THE INFLUENCE OF TECHNOLOGY ACCEPTANCE, EFFECTIVENESS, MOTIVATION, OPPORTUNITY AND SOCIAL IDENTITY TOWARDS CUSTOMER KNOW-HOW DOTA GAMERS

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LIST OF ABBREVIATIONS

ABI	Ability
AMOS	Analysis of Momentum Structure
APJII	Asosiasi Penyelenggara Jasa Internet Indonesia
AVE	Average Variance Extracted
CB SEM	Covariance Based Structural Equation Models
C2C OKHE	Customer-to-customer Online Know-How Exchange
CEO	Chief Executive Officer
CR	Construct Reliability
DOTA	Defense of The Ancients
DTPB	Decomposed Theory of Planned Behaviour
e-WOM	Electronic Word of Mouth
FORMI	Federation of Sports Recreation Society of Indonesia
FPS	First Person Shooter
GDP	Gross Domestic Product
HTMT	Heterotroit-Monotrait Ratio
IeSPA	Indonesia e-Sport Association
IDT	Innovation Diffusion Theory
Kemenpora	Ministry of Youth & Sports
KOI	Indonesian Sports Committee
KONI	Indonesian National Sports Committee
LARP	Live Action Role Playing
ML	Maximum Likelihood Method
MMORPG	Massively Multiplayer Online Roles Playing Game

MOA	Motivation Opportunity Ability
MOASI	Motivation, Opportunity, Ability and Social Identity
MOBA	Multiplayer Online Battle Arena
MOT	Motivation
OGB	Online Group Behaviour
OPP	Opportunity
PEU	Perceived Ease of Use
PLS	Partial Least Square
PUBG	Players Unknown Battle Underground
PUS	Perceived Usefulness
RPG	Role Playing Game
RRX	Rex Regum Qeon
RTS	Real Time Strategy
SD	Standard Deviation
SCT	Social Cognitive Theory
SEM	Structural Equation Modelling
SI	Social Identity
SPSS	Statistical Package for Social Science
TAM	Technology Acceptance Model
TPB	Theory of Planned Behaviour
TRA	Theory of Reaction Action
UTAUT	Unified Theory of Acceptance and Use of Technology
VIF	Variance Inflation Factor
WOM	Word of Mouth

LIST OF APPENDICES

PENGARUH KEBERKESANAN PENERIMAAN TEKNOLOGI, MOTIVASI, PELUANG, KEBOLEHAN DAN IDENTITI SOSIAL TERHADAP PENGETAHUAN PELANGGAN DALAM KALANGAN PEMAIN DOTA

ABSTRAK

Indonesia merupakan negara yang mempunyai pasaran berpotensi untuk industri permainan yang dipamerkan melalui syer terbesar muat turun permainan dalam talian (30%) dengan perolehan US$1.3 bilion di Asia Tenggara pada tahun 2020. Permainan Dota2 mewakili salah satu Arena Talian Pertempuran Berbilang yang paling popular. Memfokuskan pada pemain Dota2 Indonesia yang aktif, kajian ini menyiasat anteseden pertukaran pengetahuan dalam talian pelanggan-ke-pelanggan (C2COKHE) dan kesan penyederhanaan identiti sosial (SI) pada tingkah laku ini. C2COKHE penting kerana interaksi antara pemain yang dijalankan dalam komuniti untuk membincangkan strategi, perkongsian pengalaman dan pengetahuan berkaitan permainan Dota2 akan membantu pemain memenangi pertandingan yang terlibat di dalamnya. Kajian ini menggunakan pembolehubah daripada Technology Acceptance Model (TAM) dan Motivation, Opportunity, Ability (MOA) untuk mengukur kesan anteseden ke atas C2COKHE manakala Identiti Sosial (SI) mengukur kesan terhadap hubungan antara anteseden dan C2C OKHE. Seramai 410 pemain Dota2 Indonesia mengambil bahagian dalam kajian ini. Keputusan statistik berdasarkan Pemodelan Persamaan Struktur Separa Paling Kecil (PLS-SEM) menunjukkan bahawa TAM dan MOA adalah anteseden C2C OKHE yang ketara manakala SI menyederhanakan secara positif hubungan antara MOA dan C2C OKHEserta antara tanggapan tentang penggunaan yang mudah (PEOU) dan C2C OKHE, tetapi SI tidak menyederhanakan hubungan antara tanggapan kebergunaan (PU) yang dirasakan dengan C2C OKHE.

