Note: PUS = Perceived Usefulness; PEU = Perceived Ease of Use; ATT = Attitude; INT = Intention to Participate**

#### 4.3.2.2 Result of Direct Hypotheses

PLS-SEM was applied in this research to evaluate the direct hypotheses. Based on the results from Table 20, gratification have a positive impact on both perceived usefulness (β = 0.625; $p < 0.01$) and perceived ease of use (β = 0.425; $p < 0.01$). Perceived usefulness (β = 0.123; $p < 0.01$) and perceived ease of use (β = 0.565; $p < 0.01$) are significantly related to attitude. Attitude also have positive impact on intention to participate (β = 0.410; $p < 0.01$). However, service mechanisms are not significantly associated to perceived usefulness (β = 0.094; $p > 0.05$) and perceived ease of use (β = 0.074; $p > 0.05$).

**Table 20: Structural Model Analysis Results**

| H | Path | Beta | Standard Error | *t* | *p* | Results | $R^2$ | $f^2$ | $Q^2$ |
|---|---|---|---|---|---|---|---|---|---|
| $H_1$ | SM > PUS | 0.094 | 0.073 | 1.293 | 0.098 | NS | 0.474 | 0.010 | 0.360 |
| $H_2$ | SM > PEU | 0.074 | 0.059 | 1.252 | 0.105 | NS | 0.226 | 0.004 | 0.149 |
| $H_3$ | GRA > PUS | 0.625 | 0.060 | 10.345 | 0.000 | S | 0.474 | 0.449 | 0.360 |
| $H_4$ | GRA>PEU | 0.425 | 0.066 | 6.466 | 0.000 | S | 0.226 | 0.141 | 0.149 |
| $H_5$ | PUS> ATT | 0.123 | 0.047 | 2.615 | 0.004 | S | 0.406 | 0.019 | 0.248 |
| $H_6$ | PEU > ATT | 0.565 | 0.046 | 12.220 | 0.000 | S | | 0.399 | |
| $H_7$ | ATT>INT | 0.410 | 0.044 | 13.804 | 0.000 | S | 0.366 | 0.577 | 0.267 |

Notes:
SM= Service Mechanisms; GRA= Gratification; PUS= Perceived Usefulness; PEU= Perceived Ease of Use; ATT= Attitude; INT= Intention; S= Supported; NS= Not Supported

#### 4.3.2.3 Mediating Effect

The mediating effects is also been evaluated by using PLS-SEM analysis. There are two indirect effect paths in this study, which are attitude mediates the relationship between perceived usefulness and perceived ease of use and intention to participate. The results of this indirect effects were indicated in Table 21.

Based on the result, perceived usefulness and intention is significantly mediated by attitude ($\beta = 0.074$; $p < 0.01$). Meanwhile, perceived ease of use and intention is also significantly mediated by the mediating role of attitude ($\beta = 0.342$; $p < 0.01$). Therefore, the statistical results are supporting H3, H4, H5, H6, H7, H8a, and H8b but rejected H1 and H2.

In addition, in term of Variance Accounted For (VAF), this study has calculated the VAF to explain the degree of mediation. Based on Table 21, the VAF value between the relationship of perceived usefulness, attitude and intention is 0.277. For the relationship between perceived ease of use, attitude and intention, the VAF value is 0.508. The rule of thumb for VAF indicated that VAF <20% considered no mediation effect, VAF between 20% to 80% considered partial mediation, and VAF>80% considered fully mediation (Putra, 2022). Hence, the result revealed that attitude partially mediated the relationship between perceived usefulness, perceived ease of use, attitude and intention.

**Table 21: Structural Model Analysis Results of Mediators**

| H | Path | Beta | Standard Error | *t* | *p* | Results | $R^2$ | $Q^2$ | VAF |
|---|---|---|---|---|---|---|---|---|---|
| H8a | PUS> ATT> INT | 0.074 | 0.030 | 2.480 | 0.007 | S | 0.366 | 0.267 | 0.277 |
| H8b | PEU>ATT>INT | 0.342 | 0.038 | 8.924 | 0.000 | S | | | 0.508 |

## 4.4 Chapter Summary

In summary, the profile of the target respondents has been analysed and summarised in the form of table and graph. Besides, the results were analysed Partial Least Square Structural Equation Modelling (PLS-SEM). Measurement model and structural model were evaluated in order to make sure that the results are reliable and analysed the relationship between constructs and latent variables.

# CHAPTER FIVE

# DISCUSSION AND CONCLUSION

## 5.0 Introduction

This chapter provided the depth discussion, implications, limitations and conclusion based on the statistical results in the previous chapter. Firstly, the explanations of major findings on the hypotheses will be provided to meet research objectives and questions. Secondly, the theoretical and managerial implications will also be provided. Last but not least, the research limitation and conclusion as well as recommendation will be presented in this chapter.

## 5.1 Discussion on Findings

### 5.1.1 To what extent does service mechanisms effect on gamer perceived usefulness and perceived ease of use of eSports.

Based on the findings, it is discovered that service mechanisms were not positively influence the perception of usefulness and ease of use. Surprisingly, the outcomes were contradict with previous literatures which suggested that technological mechanisms possess significant effects on the perceived usefulness and easiness of technology usage (Jun, Jiao, & Lin, 2020; Liu & Tang, 2018;

Rafique et al., 2020; Li et al., 2018; Hamari & Sjöblom, 2017). This may be due to the competitive nature of eSports that most of the gamers emphasised more on their gaming skills or people-computer interaction ability rather than the software and hardware which can support them during gaming activities.

In the domain of competitive video gaming, service mechanisms do not have very strong effect on the attitude and intention of a gamer to participate in eSports which distinct from other technology acceptance studies. This may be due to the experienced gamer respondents are already familiar with the gaming devices and know how to control and play the game without any difficulties. For that reason, the security and internet connectivity issues may not be the biggest concern for them to play video game as they have solved the problems and continued to improve themselves in video gaming or eSports activity. This findings were similar to the study of Mei and Aun (2019) indicated that the confidentiality of system was not positively related to users' beliefs of using technology. Besides, as there are more and more advanced devices invented and high internet speed offered by the service provider, security and internet connectivity may not be the biggest concern for them when participating in video game activities or eSports. In another point of view, the development of social media creates the convenience for the video gamers to improve their gaming skills by watching live eSports stream or gaming tutorial without any charges of money. As such, the difficulties which exists in video gaming does not appear to be the primary issue for the experienced gamers in controlling and understand the video games.

### 5.1.2 To what extent does gratification effect on gamer perceived usefulness and perceived ease of use of eSports?

Based on the results, the gratification has a positive influence towards both the perceived usefulness and perceived ease of use of eSports. This result is consistent with previous researches which conducted by Matute-vallejo and Llull (2019); Bailey et al. (2018);Magsamen-Conrad et al. (2015) and Agrebi and Jallais (2015). This is because since eSports is group-based activity, gamers will be more intended to participate in it together with their peers or friends. In other words, playing with friends can be more enjoyable than playing alone.

Matute-vallejo and Llull (2019) asserted that when a gamer plays the game with entertainment purpose, the perception of usefulness and easiness may exist and should be considered in attitude of an individual. The authors further explained that the vital role of perceived usefulness and ease of use in improving user' attitude and intention of eSports which also been highly emphasised in this study. Besides, Magsamen-Conrad et al. (2015) discovered that users are more likely to adopt new technology when it can gratify the needs of maintaining relationship, information searching, keeping up with trend, and keeping their documents or works well-organised and easy to find and use. Moreover, Estriegana et al. (2019) mentioned that playfulness and enjoyment are vital to attract user and increase their motivation and acceptance towards certain technologies.

In the perspectives of eSports, the gamers are more intended to participate in video gaming activities when it is able to gratify their needs for enjoyment, social, and interactivity in a more effective way. Additionally, the difficulties that appears in video gaming will be less when the gamers are entertained and enjoy the process of social interaction. Thus, the perception of usefulness and ease of use of video games will depend heavily on the attributes of gratification, as gamers prefer video games to be enjoyable and sociable.

### 5.1.3 To what extent does perceived usefulness and perceived ease of use effect on gamers' attitude towards eSports participation?

The outcomes of this research indicated that the relationship between both perceived usefulness, ease of use, and attitude was positively related. The findings were consistent with the studies of Park et al. (2014); Indarsin and Ali (2017); Bendary and Al-sahouly (2018) and Estriegana et al. (2019). This is due to when the gamers gain benefits form playing video games in an easy way, their perception towards eSports will be favourable which in turn increase their intention towards eSports participation.

The results confirmed the Technology acceptance model (TAM) assumption that it specifies general determinants of gamer acceptance and thus can be used to explain and predict gamer behaviours. The results of this study is in line with the research conducted by Indarsin and Ali (2017) who indicated that productivity created by as well as easiness to use and learn the online transaction application able

to create better business creativity and positive attitude towards it. Besides, Bendary and Al-sahouly (2018) stated that social influence, recreational motivation, and convenience serve as significant factors for the perceived usefulness and ease of use of mobile commerce which will affect the attitude of an individual.

Gratification serves as a critical predictor of gamers attitude and intention towards eSports participation. The association between perceived usefulness and ease of use and attitude worked well in examining and explaining student's intention towards the latest educational technologies. In the context of eSports, increased gratification will lead to positive perception of usefulness and ease of use and consequently they will have favorable attitude and intention towards eSports participation. Hence, the findings suggest that game developers should emphasise on more enjoyable and user-friendly game features so that the gamers could gain high level of gratification.

### 5.1.4 To what extent does gamers' attitude affect their intention to participate eSports?

The data shows that Attitude a positive impact towards the gamers' intention to participate in eSports. This suggests that when a gamer have a positive perception about eSports, the intention to participate in it will be increased as well. This result is corresponding to the findings of Baptista and Oliveira (2019); Kim et al. (2019) and Sharma et al. (2021). Generally, the gamers share a common characteristic that

the positive attitude leads to the high intention in participating eSports. The results explained that the interest exist in the mind of gamers increases their willingness and intention to take part in competitive gaming activities.

In gamification field, a meta-analysis which conducted by Baptista and Oliveira (2019) found that attitude have a positive influence on the intention to use gamified technology. The authors further mentioned that the relationship between attitude and intention is considered as the most promising predictor of gamification and serious game acceptance. This result is in line with the earlier studies that the attitude-intention relationship was also been used to examine and predict the acceptance of technology and media (Ajzen, 1991; Davis et al., 1989).