THE INFLUENCE OF TECHNOLOGY ACCEPTANCE, EFFECTIVENESS, MOTIVATION, OPPORTUNITY AND SOCIAL IDENTITY TOWARDS CUSTOMER KNOW-HOW DOTA GAMERS

ABSTRACT

Indonesia is a country with most potential market for gaming industry with largest share of online game downloads (30%) with US $1.3 billion revenue in Southeast Asia region in 2020. Dota2 game represents one of the most popular Multiplayer Battle Online Arena. Focusing on Indonesian active online Dota2 gaming players, this study investigates the antecedents of customer-to-customer online know-how exchange (C2COKHE) and moderating effect of social identity (SI) on this behavior. C2COKHE is important because interactions between gamers carried out in the community to discuss strategies, sharing of experiences and knowledge related to Dota2 games will help gamers to win the competitions involved in it. This study applies variables from Technology Acceptance Model (TAM), Motivation, Opportunity, Ability (MOA) to measure antecedent effects on C2COKHE while Social Identity (SI) measures moderating effect on the relationship between antecedents and C2C OKHE. 410 gamers Dota2 Indonesia participated in the study's survey. Statistical results based on Partial Least Square Structural Equation Modelling (PLS-SEM) show that TAM and MOA are significant C2COKHE antecedents while SI positively moderates the relationship between MOA and C2COKHE as well as between perceived ease of use and C2COKHE, but SI does not moderate the relationship between C2C OKHE and perceived usefulness.

CHAPTER 1

INTRODUCTION

1.1 Introduction

An overview of this study will be discussed in this chapter. This chapter will begin with background of the study, followed by problem statement, research questions, research objectives, significance of the study in terms of theoretical and practical contributions and definitions of terms used in this study.

1.2 Background of Study

The development of Information and Communication Technology (ICT) is increasing rapidly. All industries that are mainly related to ICT must now face some challenges to keep up with technology advancement, which includes providing devices, tools and platforms to create easiness in finding information and supporting communication activities. With the rapid development of wireless communication and network technology, utilisation of internet network has also shown an exponential increase (Li, Lu, Cao, & Zhang, 2018). Hence, the use of computers, smartphones and mobile devices has increased rapidly in supporting daily needs, not only for creating communication or searching for information, but also for the purpose of recreation and entertainment. One of the fastest-growing industries related to entertainment and recreation is the gaming industry. The gaming industry comprises several specialisations, including development, production, design, level design, audio design, art, and testing (Gruen et al., 2007). The roles of these gaming industries are to create everything about the games from content, style of game and reward system for the targeted audience of the games. The history and development of interactive games began in the early 1950s when scholars designed simple games, simulations and

artificial intelligence programs as part of their research in computer science (Creative Economy Agency, 2015). Since then, interactive games have become a popular form of entertainment and are part of modern culture in almost every part of the world. The rapid growth of gaming industry is closely related to the advancement of internet technology.

In this digital era, gaming industry continues to grow along with technology advancement through constructing online games. Internal Data Company (IDC) defines an online game as a game item whereby many people can take part concurrently via TCP/IP and relying on Internet (Zhaohui & Xiaomeng, 2012). Online games can be accessed easily and can be played anytime. Besides being a form of entertainment, online gaming also enables people to connect with other gamers which in turn helps to shape the community. Online gaming community not only promotes social engagement between gamers, but also enables interchange of information among gamers to occur.

Online game is certainly a dominant online business model (Wu, Chen, & Cho, 2013). Recently, online games have gradually turned into a developing market segment (Lu & Wang, 2008; Koo, 2009; Wu et al., 2010). According to the data obtained from the Global Games Market Report (Newzoo, 2017), the coverage of online gaming market is growing rapidly. It is estimated that 2.2 billion of gamers worldwide earn $108.9 billion in-game revenue in 2017 and their revenue is expected to grow continually to $128.5 billion by 2020. The Asia-Pacific region earns $51.2 billion in 2017 or 47% of the total global game revenue. This growth represents a 9.2% year-on-year increase. Overall, the total revenue claimed by each region has remained virtually unchanged since 2016. North America is the second largest region, taking a

25% market share with total revenue of up to $27.0 billion or an increase of 4.0%. on a year-over-year basis by Europe. Middle East and Africa regions earned $26.2 billion and their revenues have increased by 8% year over year. Meanwhile, the region of Latin America earned $4.4 billion in-game revenue with a 13.9% increase year over year.