In eSports context, positive attitude of a gamer towards competitive video gaming will lead to increased intention to participate eSports. Comprehensively, when a gamer feels participating in eSports tournament is valuable and beneficial, they tend to have high intention to participate in it in the future. Besides, favourable attitude of a gamers towards eSports will also lead to positive word of mouth generation between their team members and friends in eSports participation. Therefore, it is vital that the attitude or perception of a gamer should be heavily emphasised in order to increase their awareness and interest towards eSports.

### 5.1.5 How does gamers' attitude mediate the relationship between perceived usefulness, perceived ease of use intention to participate eSports?

This study confirmed the significant mediation effects of attitude between the relationship between perceived usefulness and ease of use on intention to participate in eSports. Gratification has a positive and significant effect on the gamers' intention to participate in eSports except service mechanisms. The results indicated that gamers' perception about the usefulness and ease of use of video games may affect attitude towards eSports, and that attitude will further impact gamers' intentions to participate in eSports.

The reliability of attitude as an important and significant mediation factor is confirmed. This result is consistent with Krishanan et al. (2016), Altawallbeh et al. (2015), and Bervell et al. (2020) that focus on the crucial part of attitude as a mediator among the critical beliefs of an individual and their intention to use technology. The significant role of gratification towards beliefs and positive attitude of a gamer means that the usefulness of video game to fulfil gamers' certain desires such as enjoyment and social have important roles in defining the positive attitude of a gamer which would lead to more intention to participate in eSports. In other words, gamers perceived eSports is a valuable, beneficial and favourable activity when video gaming able to fulfil the purposes of enjoyment, making friends, having fun, and required less effort to control it. This favourable and positive perception will eventually increase gamers' intention and recommend others on eSports tournaments participation in the near future.

## 5.2 Implications of Study

Previous Technology Acceptance Model based researches worked to identified different technology adoption motivation. As there are increasing number of innovative products launched and evolve, the motivation behind the consumer behaviour and intention serves as a critical study for several parties. It is to improve the knowledge of users and most importantly is to increase their intention towards technology usage. Therefore, the outcomes of this study are able to provide several implications and contributions for future researchers, policy makers, service providers, game developers, and other relevant parties.

### 5.2.1 Theoretical Implication

In term of theoretical contribution, the Technology Acceptance Model was applied in this study and had successfully predicted and explained how a gamer is affected and motivated to participate eSports. Similarly, previous researches have applied Technological Acceptance Model across broad range of information technology to predict and explain technology adoption and usage. Including the studies of e-learning (Baby & Kannammal, 2019), Telemedicine services (Kamal et al., 2020), teachers' technology adoption (Scherer et al., 2019), mobile library application (Rafique et al., 2020), and Green Information Technology (Yoon, 2018). Similarly, this study adapts the Technological Acceptance Model developed by

(Davis, 1989) with the important external factors which were service mechanisms and gratification.

The results illustrate that a Technology Acceptance Model can effectively explain gamer intention towards eSports participation with acceptable variance. Critically, the proposed constructs were theoretically and empirically tested. The findings of this study indicated that gamers will be more intended to participate in eSports greatly depends on their positive attitudes and perceptions. Besides, it is confirmed that gamers' favourable attitudes are depend on their perception of usefulness and ease of use along with gratification of video game. Additionally, the mediation effects of attitude on perceived usefulness, perceived ease of use and intention were well explained in this study. Hence, this research contributes a vital theoretical implication in explaining gamers motivation in eSports. In addition, the findings also provide a basis for future scholars to conduct further investigation and evaluate gamers behaviour in the eSports industry.

### 5.2.2 Managerial Implication

Through the understanding of motivation behind a gamer towards eSports participation intention, effective marketing strategies based on the factors of gratification and entertainment are to be focused and considered extensively by relevant parties such as policy makers, game developer, eSports organisers, and so on. With the understanding of gamer's motivation, effective marketing strategy will

be created by game developers, eSports organisers, policy makers and others which will eventually achieve large market share in gaming industry. Additionally, the role of eSports team manager and practitioner is important in encouraging and bring more potential professional gamers as well as eSports enthusiasts. This can be done by setting up more eSports facilities and recreational hubs which gamer can fully focus play the games and interact with professional gamers.

One way or another, examining the acceptance of eSports is hence practically important as it may enable game developer or eSports organisers to carry out gaming activities which are more focused on social interaction and hedonic purpose. Besides, it could provide useful information for policy makers and eSports organisers in the formation and determination of effective game rules and regulation, training facilities, and rewards. By doing so, the interest of gamers will increase and the integrity of eSports sector can maintain to a high standard. Consequently, significant opportunities will be provided in enhancing the productivity as well as positive perception of gaming community towards eSports industry.

### 5.2.3 Social Implication

With the understanding of gamers' attitude and intention towards eSports participation, it is believed that video gaming community or eSports gamers will gain benefits on social development in Malaysia. The importance of eSports has been explained in the review of literature in this study. In addition, the results

demonstrated that gamers are more intended to participate eSports because by playing video game they can gratified their needs for enjoyment and social interaction. This can be explained that the rapid grow of eSports sector has create opportunities for the gamers in developing their personal connection, social interaction as well as interpersonal skills. Which can be served as important concerns towards health and wellbeing of gaming community.

In addition, the results of this study have indicated that eSports gamers could gain benefits on cognitive and personal development. The nature of eSports games especially strategy game involves extensive level of teamworking, communication, strategic thinking, sportsmanship, confident as well as personal gaming skills. With these gaming traits, gamers' proficiency in gaming world will be improved, as well as their physical conditions, problem solving and strategy skills, confident and perceptions. As a result, more and more professional gamers and game service providers will gain attention professionally, and the wellbeing of gamers will always be emphasised by policy makers and other relevant parties.

### 5.3 Limitations of the Study and Future Directions

The identification of eSports participation intention among young gamers in Malaysia assists in extending the knowledge of researcher about the existing and potential phenomenon about local competitive gaming industry. In addition, the findings of this study also underline the importance of the Technology Acceptance

Model in further explaining and predicting gamer's behaviour towards eSports. However, there are several limitations to the current study.

Firstly, the findings may be difficult to generalise. the targeted respondent of this study was primarily the university students who are currently joining video gaming or eSports related clubs and societies in Malaysia. The results were thus cannot be generalised and represented to all groups of gamers as a whole. Besides, since the targeted respondents were all located in Malaysia, the knowledge and information about gamers behaviour and preferences in other countries may be different. Hence, it is suggested that cross-boundary data collection and cross-cultural research are necessary in order to make the results become more generalisable and representable among all the gamers internationally.

Secondly, some other important motivational factors may be missed in this study. As this study focused on the current behaviour and intention of the gamers based on current issues that have been highlighted in problem statements. The behaviour and intention may be changed based on the changing environment such as the economic, social and culture changes. Additionally, consumer behaviour is also characterised by enormous flexibility and sensitivity to changes which forces the relevant parties to act accordingly (Makarewicz, 2013). Therefore, future researcher can conduct other eSports related studies or carry out longitudinal research in order to keep in track with gamers changing preferences based on future changing situation.

## 5.4 Conclusion

The eSports industry, it is often recognised as beneficial activity as other traditional sports. They shared the same traits such as leadership, competition, sportsmanship, teamwork and skill-set improvement. The rapid development of eSports has contributed large economic advantages to the world. With that reason, it has attracted the interest of marketers, academicians, policy makers, game developers, content creators and other relevant parties. Hence, this study is conducted to know what elements can effectively increase the intention of a gaming community towards eSports participation.

Based on the findings, gamers are attracted towards competitive video gaming by its hedonic and sociable features rather than advanced technological devices and software. In addition, the intention towards eSports participation is mainly determined by the perceived usefulness and perceived ease of use of a gamer. In other words, when gamers able to achieve their goals and purposes in an easier way from gaming activity, they tend to have positive perception towards eSports and eventually participate in it.

Lastly, the policy maker, government, marketers, game creator, and other relevant parties play an important role in this booming industry. They should always emphasize on their changing desires and needs in order to increase the number of eSports lovers as well as professional gamers and developers. As a result, country's

revenue will be boosted with the increasing number of big-brand sponsorships and foreign investments.

**References**


Abayomi, O. J., Zhang, X., Peng, X., Zhao, S., & Chu, J. (2020). How Do Institutional Pressures and Behavioral Intentions Affect Mobile Services Adoption? The Moderating Role of Perceived Risk. *The DATA BASE for Advances in Information Systems*, *51*(2), 82–100.

Abdullah, F., & Ward, R. (2016). Developing a General Extended Technology Acceptance Model for E-Learning (GETAMEL) by analysing commonly used external factors. *Computers in Human Behavior*, *56*, 238–256. https://doi.org/10.1016/j.chb.2015.11.036

Agag, G., & El-Masry, A. A. (2016). Understanding consumer intention to participate in online travel community and effects on consumer intention to purchase travel online and WOM : an integration of innovation diffusion theory and TAM with trust. *Computers in Human Behavior*, *60*, 97–111.

Agrebi, S., & Jallais, J. (2015). Journal of Retailing and Consumer Services Explain the intention to use smartphones for mobile shopping. *Journal of Retailing and Consumer Services*, *22*, 16–23. https://doi.org/10.1016/j.jretconser.2014.09.003

Ajzen, I. (1991). *The Theory of Planned Behavior*. *211*, 179–211.

Ajzen, I. (2002). *Constructing a TpB questionnaire: Conceptual and methodological considerations.* 1–14. file:///Users/Riccardo/Documents/Riccardo's Library/Library.papers3/Reports/2002/Ajzen/2002 Ajzen.pdf%5Cnpapers3://publication/uuid/B959DE76-CAA4-474C-996C-D014EB9357D9

Ajzen, I., & Fishbein, M. (1977). Attitude-Behavior Relations: A Theoretical Analysis and Review of Empirical Research. *Psychological Bulletin*, *84*(5), 888–918. https://doi.org/10.1007/s11614-012-0060-4

Alalwan, A. A., Baabdullah, A. M., Rana, N. P., Tamilmani, K., & Dwivedi, Y. K. (2018). Examining adoption of mobile internet in Saudi Arabia: Extending TAM with perceived enjoyment, innovativeness and trust. *Technology in Society*, *55*(March), 100–110. https://doi.org/10.1016/j.techsoc.2018.06.007

Alshurideh, M., Salloum, S., Kurd, B. Al, Monem, A. A., & Shaalan, K. (2019). Understanding the Quality Determinants that Influence the Intention to Use the Mobile Learning Platforms : A Practical Study. *International Journal of Interactive Mobile Technologies*, *13*(11), 157–183.

Altawallbeh, M., Soon, F., Thiam, W., & Alshourah, S. (2015). Mediating Role of Attitude , Subjective Norm And Perceived Behavioural Control In The Relationships Between Their Respective Salient Beliefs And Behavioural Intention To Adopt E-Learning Among Instructors In Jordanian Universities . *Journal of Education and Practice*, *6*(11), 152–160.

Amin, M., Thurasamy, R., Aldakhil, A. M., & Kaswuri, A. H. (2016). The effect of market orientation as a mediating variable in the relationship between entrepreneurial orientation and SMEs performance. *Nankai Business Review International*, *7*(1), 39–59.

Anjana, B. S., & Prasad, A. . (2021). Scales of Measurement in Research. *Introduction to Research in Social Sciences*.

Arvidsson, R. (2019). On the use of ordinal scoring scales in social life cycle assessment. *The International Journal of Life Cycle Assessment*, *24*, 604–606.

Athwal, N., Istanbulluoglu, D., & McCormack, S. E. (2019). The allure of luxury brands' social media activities: a uses and gratifications perspective. *Information Technology & People*, *32*(3), 603–626. https://doi.org/10.1108/ITP-01-2018-0017

Augustin, R. (2019). *Tackle video game addiction, says expert*. https://www.freemalaysiatoday.com/category/nation/2019/06/09/tackle-video-game-addiction-says-expert/

Ayesha, S., Shafiq, M., & Kakria, P. (2020). Investigating acceptance of telemedicine services through an extended technology acceptance model ( TAM ). *Technology in Society Journal*, *60*, 101212.

Baby, A., & Kannammal, A. (2019). Network Path Analysis for developing an enhanced TAM model: A user-centric e-learning perspective. *Computers in Human Behavior*, 106081. https://doi.org/10.1016/j.chb.2019.07.024

Bailey, A. A., Boni, C. M., & Arias, A. (2018). Journal of Retailing and Consumer Services Social media use by young Latin American consumers : An exploration. *Journal of Retailing and Consumer Services*, *43*(3), 10–19. https://doi.org/10.1016/j.jretconser.2018.02.003

Bananuka, J., Kasera, M., Najjemba, G. M., Musimenta, D., Ssekiziyivu, B., & Kimuli, S. N. L. (2019). Attitude: mediator of subjective norm, religiosity and intention to adopt Islamic banking. *Journal of Islamic Marketing*, *11*(1), 81–96. https://doi.org/10.1108/JIMA-02-2018-0025

Bányai, F., Griffith, M. D., Demetrovics, Z., & Király, O. (2019). The mediating effect of motivations between psychiatric distress and gaming disorder among esport gamers and recreational gamers. *Comprehensive Psychiatry*, *94*. https://doi.org/10.1016/j.comppsych.2019.152117

Bányai, F., Griffiths, M. D., Király, O., & Demetrovics, Z. (2019). The psychology of esports : A systematic literature review. *Journal of Gambling Studies*, *35*(2), 351–365.

Baptista, G., & Oliveira, T. (2019). Gamification and serious games : A literature meta-analysis and integrative model. *Computers in Human Behavior*, *92*, 306–315. https://doi.org/10.1016/j.chb.2018.11.030

Bendary, N., & Al-sahouly, I. (2018). Exploring the extension of unified theory of acceptance and use of technology , UTAUT2 , factors effect on perceived usefulness and ease of use on mobile commerce in Egypt. *Journal of Business and Retail Management Research (JBRMR)*, *12*(2), 60–71.

Bervell, B., Nyagorme, P., & Arkorful, V. (2020). LMS-Enabled Blended Learning Use Intentions among Distance Education Tutors : Examining the Mediation Role of Attitude Based on Technology-Related Stimulus-Response Theoretical Framework. *Contemporary Educational Technology*, *12*(2).

Bhandari, P. (2022). A Note on Survey Research Methods Levels of Measurement : Foundational Basis for Quantitative Analysis of Survey Data. *Dhaulagiri Journal of Sociology and Anthropology*, *16*, 122–126.

Bonnar, D., Castine, B., Kakoschke, N., & Sharp, G. (2019). Sleep and performance in Eathletes: for the win! *Sleep Health*, *5*(6), 647–650. https://doi.org/10.1016/j.sleh.2019.06.007

Bouranta, N., Chitiris, L., & Paravantis, J. (2009). The relationship between internal and external service quality. *International Journal of Contemporary Hospitality Management*, *21*(3), 275–293. https://doi.org/10.1108/09596110910948297

Bouteraa, M., & Banking, G. (2020). THE ROLE OF ATTITUDE AS MEDIATOR IN THE. *International Journal of Advanced Research in Economics and Finance*, *2*(1), 22–37. http://myjms.moe.gov.my/index.php/ijaref

Bovermann, K., Weidlich, J., & Bastiaens, T. (2018). Online learning readiness and attitudes towards gaming in gamified online learning – a mixed methods case study. *International Journal of Educational Technology in Higher Education*, *15*(1), 1–17. https://doi.org/10.1186/s41239-018-0107-0

Brailovskaia, J., Ströse, F., Schillack, H., & Margraf, J. (2020). Less Facebook use – More well-being and a healthier lifestyle? An experimental intervention study. *Computers in Human Behavior*, 106332. https://doi.org/10.1016/j.chb.2020.106332

Braun, V., Clarke, V., Boulton, E., Davey, L., & McEvoy, C. (2021). The Online Survey as a Qualitative Research Tool. *International Journal of Social Research Methodology*, *6*(11), 951–952.

Bujang, M. A., Sa'At, N., Tg Abu Bakar Sidik, T. M. I., & Lim, C. J. (2018). Sample size guidelines for logistic regression from observational studies with large population: Emphasis on the accuracy between statistics and parameters based on real life clinical data. *Malaysian Journal of Medical Sciences*, *25*(4), 122–130. https://doi.org/10.21315/mjms2018.25.4.12

Burke, C., Mackenzie, S. B., Podsakoff, P. M., Mackenzie, S. B., & Podsakoff, P. M. (2003). A Critical Review of Construct Indicators and Measurement Model Misspecification in Marketing and Consumer Research. *Journal of*

*Consumer Research*, *30*(2), 199–218.

Camilleri, M. A., & Falzon, L. (2021). Understanding motivations to use online streaming services : integrating the technology acceptance model ( TAM ) and the uses and grati fi cations theory ( UGT ). *Spanish Journal of Marketing - ESIC*, *25*(2), 216–236. https://doi.org/10.1108/SJME-04-2020-0074

Campbell, M. J., Toth, A. J., Moran, A. P., & Kowal, M. (2018). eSports : A new window on neurocognitive expertise ? *Progress in Brain Research*, 1–14. https://doi.org/10.1016/bs.pbr.2018.09.006

Chang, V., Golightly, L., Modesti, P., Xu, Q. A., Minh, L., & Doan, T. (2022). A Survey on Intrusion Detection Systems for Fog and Cloud Computing. *Future Internet*, *14*(3).

Chen, C. P. (2018). Understanding mobile English-learning gaming adopters in the self-learning market: The Uses and Gratification Expectancy Model. *Computers and Education*, *126*(July 2018), 217–230. https://doi.org/10.1016/j.compedu.2018.07.015

Chen, H., Rong, W., Ma, X., Qu, Y., & Xiong, Z. (2017). An Extended Technology Acceptance Model for Mobile Social Gaming Service Popularity Analysis. *Mobile Information Systems*, *2017*.

Cheng, E. W. L. (2018). Choosing between the theory of planned behavior (TPB) and the technology acceptance model (TAM). *Educational Technology Research and Development*, *67*, 21–37. https://doi.org/10.1007/s11423-018-9598-6

Collective, T. (2021). *Exploring Malaysia's booming eSports industry*. https://techcollectivesea.com/2021/03/01/exploring-malaysias-booming-esports-industry/

Coltman, T., Devinney, T. M., Midgley, D. F., & Venaik, S. (2008). Formative versus reflective measurement models : Two applications of formative measurement. *Journal of Business Research*, *61*(12), 1250–1262.

Consolazio, D. (2018). *The History Of Esports*. https://www.hotspawn.com/guides/the-history-of-esports/

Cranmer, E. E., Han, D.-I. D., Gisbergen, M. van, & Jung, T. (2021). Esports matrix: Structuring the esports research agenda. *Computers in Human Behavior*, *117*, 0–24.

Cunningham, G. B., Fairley, S., Ferkins, L., Kerwin, S., Lock, D., Shaw, S., & Wicker, P. (2018). eSport : Construct speci fi cations and implications for sport management. *Sport Management Review*, *21*(1), 1–6. https://doi.org/10.1016/j.smr.2017.11.002

CyberSecurity Malaysia. (2022). *MyCERT*. Ministry of Communications and Multimedia Malaysia.

https://www.cybersecurity.my/en/our_services/mycert/main/detail/2328/index.html

Davis, Jr., F. D. (1985). A technology acceptance model for empirically testing new end-user information systems: Theory and results. In *Massachusetts Institute of Technology*. https://doi.org/10.1016/S0378-7206(01)00143-4

Davis, F. (1989). Perceived Usefulness , Perceived Ease of Use , and User Acceptance of Information Technology. *MIS Quarterly*, *13*(3), 319–340. https://doi.org/10.2307/249008

Davis, F. D., Bagozzi, R. P., & Warshaw, P. R. (1989). User Acceptance of Computer Technology : A Comparison of Two Theoretical Models. *Management Science*, *35*(8), 982–1003. https://doi.org/10.1287/mnsc.35.8.982

Davis, F. D., Bagozzi, R. P., & Warshaw, P. R. (1992). Extrinsic and Intrinsic Motivation to Use Computers in the Workplace. *Journal of Applied Social Psychology*, *22*(14), 1111–1132.

Dillon, A., & Morris, M. G. (1996). User Acceptance of Information Technology: Theories and Models. *Annual Review of Information Science and Technology*, *31*, 3–32.