Gaming industry applies two business models to increase their profits, namely free-to-play and pay-to-play/premium (Herrewijn & Poels, 2013). For free-to-play model, gamers are allowed to download and play games without any charges. As for pay-to-play/premium model, gamers are required to pay in order to gain access rights to play games. Free-to-play games can be divided into three groups, namely shareware, freemium and freeware. Shareware allows gamers to experience games within a trial period before purchasing the full version. Freemium allows gamers to play games without any charges; however, gamers still have to pay for certain virtual content. In this model, profits are earned via in-app purchases whereby extra gears and characters can be bought to improve their performance. Companies earn profits from selling accessories. Different accessories are designed and priced differently. Fremium generates more profits compared to other paid games (Nojima, 2007; Oh & Ryu, 2007; Wu et al., 2013). Freeware allows gamers to download and play games free of charge. In this model, gaming producers generate their revenues via in-game advertisements. This business model is an alternative for the gaming industry to provide freedom to consumers in order to access the game without any charges.

Beyond the gaming industry, selling virtual items has turned into a major source of revenue in the mainstream online services. Digital products and services are commonly utilised for the realisation of economic processes, which is known as

electronic commerce (e-commerce). The notion of e-commerce relates to many economic activities that are executed online with the aid of ICT technologies (Puto & Ko, 2015). E-commerce applies internet technology to enhance organisational performance such as increasing profitability, gaining market share, improving customer service, and delivering products faster (Francisco et al., 1995; Zhao et al., 2013; Zou et al., 2012; Chen & Zhang, 2012).

E-commerce involves all aspects of organisational interaction electronically with its stakeholders. Thus, e-commerce includes activities such as creating web pages to support relationships or communicate electronically with stakeholders. In brief, e-commerce involves the use of information technology to improve communication and transactions with all stakeholders of an organisation. Stakeholders include customers, suppliers, government regulators, financial institutions, managers, employees, and the public.

The rapid development of online games and their likelihoods to be applied in trade offer a chance to promote the economy of a country (Puto & Ko, 2015). Therefore, gaming industry is connected to e-commerce industry since monetisation processes can be performed via an e-commerce platform. Monetisation is a process which makes a product or service to have a high economic value and is used to generate income. In the online gaming industry, monetisation can be performed through three methods, including paid games, virtual items, and paid in-game advertisements (Kurniawan, 2016).

The development of online gaming industry in Indonesia increases along with the development of internet network. According to a published data by the Indonesia Internet Service Provider Association (APJII) in 2019 until Q2 of 2020, there are 196,7

million of people in Indonesia who use the Internet. Meanwhile, internet penetration in 2019-2020(Q2) has reached 73.3% with the age group of most online game players is 19-34 years old which reaches 42.52%. This number has increased compared to 2018, which was only 64.8%. This implies that Indonesia is catching up with neighbouring countries such as Brunei, Singapore and Thailand where internet penetration rates exceeded 70% in 2018.

According to APJII 2019-2020(Q2), there are various reasons or purposes of using the Internet in Indonesia. The top five purposes are (1) social media, (2) communication, (3) entertainment, (4) online banking, and (5) online trading. For entertainment, the most accessed content is online videos (49.3%), followed by online games (16.5%) and online music (15.3%). The data have shown that online games are the second-highest reason of using the Internet for the purpose of entertainment (APJII, 2020). Thus, online games, along with the internet penetration, seem to have the potential to promote the development of e-commerce in Indonesia.

With a large population of people, Indonesia provides an enormous market for e-commerce. This phenomenon enables Indonesia to become a potential target for the e-commerce industry, including gaming industry that utilizes e-commerce to generate revenues through selling games application and its accessories. Gaming industry via e-commerce can certainly stimulate the economy in Indonesia (Indonesia-investment, 2017). With an increase in internet penetration, the online gaming market is seen as an opportunity for e-commerce (Soni, 2015).

Unfortunately, this vast gaming market is dominated by foreign games. In 2016, Indonesia held 9.5% of the market share and decreased to 5% during 2017 (Pratama, 2018). The number is still small compared to other Asian countries such as

Vietnam which controls 42% of the market organised by local game developers (Widiartanto, 2018). The description shows that the Indonesian gaming industry is still small compared to the creative industry. Hence, the Indonesian gaming industry still needs to be further developed. It requires an understanding of how to provide the basic entertainment needs to online users because keeping users has been considered one of the most critical challenges in the online gaming industry (Fu, Chen, Shi, Bose, & Cai, 2017). The Indonesian online gaming industry should work hard to gain gamers' attention to the level of technology acceptance.