Elkheshin, S., & Saleeb, N. (2020). Assessing the Adoption of E-Government Using TAM Model: Case of Egypt. *International Journal of Managing Information Technology (IJMIT)*, *12*(1), 1–14. https://doi.org/10.5121/ijmit.2020.12101

Emmanuel, T., Maupong, T., Mpoeleng, D., Semong, T., & Mphago, B. (2021). A survey on missing data in machine learning. *Journal of Big Data*, *8*(1), 1–37. https://doi.org/10.1186/s40537-021-00516-9

Esports, R. (2020). *Can Virtual Reality and Esports Coexist?* https://readyesports.com/vr-and-esports/

Estriegana, R., Medina-merodio, J., & Barchino, R. (2019). Computers & Education Student acceptance of virtual laboratory and practical work : An extension of the technology acceptance model. *Computers & Education*, *135*, 1–14. https://doi.org/10.1016/j.compedu.2019.02.010

Farhan, A. (2019). *EPIC Perak – The Gaming Event for Grassroots Esports*. https://kitamenshahalam.com/epic-perak

Faul, F., Erdfelder, E., Buchner, A., & Lang, A.-G. (2009). Statistical power analyses using G*Power 3.1: Tests for correlation and regression analyses. *Behavior Research Methods*, *41*(4), 1149–1160. https://doi.org/10.3758/BRM.41.4.1149

Fornell, C., & Larcker, D. F. (1981). Evaluating Structural Equation Models with Unobservable Variables and Measurement Error. *Journal of Marketing Research*, *18*(1), 39–50.

Franzitta, V., Longo, S., Sollazzo, G., Cellura, M., & Celauro, C. (2020). energies Primary Data Collection and Environmental / Energy Audit of Hot Mix Asphalt Production. *Energies*, *13*(8).

Funk, D. C., Pizzo, A. D., & Baker, B. J. (2018). eSport management: Embracing eSport education and research opportunities. In *Sport Management Review* (Vol. 21, Issue 1, pp. 7–13). Sport Management Association of Australia and New Zealand. https://doi.org/10.1016/j.smr.2017.07.008

Gaming, B. (2018). *The History and Evolution of Esports*. https://medium.com/@BountieGaming/the-history-and-evolution-of-esports-8ab6c1cf3257

Gangadharan, S. P. (2017). The Downside of Digital Inclusion: Expectations and Experiences of Privacy and Surveillance among Marginal Internet Users. *New Media & Society*, *19*(4), 597–615. http://eprints.lse.ac.uk/64156/

García, J., & Murillo, C. (2019). Sports video games participation: what can we learn for esports? *Sport, Business and Management: An International Journal*, *39*. https://doi.org/10.1108/SBM-01-2019-0006

Glitch. (2017). *How Virtual Reality will shape the future of Esports*. https://www.glitchstudios.co/how-virtual-reality-will-shape-the-future-of-esports/

Gough, C. (2022). *eSports audience size worldwide from 2020 to 2025*. Statista. https://www.statista.com/statistics/1109956/global-esports-audience/

Hair, J. F., Risher, J. J., Sarstedt, M., & Ringle, C. M. (2019). When to use and how to report the results of PLS-SEM. *European Business Review*, *31*(1), 2–24. https://doi.org/10.1108/EBR-11-2018-0203

Hamari, J., & Sjöblom, M. (2017). What is eSports and why do people watch it ? *Internet Research*, *27*(2), 211–232. https://doi.org/10.1108/IntR-04-2016-0085

Hananto, A. (2019). *Rank of Countries with Fastest (and Slowest) Internet in The World 2019*. https://seasia.co/2019/07/12/rank-of-countries-with-fastest-and-slowest-internet-in-the-world-2019

Harry N. Boone, J., & Boone, D. A. (2012). Analyzing Likert Data. *Jounal of Extension*, *50*(2). https://doi.org/10.1007/s11172-017-1908-3

Hassan, I. B., Azrifah, M., Murad, A., El-shekeil, I., & Liu, J. (2022). Extending the UTAUT2 Model with a Privacy Calculus Model to Enhance the Adoption of a Health Information Application in Malaysia. *Informatics*, *9*(2), 1–31.

Heravi, A., Mubarak, S., & Raymond Choo, K. K. (2018). Information privacy in online social networks: Uses and gratification perspective. *Computers in Human Behavior*, *84*, 441–459. https://doi.org/10.1016/j.chb.2018.03.016

Hill, R. (1998). What sample size is " enough " in internet survey research ? *Interpersonal Computing and Technology: An Electronic Journal for the 21st Century*, *6*(3), 1–10.

Hollywood. (2019). *Hollywood Esports Plans To Provide Gamers A Bigger Experience With Dolby Atmos In Their Hollywood Esports MX4D Theatres*. https://www.dcinematoday.com/dc/pr?newsID=5453

Houari, R., Tari, A. A. K., & Bounceur, A. (2014). Handling Missing Data Problems with Sampling Methods. *International Conference on Advanced Networking Distributed Systems and Applications*, 99–104. https://doi.org/10.1109/INDS.2014.25

Hsu, C. L., & Lu, H. P. (2004). Why do people play on-line games? An extended TAM with social influences and flow experience. *Information and Management*, *41*(7), 853–868. https://doi.org/10.1016/j.im.2003.08.014

Hu, Z., Ding, S., Li, S., Chen, L., & Yang, S. (2019). Adoption Intention of Fintech Services for Bank Users : An Empirical Examination with an Extended Technology Acceptance Model. *Symmetry*, *11*(3), 340. https://doi.org/10.3390/sym11030340

Huang, Y. (2018). Reason and Emotion : How They Drive Students to Play a Color Game. *Journal of Mathematics, Science and Technology Education*, *14*(5), 1911–1924.

Husain, F., Shahnawaz, G., Khan, N. H., & Parveen, H. (2021). Intention to get COVID-19 vaccines : Exploring the role of attitudes , subjective norms , perceived behavioral control , belief in COVID-19 misinformation , and vaccine confidence in Northern India. *Human Vaccines & Immunotherapeutics*, *17*(11), 3941–3953. https://doi.org/10.1080/21645515.2021.1967039

Ifinedo, P. (2018). Determinants of students ' continuance intention to use blogs to learn : an empirical investigation. *Behaviour & Information Technology*, *37*(4), 381–392. https://doi.org/10.1080/0144929X.2018.1436594

Indarsin, T., & Ali, H. (2017). Attitude toward Using m-Commerce : The Analysis of Perceived Usefulness , Perceived Ease of Use , and Perceived Trust : Case Study in Ikens Wholesale Trade , Jakarta – Indonesia. *Saudi Journal of Business and Management Studies*, *2*(11), 995–1007. https://doi.org/10.21276/sjbms.2017.2.11.7

InMyArea. (2019). *Ways To Analyze And Fix Your Slow Internet To Improve Gaming Success*. https://www.inmyarea.com/resources/internet/internet-affects-online-console-gaming

Investor, S. (2019). *The Rise and Rise of Esports*. https://www.smartinvestor.com.my/the-rise-and-rise-of-esports/

Ismudianto, N., & Haryanto, R. (2019). 5 Steps in Data Processing for Maritime Intelligence Decision Making. *JOURNAL OF MARITIME RESEARCH*, *16*(3), 79–83.

Izuagbe, R., Ademola, N., Osamienfa, L., Rebecca, O., Mary, N., & Ifeoma, P. (2019). Library and Information Science Research Effect of perceived ease of use on librarians ' e-skills : Basis for library technology acceptance intention. *Library and Information Science Research*, *41*(3), 100969. https://doi.org/10.1016/j.lisr.2019.100969

Ja Kim, M., Lee, C.-K., & Preis, M. W. (2020). The impact of innovation and gratification on authentic experience, subjective well-being, and behavioral intention in tourism virtual reality: The moderating role of technology readiness. *Telematics and Informatics*, 101349. https://doi.org/10.1016/j.tele.2020.101349

Ja, M., Lee, C., & Contractor, N. S. (2019). Seniors ' usage of mobile social network sites : Applying theories of innovation diffusion and uses and gratifications. *Computers in Human Behavior*, *90*, 60–73. https://doi.org/10.1016/j.chb.2018.08.046

Jang, W. W., & Byon, K. K. (2019). Antecedents and consequence associated with esports gameplay. *International Journal of Sports Marketing and Sponsorship*, *21*(1), 1–22. https://doi.org/10.1108/IJSMS-01-2019-0013

Jang, W. W., & Byon, K. K. (2020). Antecedents of Esports Gameplay Intention: Genre as a Moderator. *Computers in Human Behavior*, *109*, 106336. https://doi.org/10.1016/j.chb.2020.106336

Janiszewski, C., & Osselaer, S. M. J. van. (2021). The Bene fi ts of Candidly Reporting Consumer Research. *Journal of Consumer Psychology*, *31*(4), 633–646. https://doi.org/10.1002/jcpy.1263

Jeanne, A., Anita, L., Teresi, J. A., Yu, X., Stewart, A. L., & Hays, R. D. (2022). Guidelines for Designing and Evaluating Feasibility Pilot Studies. *Medical Care*, *60*(1), 95–103. https://doi.org/10.1097/mlr.0000000000001664

Jho. (2018). *Senarai Universiti Tempatan Yang Mempunyai Kelab Esukan*. https://meta.my/2018/10/03/senarai-universiti-tempatan-yang-mempunyai-kelab-e-sukan/

Jordan, P. J., & Troth, A. C. (2019). Common method bias in applied settings : The dilemma of researching in organizations. *Australian Journal of Management*, *45*(1), 3–14. https://doi.org/10.1177/0312896219871976

Jun, F., Jiao, J., & Lin, P. (2020). Influence of virtual CSR gamification design elements on customers' continuance intention of participating in social value co-creation: The mediation effect of psychological benefit. *Asia Pacific Journal of Marketing and Logistics*, *2019*(19). https://doi.org/10.1108/APJML-03-2019-0213

Kamal, S. A., Shafiq, M., & Kakria, P. (2020). Investigating acceptance of telemedicine services through an extended technology acceptance model (TAM). *Technology in Society*, *60*(November 2019). https://doi.org/10.1016/j.techsoc.2019.101212

Kang, J., & Namkung, Y. (2019). The information quality and source credibility matter in customers ' evaluation toward food O2O commerce. *International Journal of Hospitality Management*, *78*, 189–198. https://doi.org/10.1016/j.ijhm.2018.10.011

Kasilingam, D. L. (2020). Technology in Society Understanding the attitude and intention to use smartphone chatbots for shopping. *Technology in Society*, *62*(June 2019), 101280. https://doi.org/10.1016/j.techsoc.2020.101280