Gamer's behaviour when playing online games is not affected by the perceived ease of use in online games; however, their intention of playing online games is directly influenced by the perceived ease of use in online games (Liang & Yeh, 2011). An online game with low level of difficulty not only will raise gamers' intention to play continually, but will also drive them to spend more money on buying virtual items, characters or gears which can improve their gaming performance. The more gamers are satisfied with the game and virtual selling items, the more purchases will be conducted. Hence, it will offer excellent opportunities for gaming industry to gain more profits via e-commerce.

In order to enhance the profits of online gaming industry, gaming companies require to learn on how to fulfil gamers' requirements. Many virtual gaming players develop some online communities or forums and some of them become important communication channels for players to interact and communicate with one another. These online communites or forums can help to grab gamers' attention, thus creating buzz and word of mouth (WOM) effect. The significance of word of mouth (WOM) has been a very crucial subject for researchers and marketing practitioners. Customer's

choice is greatly affected by WOM (Katz & Lazarfeld, 1955; Engel et al., 1969; Arndt, 1967; Richins, 1983). The Internet has emerged as a source and channel for electronic word-of-mouth (e-WOM) communication among customers (Hennig-Thurau et al., 2004).

Within the online gaming community, several game genres are discussed by gamers. Genres are narrative styles that affect story structure, depth of character, and other storytelling elements (Grace, 2005). A game genre is a particular class of games that are connected by a similar gameplay feature. Genres are interpreted based on the common challenge of games. Genres may cover various kinds of games, thus contributing to more specific stratifications called subgenres. Several games, especially browsers and mobile games, are generally grouped into numerous genres.

The following table is a list of all commonly defined game genres with short descriptions.

Table 1.1 Game Genres and Its Descriptions

Genre	Description
1. Real Time Strategy (RTS)	Is the genre of a computer game with the typical character of a war game where each player has a country. Example: Warcraft, Star Wars, Age of Empires.
2. First Person Shooter (FPS)	Is the type of game of shoot-out with a display on the player's screen is the viewing angle of the character played. Example: Counter Strike, Halo, Call of Duty, etc.
3. Role Playing Game (RPG)	Is a game whose players play the role of fictional figures and collaborate to string together a story. There are two types of RPG: Live Action Role Playing (LARP) is a game that players can mimic the physical movements of characters played and wear costumes and use tools that match the characters, situations and stories played; and Massively Multiplayer Online Role Playing Game (MMORPG) is a game that involves thousands of players to play together in cyberspace at the same time. For example: World of Warcraft, The Lord of the Rings Online: Shadows of Angmar, Final Fantasy, Ragnarok, and Dota.
4. Life Simulation Game	Is a life simulation game covering individual activities in a character figure and generally designed to closely simulate aspects of a real or fictional reality. For example: SimLife, Second Life.

5. Construction and Management Simulation Game	Is a simulation game of building a city where players are required to build a city complete with public and government facilities. For example: Simcity.
6. Vehicle Simulation	Is a game that includes simulation of the operation of some vehicles, such as airplanes, trains, or war vehicles. For example: Flight Gear, Tram and Orbiter.
7. Action Game	Is a game that deals with physical challenges, such as dexterity and reflexes of players. For example: Street Fighter
8. Adventure Game	Is a game that requires the player to solve various puzzles by interacting with people or the environment, most often in a non-confrontational way. It is considered a "purist" genre and tends to exclude anything which includes action elements beyond a mini game. For example: Assassins Creed, Tomb Raider
9. Action Adventure Game	Is an adventure game combined with fighting action, confronting obstacles and solving puzzles. For example: Grand Theft Auto, Splinter Cell, Tomb Raider and Indiana Jones.
10. Manager Simulation	Is a simulation game to be a manager in a football club. For example: Championship Manager.
11. Racing	Is a game of racing vehicles. Example: Crash Team Racing and Need for Speed.
12. Sport	Is an interactive game themed sport in general. For example: PES 2010, and Winning Eleven.

Source: Grand Strategy 'Subsektor Ekonomi Kreatif', 2016 (p. 43)

Tables 1.1 shown that there are certainly many genres in online games which generate a huge number of gamers and the numbers are expected to increase over time. Hence, gamers require to tak part in gaming communities and forums in order to voice out their perceptions or questions regarding online games (Su, Chen, Chang, & Mao, 2015; Teng, 2018). Despite using only official websites, some gamers develop communities in online media so as to accommodate gamer's needs. The ability to develop online social identities on social media has become important for every gaming developer as a communication channel (Teng, 2018). With the development of online media, it is no longer just words that help to spread information about certain games among gamers. It also provides features that involve comments and reviews in order to encourage gamers to share their individual gaming experiences. This includes gamers' opinions and experiences which are distributed through chat rooms, message boards, and other cyberspace communication channels (Gelb & Sundaram, 2002; Li & Ku, 2018). It can attract gamers' attention and create buzz. Thus, it can be a very

effective promotional medium which can help online gaming to become highly visible and popular.