Keiper, M. C., Manning, R. D., Jenny, S., Olrich, T., & Croft, C. (2017). No reason to LoL at LoL : the addition of esports to intercollegiate athletic departments. *JOURNAL FOR THE STUDY OF SPORTS AND ATHLETES IN EDUCATION*, *11*(2), 143–160. https://doi.org/10.1080/19357397.2017.1316001

Khan, I. (2019). *The Road Ahead for VR Esports*. https://esportsobserver.com/vr-esports-2019/

Kim, D., & Jae, Y. (2019). The impact of virtual reality (VR) technology on sport spectators ' flow experience and satisfaction. *Computers in Human Behavior*, *93*, 346–356. https://doi.org/10.1016/j.chb.2018.12.040

Kim, J., Chang, Y., Chong, A. Y. L., & Park, M. C. (2019). Do perceived use contexts influence usage behavior? An instrument development of perceived use context. *Information and Management*, *56*(7), 103155. https://doi.org/10.1016/j.im.2019.02.010

Kim, M., & Kim, J. (2018). The effects of perceived online justice on relational bonds and engagement intention : Evidence from an online game community. *Computers in Human Behavior*, *84*, 410–419. https://doi.org/10.1016/j.chb.2018.03.022

Knutson, C. D. (2020). *Standalone vs. Online*. http://digitalmists.com/read/chapter-10/standalone-vs-online/

Kocaleva, M., Stojanovic, I., & Zdravev, Z. (2015). *Model of e-Learning Acceptance and Use for Teaching Staff in Higher Education Institutions*. *April*. https://doi.org/10.5815/ijmecs.2015.04.03

Kock, N. (2015). Common method bias in PLS-SEM : A full collinearity assessment approach. *International Journal of E-Collaboration*, *11*(4), 1–10.

Koivisto, J., & Hamari, J. (2019). The rise of motivational information systems: A review of gamification research. *International Journal of Information Management*, *45*(2019), 191–210. https://doi.org/10.1016/j.ijinfomgt.2018.10.013

Koththagoda, K., & Herath, R. P. (2018). Factors Influencing Online Purchasing Intention : The Mediation Role of Consumer Attitude. *Journal of Marketing and Consumer Research*, *42*, 66–74.

Krishanan, D., Low, K., Teng, L., & Khalidah, S. (2016). Mediating Effects of Attitude Towards Consumers' Perceived Interactivity in Using Mobile Banking. *Journal of Global Business and Social Entrepreneurship (GBSE)*, *3*(5), 95–106.

Lai, P. C. (2017). The Literature Review of Technology Adoption Models and Theories for The Novelty Technology. *Journal of Information Systems and Technology Management*, *14*(1), 21–38. https://doi.org/10.4301/S1807-17752017000100002

Lai, V. S., & Li, H. (2005). Technology acceptance model for internet banking: An invariance analysis. *Information and Management*, *42*(2), 373–386. https://doi.org/10.1016/j.im.2004.01.007

Larch, F. (2019). *The History of the Origin of eSports*. https://www.ispo.com/en/markets/history-origin-esports

Lee, M. C. (2009). Understanding the behavioural intention to play online games: An extension of the theory of planned behaviour. *Online Information Review*, *33*(5), 849–872. https://doi.org/10.1108/14684520911001873

Lester, J. N., Cho, Y., & Lochmiller, C. R. (2020). Learning to Do Qualitative Data Analysis : A Starting Point. *Human Resource Development Review*, *19*(1), 94–106. https://doi.org/10.1177/1534484320903890

Li, K., Nguyen, H. Van, Cheng, T. C. E., & Teng, C. I. (2018). How do avatar characteristics affect avatar friendliness and online gamer loyalty? Perspective of the theory of embodied cognition. *Internet Research*, *28*(4), 1103–1121. https://doi.org/10.1108/IntR-06-2017-0246

Li, Y., Yang, S., Chen, Y., & Yao, J. (2018). Effects of perceived online – offline integration and internet censorship on mobile government microblogging service continuance : A gratification perspective. *Government Information Quarterly Journal*, *35*, 588–598. https://doi.org/10.1016/j.giq.2018.07.004

Lim, J. (2021). *Levelling up to stay competitive*. https://www.thestar.com.my/metro/metro-news/2021/09/11/levelling-up-to-stay-competitive

Lima, M., Baudier, P., & Lima, M. (2017). Business Model Canvas Acceptance among French Entrepreneurship Students: Principles for Enhancing Innovation Artefacts in Business Education. *Journal of Innovation Economics & Management*, *23*(2), 159–183.

Liu, Y., & Tang, X. (2018). The effects of online trust-building mechanisms on trust and repurchase intentions: An empirical study on eBay. *Information Technology and People*, *31*(3), 666–687. https://doi.org/10.1108/ITP-10-

2016-0242

Llorens, M. R. (2017). eSport Gaming : The Rise of a New Sports Practice. *Sport, Ethics and Philosophy*, *11*(4), 464–476. https://doi.org/10.1080/17511321.2017.1318947

Ma, H., Wu, Y., & Wu, X. (2013). Research on essential difference of e-sport and online game. *Informatics and Management Science V*, 615–621. https://doi.org/10.1007/978-1-4471-4796-1_79

Ma, Y. (2021). Telematics and Informatics To shop or not : Understanding Chinese consumers ' live-stream shopping intentions from the perspectives of uses and gratifications , perceived network size , perceptions of digital celebrities , and shopping orientations. *Telematics and Informatics*, *59*, 101562. https://doi.org/10.1016/j.tele.2021.101562

Madden, T. J., Ellen, P. S., & Ajzen, I. (1992). A Comparison of the Theory of Planned Behavior and the Theory of Reasoned Action. *Personality and Social Psychology Bulletin*, *18*(1), 3–9. https://doi.org/10.1177/0146167292181001

Magsamen-Conrad, K., Dowd, J., Abuljadail, M., Alsulaiman, S., & Shareefi, A. (2015). Life-span differences in the uses and gratifications of tablets: Implications for older adults. *Computers in Human Behavior*, *52*, 96–106. https://doi.org/10.1016/j.chb.2015.05.024

Makarewicz, A. (2013). Consumer behavior as a fundamental requirement for eff ective operations of companies. *Journal of International Studies*, *6*(1), 103–109.

Malaymail. (2019). *Esports industry poised to be new economic subsector, says Perak Youth and Sports chief*. https://www.malaymail.com/news/money/2019/03/02/esports-industry-poised-to-be-new-economic-subsector-says-perak-youth-and-s/1728470

Marelić, M., & Vukušić, D. (2019). E-sports : Definition and social implications. *Exercise and Quality of Life Journal*, *11*(2), 47–54. https://doi.org/10.31382/eqol.191206

Martonc, M. (2015). e-Sports : Playing just for fun or playing to satisfy life goals ? *Computers in Human Behavior*, *48*, 208–211. https://doi.org/10.1016/j.chb.2015.01.056

Mathieson, K. (1991). Comparing The Technology Acceptance Model with The Theory of Planned Behaviour. *Information Systems Research*, *2*(3), 173–191.

Matute-vallejo, J., & Llull, U. R. (2019). Understanding online business simulation games : the role of flow experience , perceived enjoyment and personal innovativeness. *Australasian Journal of Educational Technology*, *35*(3), 71–85.

McDonald, E. (2023). *Newzoo's Games Market Estimates and Forecasts*. Newzoo. https://newzoo.com/insights/articles/the-latest-games-market-size-estimates-

and-forecasts

MediaMation. (n.d.). *MX4D Theaters*. https://www.mediamation.com/mx4dtheatres.html

Mei, Y. C., & Aun, N. B. (2019). Factors Influencing Consumers ' Perceived Usefulness of M-Wallet in Klang Valley , Malaysia. *Review of Integrative Business and Economics Research*, *8*(4), 1–23.

MIDA, M. I. D. A. (2019). *The Gaming Industry: A New Game of Growth*. https://www.mida.gov.my/home/-the-gaming-industry:-a-new-game-of-growth/posts/

Mneimneh, Z., Pasek, J., Singh, L., Best, R., Bode, L., Bruch, E., Budak, C., Davis-kean, P., Donato, K., Ellison, N., Gelman, A., Hemphill, L., Hobbs, W., Jensen, B., Karypis, G., Ladd, J., West, B. T., & Wojcik, S. (2021). Data Acquisition , Sampling , and Data Preparation Considerations for Quantitative Social Science Research Using Social Media Data. *The Future of Quantitative Research in Social Science*, *98*(6), 33–69.

Molinillo, S., Muñoz-leiva, F., & Pérez-García, F. (2018). The effects of human-game interaction , network externalities , and motivations on players ' use of mobile casual games. *Industrial Management & Data Systems*, *118*(9), 1766–1786. https://doi.org/10.1108/IMDS-11-2017-0544

Moore, K. (2017). *The Rise in College Esports Scholarships*. https://esportsobserver.com/esports-scholarships/

Murphy, S. (2009). Video Games , Competition and Exercise : A New Opportunity for Sport Psychologists ? *The Sport Psychologist*, *23*(4), 487–503. https://doi.org/10.1123/tsp.23.4.487

Nair, S. (2019). *Playing the game right: Young Malaysians are marking their spots in the eSports world Read more at https://www.thestar.com.my/tech/tech-news/2019/09/17/playing-the-game-right-young-malaysians-are-marking-their-spots-in-the-esports-world#xMV8TzFlwi5kg062.9*. https://www.thestar.com.my/tech/tech-news/2019/09/17/playing-the-game-right-young-malaysians-are-marking-their-spots-in-the-esports-world

Neus, F., Nimmermann, F., Wagner, K., & Schramm-Klein, H. (2019). Differences and Similarities in Motivation for Offline and Online eSports Event Consumption. *Proceedings of the 52nd Hawaii International Conference on System Sciences*, *6*, 2458–2467. https://doi.org/10.24251/hicss.2019.296

Newzoo. (2022). *The Esports Audience Will Pass Half a Billion in 2022 as Revenues, Engagement, & New Segments Flourish*. Newzoo. https://newzoo.com/insights/articles/the-esports-audience-will-pass-half-a-billion-in-2022-as-revenue-engagement-esport-industry-growth

Nordhoff, S., Louw, T., Innamaa, S., Lehtonen, E., Beuster, A., Torrao, G., Bjorvatn, A., Kessel, T., Malin, F., Happee, R., & Merat, N. (2020). Using the UTAUT2 model to explain public acceptance of conditionally automated ( L3 ) cars : A questionnaire study among 9 , 118 car drivers from eight European countries. *Transportation Research Part F: Psychology and Behaviour*, *74*, 280–297. https://doi.org/10.1016/j.trf.2020.07.015

Pahlevan Sharif, S., & Yeoh, K. K. (2018). Excessive social networking sites use and online compulsive buying in young adults: the mediating role of money attitude. *Young Consumers*, *19*(3), 310–327. https://doi.org/10.1108/YC-10-2017-00743

Pantouw, R. T., & Aruan, D. T. H. (2019). Influence of Game Design and Playability Toward Continuance Intention Using TAM Framework. *IPTEK Journal of Proceedings Series*, *5*, 2354–6026.

Park, E., Baek, S., Ohm, J., & Chang, H. J. (2014). Telematics and Informatics Determinants of player acceptance of mobile social network games : An application of extended technology acceptance model. *Telematics and Informatics*, *31*(1), 3–15. https://doi.org/10.1016/j.tele.2013.07.001

Pedraza-Ramirez, I., Musculus, L., Raab, M., & Laborde, S. (2020). Setting the scientific stage for esports psychology: a systematic review. *International Review of Sport and Exercise Psychology*, *13*(1), 319–352. https://doi.org/10.1080/1750984X.2020.1723122

Pizzo, A. D., Baker, B. J., Na, S., Lee, M. A., Kim, D., & Funk, D. C. (2018). eSport vs. Sport: A comparison of spectator motives. *Sport Marketing Quarterly*, *27*(2), 108–123.

Putra, W. B. T. S. (2022). Problems , Common Beliefs and Procedures on the Use of Partial Least Squares Structural Equation Modeling in Business Research. *South Asian Journal of Social Studies and Economics*, *14*(1), 1–20. https://doi.org/10.9734/SAJSSE/2022/v14i130367

Quwaider, M., Alabed, A., & Duwairi, R. (2019). The Impact of Video Games on the Players Behaviors : A Survey. *Procedia Computer Science*, *151*, 575–582. https://doi.org/10.1016/j.procs.2019.04.077

Rafdinal, W., & Qisthi, A. (2020). In-Game Factors and Technology Acceptance Factors in Increasing Intention to Play Online Game. *Proceedings of Tourism Development Centre International Conference*, *October*, 281–296. https://doi.org/10.2478/9788395720406-029

Rafique, H., Almagrabi, A. O., Shamim, A., Anwar, F., & Bashir, A. K. (2020). Investigating the Acceptance of Mobile Library Applications with an Extended Technology Acceptance Model (TAM). *Computers and Education*, *145*(October 2019), 103732. https://doi.org/10.1016/j.compedu.2019.103732

Ragu, D. (2021). Be transparent in spending budget for esports industry, govt told. *FMT Media*.

https://www.freemalaysiatoday.com/category/nation/2021/11/05/be-transparent-in-spending-budget-for-esports-industry-govt-told/

Rajan, K. (2022). *NSC hits back at national esports federation*. New Straits Times. https://www.nst.com.my/sports/others/2022/10/839997/nsc-hits-back-national-esports-federation#:~:text=Last week%2C the government announced,and RM20 million for 2022.

Rasooli, A., Zandi, H., & Deluca, C. (2019). Conceptualizing Fairness in Classroom Assessment : Exploring the Value of Organizational Justice Theory. *Assessment in Education: Principles, Policy & Practice*, *26*(5), 584–611.

Rehman, Z. U., & Shaikh, F. A. (2020). Critical Factors Influencing the Behavioral Intention of Consumers towards Mobile Banking in Malaysia. *Engineering, Technology and Applied Science Research*, *10*(1), 5265–5269. https://doi.org/10.48084/etasr.3320

Reitman, J. G., Anderson-Coto, M. J., Wu, M., Lee, J. S., & Steinkuehler, C. (2020). Esports Research: A Literature Review. *Games and Culture*, *15*(1), 32–50. https://doi.org/10.1177/1555412019840892

Rita, P., Oliveira, T., & Farisa, A. (2019). The impact of e-service quality and customer satisfaction on customer behavior in online shopping. *Heliyon*, *5*(10), e02690. https://doi.org/10.1016/j.heliyon.2019.e02690

Rudolf, K., Bickmann, P., Froböse, I., Tholl, C., Wechsler, K., & Grieben, C. (2020). Demographics and health behavior of video game and esports players in germany: The esports study 2019. *International Journal of Environmental Research and Public Health*, *17*(6). https://doi.org/10.3390/ijerph17061870

Saeed, R., & Al-emran, M. (2018). Students acceptance of Google classroom: An exploratory study using PLS-SEM approach. *International Journal of Emerging Technologies in Learning*, *13*(6). https://doi.org/10.3991/ijet.v13i06.8275

San-martín, S., Jimenez, N., Camarero, C., San-josé, R., San-martín, S., & San-josé, R. (2020). The Path between Personality , Self-Efficacy , and Shopping Regarding Games Apps. *Journal of Theoretical and Applied Electronic Commerce Research*, *15*(2), 59–75. https://doi.org/10.4067/S0718-18762020000200105

Sánchez-mena, A., Martí-parreño, J., & Aldás-manzano, J. (2018). Teachers ' intention to use educational video games : The moderating role of gender and age. *Innovations in Education and Teaching International*, *56*(3), 318–329. https://doi.org/10.1080/14703297.2018.1433547

Sarstedt, M., Ringle, C. M., & Hair, J. F. (2017). Partial Least Squares Structural Equation Modeling. *Handbook of Market Research*, *26*, 1–40. https://doi.org/10.1007/978-3-319-05542-8

Scherer, R., Siddiq, F., & Tondeur, J. (2019). The technology acceptance model (TAM): A meta-analytic structural equation modeling approach to explaining teachers' adoption of digital technology in education. *Computers and Education*, *128*(0317), 13–35. https://doi.org/10.1016/j.compedu.2018.09.009

Schreiber, J. B. (2021). Research in Social and Administrative Pharmacy Issues and recommendations for exploratory factor analysis and principal component analysis. *Research in Social and Administrative Pharmacy*, *17*(5), 1004–1011. https://doi.org/10.1016/j.sapharm.2020.07.027

Seo, Y. (2016). Professionalized consumption and identity transformations in the fi eld of eSports. *Journal of Business Research*, *69*(1), 264–272. https://doi.org/10.1016/j.jbusres.2015.07.039

Sepasgozar, S. M. E., Hawken, S., Sargolzaei, S., & Foroozanfa, M. (2019). Technological Forecasting & Social Change Implementing citizen centric technology in developing smart cities : A model for predicting the acceptance of urban technologies. *Technological Forecasting & Social Change*, *142*(August 2018), 105–116. https://doi.org/10.1016/j.techfore.2018.09.012

Sharma, S., Singh, G., & Sharma, R. (2021). For it is in giving that we receive : Investigating gamers ' gifting behaviour in online games. *International Journal of Information Management*, *60*, 102363. https://doi.org/10.1016/j.ijinfomgt.2021.102363

Shorey, S., Kua, E. H., Tam, W., Chan, V., Goh, Y. S., Lim, H. M., Hsiu, L., Lim, K., Tian, C. S., & Mahendran, R. (2021). " Where-There-Is-No-Psychiatrist Integrated Personal Therapy " among Community-Dwelling Older Adults : A Randomized Pilot Study. *International Journal of Environmental Research and Public Health*, *18*, 9514.

Silaban, A. (2018). The Integration of Technology Acceptance Model with the Uses and Gratification Theory toward the Intention to use. *Information Security Management*, *19*(165), 143–149.

Singh, N., & Sinha, N. (2020). Journal of Retailing and Consumer Services How perceived trust mediates merchant ' s intention to use a mobile wallet technology. *Journal of Retailing and Consumer Services*, *52*(March 2019), 101894. https://doi.org/10.1016/j.jretconser.2019.101894

Sjöblom, M., Macey, J., & Hamari, J. (2019). Digital athletics in analogue stadiums: Comparing gratifications for engagement between live attendance and online esports spectating. *Internet Research*, 1066–2243. https://doi.org/10.1108/INTR-07-2018-0304

Sorokanich, B. (2014). *South Korean University Now Accepts Gamers as Student Athletes*. https://gizmodo.com/south-korean-university-now-accepts-gamers-as-student-a-1547111361

Statista. (2023). *Video Games-Malaysia*. Statista. https://www.statista.com/outlook/dmo/digital-media/video-games/malaysia

Stewart, J. (2018). *PENTA Sports Partners With Cinema-Focused Merchandise and Event Organizers MMmedia*. https://esportsobserver.com/penta-sports-partners-mmmedia/

Tang, J., & Zhang, P. (2020). The impact of atmospheric cues on consumers ' approach and avoidance behavioral intentions in social commerce websites. *Computers in Human Behavior*, *108*, 105729. https://doi.org/10.1016/j.chb.2018.09.038

Tawafak, R. M., Romli, A. B. T., Bin, R., & Arshah, A. (2018). Continued Intention to Use UCOM : Four Factors for Integrating With a Technology Acceptance Model to Moderate the Satisfaction of Learning. *IEEE Access*, *6*, 66481–66498. https://doi.org/10.1109/ACCESS.2018.2877760

Teijlingen, E. R. Van, & Hundley, V. (2014). *The Importance of Pilot Studies*. *35*. https://doi.org/10.7748/ns2002.06.16.40.33.c3214

TheStar. (2022). *Budget 2023: Mixed reaction towards lower allocation for esports*. TheStar. https://www.thestar.com.my/tech/tech-news/2022/10/07/budget-2023-mixed-reaction-towards-lower-allocation-for-esports

Thomas, M. K. (2015). A Stage Theory Model of professional video game players in South Korea : The socio-cultural dimensions of the development of expertise. *Asian Journal of Information Technology*, *14*(5), 176–186. https://doi.org/10.3923/ajit.2015.176-186

Tran, T., & Khuc, Q. (2021). Primary Data. *Writing and Presenting Research*, 78–88. https://doi.org/10.4135/9780857020307.n6

Ulrike, S., & Brooks, J. A. (2019). An Interactional View of Social Presence : Making The Virtual Other " Real ". *Information Systems Journal*, *29*(3), 707–737. https://doi.org/10.1111/isj.12230

Vahdat, A., Alizadeh, A., Quach, S., & Hamelin, N. (2020). Would you like to shop via mobile app technology? The technology acceptance model, social factors and purchase intention. *Australasian Marketing Journal (AMJ)*, 1–10. https://doi.org/10.1016/j.ausmj.2020.01.002

Vanduhe, V. Z. (2020). Continuance Intentions to Use Gamification for Training in Higher Education : Integrating the Technology Acceptance Model ( TAM ), Social Motivation , and Task Technology Fit ( TTF ). *IEEE Access*, *8*, 21473–21484. https://doi.org/10.1109/ACCESS.2020.2966179

Verma, H. V, & Sachdev, S. B. (2004). Relative importance of service quality dimensions: A multisectoral study. *Journal of Services Research*, *4(1)*(January).