In Indonesia, the gaming market grows continuously with the appearance of MMORPG (massively multiplayer online role-playing game), RTS (real-time simulation) and MOBA (Multiplayer Online Battle Arena). Presently, the development of Dota2 has contributed to the domination of MOBA games in the online gaming market (Wilson, 2017). Dota2 is one of the top games that are played in Indonesia (Steamspy, 2017). The popularity of Dota2 continues to grow and has become the best-selling online game in 2020, with over 6 million unique users (Statista, 2020). Since Dota 2 also provided players to compete in some competition which need some strategies in completing and winning the challenges, that is why the information exchange among player (C2C OKHE) become important to be examined.

While many of these users play casually, some professional players take part in Dota2 tournaments with massive monetary pay-outs. Dota2 possesses an extensive and active competitive gaming arena, with teams from all over the world competing in leagues and tournaments. Premium Dota2 tournaments provide millions of US dollars as prizes which are the highest compared to other e-Sport tournaments. The largest tournament is known as The International, which is organised by Valve and held annually at the KeyArena in Seattle. Valve also sponsors smaller tournaments, but frequently holds major tournaments known as the Majors which lead up to the International every year. For larger tournaments, on-site staff will provide comments and analysis for ongoing matches and this is similar to traditional sports events that are conducted via media coverage. Professional Dota2 competitions are livesteamed or occasionally broadcasted via television, with millions of spectators. In 2017, there

was a Premier Tournament that offered an outstanding prize of $7.227.416 (Lee Kah Leng, 2017).

According to Harley (2017), Dota2 offers exciting games where players have to cooperate in order to win a game. The ability of every individual in a team must also be qualified because Dota2 requires players to analyse the situation and decide quickly when facing their opponents. Dota2 itself has millions of fans worldwide and fans are the ones who ensure the survival of a game. In addition, the popularity of Dota2 has turned this game into a prestigious game with billions of dollars as prizes for an international tournament. This type of e-Sport is considered to be organised globally because of the appearance of Dota2. The update features have become one of the important factors that attract players and the developers of Dota2 are aware of it.

The focus of this study is Dota2 players in Indonesia. This research will investigate whether the positive effect of the game is associated with the effect of perceived ease of use and perceived usefulness of players on customer-to-customer online know-how exchange. In addition, this study will analyse whether customer-to-customer online know-how exchange is affected by players' ability, opportunity and motivation.

Furthermore, this research will also include social identity as a mediator because it is categorised as the regular issue in social media and online setting (Wang, 2017). Social identity is considered a mediator due to the consideration that Dota2 players usually form the community as their social identity. Players need to characterise their identities by self-associating with a category label, which is the impression of who they want to be (Warlop & Puntoni, 2012; Vernuccio et al., 2015). Identity has been a significant piece of society since players need a personality to

communicate with others. There are two fundamental parts of an individual's character: the first one is the name which can separate an individual from another, and the other one is substantial which can be found somewhere inside. The quintessence of character refers to the consistency of an individual in all circumstances while being indistinguishable and socially important (Fearon, 1999; Joseph, 2004; Edwards, 2009). These thoughts of character are known to be close to a home character. It can refer to an individual's qualities, characteristics, objectives, values and methods which separate them from social job (Oyserman, Elmore, & Smith, 2012).

Social identity is related to the necessity for a sense of belonging towards a particular community and it is shaped by trust among community members (Luarn et al., 2016). It is a part of individuals' self-concept, which is developed from their knowledge when they join as members of a social group (Wang, 2017). In an online network-based community, a member has an emotional involvement and a value connotation that can be positive or negative (Vernuccio et al., 2015).

Social identity characterises the social way of life as an acknowledgement of one's self towards enrolment in a specific gathering which is an element from his insight, esteem, and enthusiastic noteworthiness connected to that enrolment (Joseph, 2004). Identity has a close relationship with language. The language that people use can reveal many things about them without having to say anything about it. Social background, group membership, linguistic background, age, mentality, nationality, and even gender can be guessed from the language they use. Language is one of the most basic ways whereby people can establish their own identity and shape others' views towards them (Price, 2010).