Villiers, C. de, Dumay, J., & Maroun, W. (2019). Qualitative accounting research : dispelling myths and developing a new research agenda. *Accounting & Finance*, *59*(3), 1459–1481.

Wagner, M. G. (2006). On the Scientific Relevance of eSports. *International Conference on Internet Computing*, 437–442.

Wattanapisit, A., Wattanapisit, S., & Wongsiri, S. (2020). Public Health Perspectives on eSports. *Public Health Reports*, *135*(3), 295–298. https://doi.org/10.1177/0033354920912718

Weaver, J. (2019). *College students are avid gamers*. http://www.nbcnews.com/id/3078424/ns/technology_and_science-games/t/college-students-are-avid-gamers/#.Xq1NVmgzbIU

Weller, C. (2016). *A new eSports scholarship will award $20,000 to student gamers*. https://www.businessinsider.com/new-esports-scholarship-for-student-gamers-2016-3?IR=T

Winder, D. (2019). *Fortnite Hack Warning Issued For 250 Million Players*. https://www.forbes.com/sites/daveywinder/2019/08/22/fortnite-hack-warning-issued-for-250-million-players/#3c0d20d39ffd

Wu, J. H., Wang, S. C., & Tsai, H. H. (2010). Falling in love with online games: The uses and gratifications perspective. *Computers in Human Behavior*, *26*(6), 1862–1871. https://doi.org/10.1016/j.chb.2010.07.033

Wu, M., Lee, J. S., & Steinkuehler, C. (2021). Understanding Tilt in Esports : A Study on Young League of Legends Players. *Proceedings of the 2021 CHI Conference on Human Factors in Computing Systems*, 1–9. https://doi.org/10.1145/3411764.3445143

Wu, Y., Sescousse, G., Yu, H., Clark, L., & Li, H. (2018). Cognitive distortions and gambling near- misses in Internet Gaming Disorder : A preliminary study. *PLoS One*, *13*(1), 1–12.

Xiung, C. J. (2018). *MALAYSIA'S E-SPORTS SCENE SHOWS GROWTH BUT CHALLENGES REMAIN*. https://www.digitalnewsasia.com/digital-economy/malaysias-e-sports-scene-shows-growth-challenges-remain

Xuejing, S., Ewoldsen, D. R., Ellithorpe, M. E., Heide, B. Van Der, & Rhodes, N. (2022). Gamer Girl vs . Girl Gamer : Stereotypical Gamer Traits Increase Men ' s Play Intention. *Computers in Human Behavior*, *131*, 107217. https://doi.org/10.1016/j.chb.2022.107217

Yang, C. (2019). Maritime shipping digitalization : Blockchain-based technology applications , future improvements , and intention to use. *Transportation Research Part E*, *131*(September), 108–117. https://doi.org/10.1016/j.tre.2019.09.020

Yazdi, M. T., Motallebzadeh, K., Ashraf, H., & Baghaei, P. (2017). A latent variable analysis of continuing professional development constructs using PLS-SEM modeling. *Cogent Education*, *4*(1), 1–15. https://doi.org/10.1080/2331186X.2017.1355610

Yoon, C. (2018). Extending the TAM for Green IT: A normative perspective. *Computers in Human Behavior*, *83*, 129–139. https://doi.org/10.1016/j.chb.2018.01.032

Yousafzai, S. Y., Foxall, G. R., & Pallister, J. G. (2010). *Explaining Internet Banking Behavior : Theory of Reasoned Action , Theory of Planned Behavior , or Technology Acceptance Model ? 1*. 1172–1202.

Yue, Y. (2018). Research on eSports and eSports Industry in China. *China Sport Science*, *38*(4), 8–21.

Zamri, B. (2019a). *Is Malaysia Actually Ready for a National eSports league*. https://kakuchopurei.com/2019/10/12/is-malaysia-actually-ready-for-a-national-esports-league/

Zamri, B. (2019b). *STRATEGIC PLAN FOR ESPORTS DEVELOPMENT: MINISTRY OF YOUTH AND SPORTS 2020-2025*. https://kakuchopurei.com/2019/11/22/malaysia-esports-blueprint-is-finally-unveiled-heres-what-you-need-to-know/

Zeng, L., & Li, R. Y. M. (2021). Tourist satisfaction, willingness to revisit and recommend, and mountain Kangyang tourism spots sustainability: A structural equation modelling approach. *Sustainability (Switzerland)*, *13*(19), 10620. https://doi.org/10.3390/su131910620

Zhang, S., Liu, W., Han, W., Xie, J., & Sun, M. (2022). Influence mechanism of tourists' impulsive behavior in E-sports tourism: Mediating role of arousal. *Tourism Management Perspectives*, *44*, 101032. https://doi.org/10.1016/j.tmp.2022.101032

# APPENDICES

## Appendix A

### Reported Incidents based on General Incident Classification Statistics 2020

| # | JAN | FEB | MAC | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Spam | 11 | 27 | 14 | 8 | 13 | 8 | 6 | 7 | 8 | 16 | 16 | 11 | 145 |
| Intrusion Attempt | 13 | 8 | 8 | 11 | 4 | 1 | 2 | 4 | 20 | 14 | 17 | 14 | 116 |
| Denial of Service | 0 | 1 | 3 | 7 | 1 | 0 | 0 | 1 | 0 | 2 | 1 | 0 | 16 |
| Fraud | 807 | 725 | 798 | 1,180 | 770 | 626 | 413 | 378 | 351 | 411 | 526 | 608 | 7,593 |
| Cyber Harassment | 37 | 27 | 58 | 65 | 73 | 69 | 48 | 32 | 40 | 50 | 60 | 37 | 596 |
| Vulnerabilities Report | 5 | 7 | 10 | 10 | 7 | 11 | 18 | 9 | 18 | 10 | 5 | 7 | 117 |
| Malicious Codes | 56 | 32 | 33 | 40 | 35 | 36 | 47 | 72 | 76 | 75 | 40 | 51 | 593 |
| Content Related | 23 | 23 | 42 | 23 | 9 | 7 | 7 | 6 | 7 | 11 | 7 | 5 | 170 |
| Intrusion | 122 | 93 | 125 | 144 | 133 | 113 | 101 | 102 | 81 | 87 | 88 | 255 | 1,444 |
| | 1,074 | 943 | 1,091 | 1,488 | 1,045 | 871 | 642 | 611 | 601 | 676 | 760 | 988 | 10,790 |

**Source: CyberSecurity Malaysia (2022)**

## Appendix B

### Reported Incidents based on General Incident Classification Statistics 2021

| # | JAN | FEB | MAC | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Spam | 10 | 4 | 11 | 5 | 8 | 4 | 7 | 6 | 6 | 14 | 13 | 14 | 102 |
| Intrusion | 178 | 252 | 119 | 100 | 116 | 112 | 126 | 101 | 94 | 102 | 54 | 56 | 1,410 |
| Cyber Harassment | 35 | 37 | 40 | 29 | 30 | 55 | 41 | 34 | 35 | 30 | 25 | 26 | 417 |
| Vulnerabilities Report | 8 | 5 | 12 | 4 | 6 | 3 | 3 | 13 | 3 | 4 | 3 | 5 | 69 |
| Intrusion Attempt | 11 | 10 | 16 | 12 | 24 | 18 | 9 | 12 | 12 | 8 | 12 | 15 | 159 |
| Denial of Service | 1 | 2 | 3 | 1 | 3 | 0 | 1 | 2 | 3 | 0 | 4 | 2 | 22 |
| Malicious Codes | 58 | 44 | 42 | 29 | 83 | 64 | 44 | 25 | 76 | 53 | 60 | 70 | 648 |
| Content Related | 2 | 11 | 10 | 6 | 9 | 5 | 8 | 7 | 12 | 12 | 3 | 6 | 91 |
| Fraud | 746 | 502 | 566 | 726 | 689 | 861 | 639 | 680 | 490 | 473 | 365 | 361 | 7,098 |
| | 1,049 | 867 | 819 | 912 | 968 | 1,122 | 878 | 880 | 731 | 696 | 539 | 555 | 10,016 |

**Source: CyberSecurity Malaysia (2022)**

## Appendix C

## Malaysia Botnet Drones and Malware Infection in 2020

| # | JAN | FEB | MAC | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Malware Infection by unique IP | 137,384 | 117,440 | 154,712 | 170,922 | 160,586 | 171,490 | 174,290 | 133,039 | 135,957 | 136,093 | 155,771 | 132,978 | 1,780,662 |
| Botnet drones count by unique IP | 339,810 | 196,358 | 313,161 | 320,811 | 396,133 | 384,765 | 367,486 | 269,594 | 264,929 | 249,381 | 327,451 | 297,816 | 3,727,695 |
| | 477,194 | 313,798 | 467,873 | 491,733 | 556,719 | 556,255 | 541,776 | 402,633 | 400,886 | 385,474 | 483,222 | 430,794 | 5,508,357 |

**Source: CyberSecurity Malaysia (2022)**

## Appendix D

## Malaysia Botnet Drones and Malware Infection in 2021

| # | JAN | FEB | MAC | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Botnet drones count by unique IP | 308,155 | 97,781 | 115,454 | 102,385 | 174,385 | 43,823 | 43,237 | 41,642 | 39,566 | 38,866 | 35,532 | 30,485 | 1,071,311 |
| Malware Infection by unique IP | 129,031 | 50,390 | 66,547 | 38,017 | 99,304 | 199,265 | 200,255 | 196,350 | 186,660 | 183,202 | 170,270 | 155,663 | 1,674,954 |
| | 437,186 | 148,171 | 182,001 | 140,402 | 273,689 | 243,088 | 243,492 | 237,992 | 226,226 | 222,068 | 205,802 | 186,148 | 2,746,265 |

**Source: CyberSecurity Malaysia (2022)**

## Appendix E

**UNIVERSITY TUNKU ABDUL RAHMAN**
**FACULTY OF BUSINESS AND FINANCE**
**DISSERTATION FOR**
**MASTER OF PHILOSOPHY**

**SURVEY QUESTIONNAIRE**

Dear Respondent,

eSports is a professional competitive gaming and entertainment sports in which a group of professional gamers compete with each other for the purpose of winning prizes. eSports is a relatively new industry and has contributed much to the country economy. Currently, I am conducting a research to gain more understanding on gamers' intention to participate in eSports tournament.