The gaming group of players can be recognised through their choice of words. It is because each group has their own way of expressing ideas related to the game which is influenced by the group activity and the game itself. Besides their choice of words, they also make abbreviations to make it easier to be discussed. Both choices of words and abbreviations serve as indexical links between users and groups that they join because they have significant value for their corresponding groups (Bucholtz & Kira, 2010). Among the Indonesian Dota2 community, there is the largest community called Steam Community which has around 1,691 active members out of the total members of 63,265. They share information via online media such as WhatsApp group, website and blog. In the online community, they discuss special cheats, game instruction, tips and role in DOTA2 language such as " LFT ROLE", "MIN MEDAL ANCIENT" and "LPF PARTY MMR". This language represents their identity as DOTA2 members in Indonesia. Although games have similar elements, the perception of groups is not on the same wavelength. Consequently, each group produces unique terms and abbreviations that are approved by players in order to be served as their group marker. The difference in perception also results in the difference of social identity in their respective group. This also indicates that interpreting language is connected to a gamer’s community.

The value of a consumer in a community can be seen through sharing of resources. The knowledge-sharing exchanges can be considered as a mean of accumulating practical skills for individuals who want to improve themselves (Gruen, 2006; McAlexander, Schouten, & Koenig, 2002; Benkler, 2004; Sloan et al., 2015). In knowledge-sharing exchanges, the value of a consumer is generated via know-how exchange (von Hippel, 1988). When consumers interact and share resources together, know-how exchange will take place.

Theories and models that are related to a person's involvement with technology are employed in conducting research on online know-how exchange. Those theories and models show that a person's behaviour and opinions towards technology are influenced by the technological aspect of know-how exchanges (Casalo et al., 2010; Chung et al., 2010; Kwon & Wen, 2010; Chang & Zhu, 2011; Ruiz et al., 2015).

This research will try to map the behaviour of Indonesian online gaming players, especially the C2C OKHE in Dota2 in order to find out a description of the behaviour among online gaming players so that opportunities are well mapped by gaming developers in Indonesia. In addition, this research can also serve as a reference for the gaming industry by providing some information related to the behaviour of gamers and interactions among gamers, specifically Dota2 players. Based on the description of the player's behaviour, it is hoped that this research can provide information on C2C OKHE issues regarding online gaming players, especially in terms of technology acceptance model and MOA theory.

This research will also address the gaps that occurred in previous research. This research focuses on the behaviour and interaction among Dota2 players in the gaming industry, whereas previous studies focused more on play strategies and how to win a competition in the game. This study will benefit the government and gaming industry as it can help to increase the knowledge regarding the development of one of the most popular games and its role in the C2C OKHE process.

The findings of this study will provide benefits for the community, given that online gaming is one of the most effective means of communication. Thus, the relevant stakeholders can apply suggested approaches that are derived from the results. This study is expected to increase the awareness among providers and users in utilising the

online community as a medium for information and knowledge exchange. For researchers, this research will help them to uncover important areas in the online marketing process which have not been explored in any research.

1.2.1 Dota2 Game in Indonesia

The gaming industry in Indonesia is one of the sub-sectors in the creative industry. Based on the data obtained from the Creative Economy Agency (2017), Gross Domestic Product (GDP) in the creative economy sector in 2015 amounted to 852 trillion rupiahs and grew by 4.38% from the previous year. The creative economy contributes 7.38% to the total national economy. Meanwhile, the gaming industry contributes 1.77% to GDP with employment of 23,320 people. The development of online games in recent years provides an opportunity for the government to recognise online games in the form of e-sport. E-sport is an electronic sport that is supported by IESPA (Indonesia E-Sports Association). IESPA is part of FORMI (Federation of Sports Recreation Society of Indonesia). FORMI is a federation that has been recognized by Kemenpora (Ministry of Youth and Sports), KONI (Indonesian National Sports Committee), and KOI (Indonesian Sports Committee). The Indonesian E-Sports Association started from an idea and was inspired by the development of the e-Sports industry in a rapidly growing world since 2000. Gaming activities, which are initially a hobby, are developed into promising industries for its stakeholders. The structure and level of the game are similar to sports. E-sports do not require athletes to compete physically but are more concerned with strategy and atheletes compete online through technological tools. Gamers are more confident to compete in e-sports with the establishment of IESPA as an official institution, as they will get more support from the government (Hiltscher & Scholz, 2017).

In e-sports, the competition is categorised into amateur, semi-professional and professional levels. The enthusiasm of Dota2 players in Indonesia is high. Based on the data obtained from steamspy.com, the number of Indonesia's active players in Dota2 reach more than 900 thousand since 2009. According to the president of IESPA, Indonesia is the fourth country in the world with the highest number of Dota2 players (Kuntjorojati, 2018).

Dota2 is developed through the collaboration with Steam, which is a platform created by Valve Corp for downloading software updates. There are 500.000 players who play Dota2 every day and this game is still the second most-played Steam game. However, Valve's efforts to bring more new players seem to be unsuccessful and they have lost many active players throughout 2017. The decrease in numbers of active players can be caused by several factors. One of the factors is the growing popularity of battle royal game genre such as Player Unknown’s Battlegrounds (PUBG). In Indonesia, Dota2 is still in great demand and it can be shown through the enthusiasm of Dota2 gamers to participate in one of the international competitions, which was GESC Dota2 Pro Circuit Minor in March 2018. The match had received official license from Valve Corporation (Kuncorojati, 2018). In Indonesia, the development of Dota2 has increased in terms of its quality since there are more reliable team players who play this game. In fact, the Dota2 team players often participate in various competitions in many places in order to attain achievements.

Indonesia has some of the best Dota2 players, including EVOS (Sport Evolution), Rex Regum Qeon (RRQ), BOOM ID, Kanaya Gaming, and The Prime NND (Ghustara, 2018). These are few teams that play Dota2 in Indonesia and have participated in both local and international competitions. These players have also won

various championships with their respective abilities. Some of these teams also have their top players who can help their teams to be successful and famous in Indonesia.

Various online communities of Dota2 players serve as a platform to share and discuss the Dota2 game. This raises the concern about factors that affect the online know-how exchange among Dota2 players as well as the effectiveness of information exchange that takes place among the players. This study focuses on the C2C-OKHE among Dota2 players and identifies several theories related to factors that influence them such as technology acceptance effectiveness, MOA theory, and social identity. Further description of the theories will be explained in the next section.

1.3 Problem Statements

The literature has acknowledged technology advancement and the widespread deployment of worldwide internet as factors that enable people to establish online interaction with other people easily. In general, in the context of consumers, they use online platforms to voice out their perceptions and experiences of purchasing or using a certain product, which can be received easily by other consumers although they are geographically dispersed but are connected through online. Reviews of frequently posted products on the internet-based media have become important and is usually used by consumers to give them more information before they make any product purchase. As a result, the posted consumer's reviews, weblogs, ratings, messages and discussions have forced product developers to change their traditional ways by providing platforms for consumers to communicate and interact.

To date, Indonesia is the 11th largest market for e-commerce, with a revenue of US$33 billion in 2020 which is projected to grow to US$56,4 billion in 2025 (APJII, 2020). This places Indonesia ahead of Russia and behind Australia. With an increase

of 61%, the Indonesian e-commerce market contributed to the worldwide growth rate of 29% in 2020 (APJII, 2020). As for the global gaming industry, Indonesia claims 17th position with US$1.1 billion-dollar revenue in January 2019 (APJII, 2020). In Southeast Asia, Newzoo research ranks Indonesia in the top spot of gaming markets followed by Thailand (2nd) and Malaysia (3rd) (Newzoo, 2020).

Indonesia's gaming market revenues are expected to show annual growth rates (CAGR 2017-2021) of 13.6% and market volumes of $227 million by 2021. This is the fastest growth compared to other countries in Southeast Asia whereby the global growth rate is estimated at 7% for the same period. The tremendous growth of gaming market in Indonesia helps to promote the development and growth of gaming industry in Indonesia.

As a country with most potential market for gaming industry, there is a required need to focus on Dota2 game as it is identified as one of the most popular Multiplayer Battle Online Arena. Based on the phenomenon it creates since its release in 2013, it is expected that Dota2 will continue to maintain its top position well into the future.

Dota2 is a team game; thus, gamers need to form effective teams when they compete to win Dota2 competitions such as Rex Regum Qeon (RRQ) and JOIN DOTA (this allows Indonesian players to compete against teams from overseas). One area of importance is customer-to-customer online know-how exchange (C2COKHE). C2COKHE is important because interactions between gamers carried out in the online community to discuss most effective strategies to undertake, sharing of experiences (good, bad) and knowledge related to Dota2 games (e.g., technical) will help gamers to win the competitions involved in it (such as JOIN DOTA). These forces gaming developers in Indonesia to create players' community forums where they can conduct

the know-how exchange about a particular game as a way of providing gamers' basic needs. Continuous activities in the online community (C2COKHE) include grabbing gamers' attention, buzzing and word of mouth (e-WOM) effects. To date, various online communities of Dota2 players are established as a platform to share and discuss issues about Dota2. The question that emerges from this phenomenon is – what is/are the antecedent(s) of C2COKHE? In addition, is there a moderating effect between the antecedent(s) and C2COKHE?