I hereby humbly request for your cooperation to answer the questionnaire attached to this letter. The instructions for completing the questionnaire are indicated below. You will take approximately 10 – 15 minutes to complete this questionnaire.

All the data collected will be kept confidential and solely use for academic purpose. Your participation in this survey is on a voluntary basis. If you have any questions or concerns, please do not hesitate to contact me at +6018- 4625711 or email at lohhowzheng@1utar.my.

Thank you in advance for your time and willingness to participate in this survey.

Yours sincerely,

_____
Loh How Zheng
20ABM00784

## Personal Data Protection Statement

Please be informed that in accordance with Personal Data Protection Act 2010 (PDPA) which came into force on 15 November 2013, Universiti Tunku Abdul Rahman (UTAR) is hereby bound to make notice and require consent in relation to collection, recording, storage, usage and retention of personal information.

**Notice:**

1. The purposes for which your personal data may be used are inclusive but not limited to:-
    - For assessment of any application to UTAR
    - For processing any benefits and services
    - For communication purposes
    - For advertorial and news
    - For general administration and record purposes
    - For enhancing the value of education
    - For educational and related purposes consequential to UTAR
    - For the purpose of our corporate governance
    - For consideration as a guarantor for UTAR staff/ student applying for his/her scholarship/ study loan

2. Your personal data may be transferred and/or disclosed to third party and/or UTAR collaborative partners including but not limited to the respective and appointed outsourcing agents for purpose of fulfilling our obligations to you in respect of the purposes and all such other purposes that are related to the purposes and also in providing integrated services, maintaining and storing records. Your data may be shared when required by laws and when disclosure is necessary to comply with applicable laws.

3. Any personal information retained by UTAR shall be destroyed and/or deleted in accordance with our retention policy applicable for us in the event such information is no longer required.

4. UTAR is committed in ensuring the confidentiality, protection, security and accuracy of your personal information made available to us and it has been our ongoing strict policy to ensure that your personal information is accurate, complete, not misleading and updated. UTAR would also ensure that your personal data shall not be used for political and commercial purposes.

**Consent:**

1. By submitting this form you hereby authorise and consent to us processing (including disclosing) your personal data and any updates of your

information, for the purposes and/or for any other purposes related to the purpose.

2. If you do not consent or subsequently withdraw your consent to the processing and disclosure of your personal data, UTAR will not be able to fulfil our obligations or to contact you or to assist you in respect of the purposes and/or for any other purposes related to the purpose.
3. You may access and update your personal data by writing to us at lohhowzheng@1utar.my.

Acknowledgement of Notice (Please tick (√) on the appropriate box.)
[ ] I have been notified by you and I hereby understood, consented and agreed per UTAR notice.
[ ] I disagree, my personal data will not be processed.

---

**Section A: Filter Questions**
**Please tick (√) on the appropriate box.**

1 Are you a member of video game clubs and societies?
- □ Yes (Please continue)
- □ No (End of questionnaire, thank you)

2 Are you considering yourself an active gamer?
- □ Yes (If yes, please continue)
- □ No (End of questionnaire, thank you)

3 Have you joined any eSports tournament before?
- □ Yes (Please continue to the next section)
- □ No (End of questionnaire, thank you)

**Section B: Demographics profile**
**Please tick (√) on the appropriate box.**

1 Gender
- □ Male
- □ Female

2 Race
- □ Malay
- □ Indian
- □ Chinese
- □ Other (please specify): _____

3 Educational level
- □ Foundation
- □ Master's Degree

- ☐ Undergraduate
- ☐ Doctorate Degree

4 Year of study

- ☐ First year
- ☐ Second year
- ☐ Third year
- ☐ Other (please specify): _____

5 Academic Faculty

- ☐ Faculty of Medicine and Health Sciences
- ☐ Faculty of Accountancy and Management
- ☐ Faculty of Arts and Social Science
- ☐ Faculty of Business and Finance
- ☐ Faculty of Creative Industries
- ☐ Faculty of Engineering and Science
- ☐ Faculty of Engineering and Green Technology
- ☐ Faculty of Information and Communication Technology
- ☐ Faculty of Science
- ☐ Other (please specify): _____

6 Video game playing experience

- ☐ Less than 1 year
- ☐ 1-3 years
- ☐ 4-5 years
- ☐ 6-7 years
- ☐ More than 7 years

7 Frequency of playing video game

- ☐ 1-5 times a week
- ☐ 6-10 times a week
- ☐ 11-15 times a week
- ☐ 16-20 times a week
- ☐ More than 20 times a week

**Section C:**
Please circle only **ONE** appropriate number that **BEST** represents your agreement with the statement on the scale 1 to 5 below.

| Strongly Disagree (SD) | Disagree (D) | Neutral (N) | Agree (A) | Strongly Agree (SA) |
|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 |

**Part 1: Service Mechanisms**

| No. | Code | | SD | D | N | A | SA |
|---|---|---|---|---|---|---|---|
| 1 | INC 1 | The game service provider offers incentives for continued play. | 1 | 2 | 3 | 4 | 5 |
| 2 | INC 2 | I get rewarded for my continued participation. | 1 | 2 | 3 | 4 | 5 |
| 3 | SEC 1 | I feel the game service provider can offer the security on data transformation. | 1 | 2 | 3 | 4 | 5 |
| 4 | SEC 2 | I feel the game service provider can protect the gamers' privacy. | 1 | 2 | 3 | 4 | 5 |
| 5 | SEC 3 | When playing the video game, I feel the internet connection is of good quality and stable. | 1 | 2 | 3 | 4 | 5 |
| 6 | FRS 1 | If a vital problem occurs, the game service provider in charge will compensate the loss. | 1 | 2 | 3 | 4 | 5 |
| 7 | FRS 2 | While playing the video game, I assume the rewards given meet the efforts I put into. | 1 | 2 | 3 | 4 | 5 |
| 8 | FRS 3 | The game service provider will penalise the gamers who use cheating program. | 1 | 2 | 3 | 4 | 5 |

**Part 2: Gratifications**

| No. | Code | | SD | D | N | A | SA |
|---|---|---|---|---|---|---|---|
| 1 | SOP 1 | When interact with other video gamers, I am able to show what kind of person I really am. | 1 | 2 | 3 | 4 | 5 |
| 2 | SOP 2 | I trust that other video gamers will assist me if I need help. | 1 | 2 | 3 | 4 | 5 |
| 3 | SOP 3 | When I see that other gamer are confused, I offer help. | 1 | 2 | 3 | 4 | 5 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **4** | ENJ 1 | Playing the video game is exciting | 1 | 2 | 3 | 4 | 5 |
| **5** | ENJ 2 | Playing the video game gives me lots of pleasure. | 1 | 2 | 3 | 4 | 5 |
| **6** | ENJ 3 | I enjoy playing the video game. | 1 | 2 | 3 | 4 | 5 |
| **7** | SOI 1 | My video gaming friends understand me better than other people. | 1 | 2 | 3 | 4 | 5 |
| **8** | SOI 2 | I open up more to people involved in playing video game. | 1 | 2 | 3 | 4 | 5 |
| **9** | SOI 3 | Going for video game has make it easier for me to make friends. | 1 | 2 | 3 | 4 | 5 |

**Part 3: Perceived Usefulness**

| **No.** | **Code** | | **SD** | **D** | **N** | **A** | **SA** |
|---|---|---|---|---|---|---|---|
| The purpose of playing video games include enjoyment, making friends, having fun and etc. In your opinion, video game is useful because: | | | | | | | |
| **1** | PUS 1 | It enables me to accomplish the purpose of playing game more quickly. | 1 | 2 | 3 | 4 | 5 |
| **2** | PUS 2 | It enables me to fulfil the purpose of playing game effectively. | 1 | 2 | 3 | 4 | 5 |
| **3** | PUS 3 | It enables me to satisfy the purpose of playing game easier. | 1 | 2 | 3 | 4 | 5 |
| **4** | PUS 4 | It assists me when I feel stress and or have problem. | 1 | 2 | 3 | 4 | 5 |

**Part 4: Perceive Ease of Use**

| **No.** | **Code** | | **SD** | **D** | **N** | **A** | **SA** |
|---|---|---|---|---|---|---|---|
| **1** | PEU 1 | Learning to play video games is easy for me. | 1 | 2 | 3 | 4 | 5 |
| **2** | PEU 2 | It is easy for me to become skilful in video games. | 1 | 2 | 3 | 4 | 5 |
| **3** | PEU 3 | I know how to solve most of the gaming problems that arise during playing. | 1 | 2 | 3 | 4 | 5 |
| **4** | PEU 4 | It is easy for me to master the video games. | 1 | 2 | 3 | 4 | 5 |
| **5** | PEU 5 | My interaction on video game is clear and understandable. | 1 | 2 | 3 | 4 | 5 |

**Part 5: Attitude**

| No. | Code | | SD | D | N | A | SA |
|---|---|---|---|---|---|---|---|
| **1** | ATT 1 | I am interested in video game. | 1 | 2 | 3 | 4 | 5 |
| **2** | ATT 2 | I feel good about video game. | 1 | 2 | 3 | 4 | 5 |
| **3** | ATT 3 | I feel pleasant when playing video games. | 1 | 2 | 3 | 4 | 5 |
| **4** | ATT 4 | Video game is a good leisure activity. | 1 | 2 | 3 | 4 | 5 |
| **5** | ATT 5 | Overall, my attitude towards video gaming is favourable. | 1 | 2 | 3 | 4 | 5 |

**Part 6: Intention to Participate eSports**

| No. | Code | | SD | D | N | A | SA |
|---|---|---|---|---|---|---|---|
| **1** | INT 1 | I intend to take part in eSports tournaments for the near future. | 1 | 2 | 3 | 4 | 5 |
| **2** | INT 2 | I plan to participate in eSports tournaments actively. | 1 | 2 | 3 | 4 | 5 |
| **3** | INT 3 | I believe I will participate in eSports tournaments with my team member. | 1 | 2 | 3 | 4 | 5 |
| **4** | INT 4 | I am willing to recommend others to participate in eSports tournaments. | 1 | 2 | 3 | 4 | 5 |