Based on the phenomenon and emerging questions, this study tries to investigate Indonesian active online Dota2 gaming players' behavior whereby it studies the relationship between antecedents and customer-to-customer online know-how exchange (C2COKHE); in addition to studying the moderating effect of social identity (SI) on this behavior. In this light, this study applies variables from Technology Acceptance Model (TAM), Motivation, Opportunity, Ability (MOA) to measure antecedent effects on C2COKHE while Social Identity (SI) measures moderating effect on the relationship between antecedents and C2C OKHE.

People tend to be more empathic towards product information posted by other customers in online communities compared to information provided by marketers (Bickart & Schindler, 2001). The C2C-OKHE used for sharing knowledge primarily focuses on interactions between group members via notes, links, photos or videos, and it can be used to publish different types of knowledge (Awl, 2011). Thus, C2C-OKHE emphasizes the exchange and sharing of knowledge and communication. TAM as the first underlying theory for this study provides the first two antecedent variables, namely, PEU and PU so as to find out an individual's acceptance or choice of an information technology. Technology acceptance can take place in the gaming

community when people share and discsuss matters pertaining to a certain game (Gruen et al., 2006; Briliana et al., 2015; Pandey & Kumar, 2021).

The Motivation Opportunity Ability (MOA) theory is the second underlying theory applied which provides the study with another three antecedent variables, namely, MOA (pls write in full) for predicting Dota2 gamers' C2C OKHE behavior. Previous studies showed that MOA theory is appropriate to be used in predicting C2C OKHE (Briliana, Wahid, & Fernando, 2015; Ruiz et al., 2015).

The last theory, Social Identity (SI) refers to an individual's sense of belonging towards a social group and an important personal value. Social identity is related to an individual's perceived position within a social group. Social identity has a significant effect on a user's behavior (Zhou, 2011); it was found that SI is connected to social media platforms (Arenas-Gaitan, Rondan-Cataluña, & Ramírez-Correa, 2013). Social identities can be perceived as having an endurable and real existence within the self-system that can guide other important aspects of self and intergroup relations (Arenas-Gaitan, Rondan-Cataluña, & Ramírez-Correa, 2013). In contrast, a malleable view of human character may cause an individual to treat members of social groups as comprising people who share some personal qualities that may change along with the context of categorization (Zhou, 2011).

Based on review of the literature, while TAM and MOA theories have been used to predict C2C OKHE, there is still a lack of studies on consumer behavior that focuses on C2C OKHE via online forums, in specific, emphasizing on the gaming industry in Indonesia. Prior studies emphasized the influence of C2C OKHE upon purchase behavior (Gruen et al., 2006; Briliana et al., 2015; Pandey & Kumar, 2021). Hence, this study findings on identification of antecedents and moderating effect of

customer-to-customer online know-how exchange among Dota2 gamers in Indonesia will be providing insights to the gaps found in the literature.

1.4 Research Questions

1. Does perceived ease of use influence customer-to-customer online know-how exchange for Dota2 gamers?
2. Does perceived usefulness affect customer-to-customer online know-how exchange for Dota2 gamers?
3. Does motivation affect customer-to-customer online know-how exchange for Dota2 gamers?
4. Does opportunity affect customer-to-customer online know-how exchange for Dota2 gamers?
5. Does ability affect customer-to-customer online know-how exchange for Dota2 gamers?
6. Does social identity moderate the connection between perceive usefulness and customer-to-customer online know-how exchange for Dota2 gamers?
7. Does social identity moderate the relationship between perceive ease of use and customer-to-customer online know-how exchange for Dota2 gamers?
8. Does social identity moderate the connection between customer-to-customer online know-how exchange and motivation for Dota2 gamers?
9. Does social identity moderate the connection between customer-to-customer online know-how exchange and opportunity for Dota2 gamers?
10. Does social identity moderate the connection between customer-to-customer online know-how exchange and ability for Dota2 gamers?

1.5 Research Objectives

1. To determine whether perceived ease of use leads to customer-to-customer online know-how exchange for Dota2 gamers.
2. To determine whether perceived usefulness leads to customer-to-customer online know-how exchange for Dota2 gamers.
3. To determine whether motivation leads to customer-to-customer online know-how exchange for Dota2 gamers.
4. To determine whether opportunity leads to customer-to-customer online know-how exchange for Dota2 gamers.
5. To determine whether ability leads to customer-to-customer online know-how exchange for Dota2 gamers.
6. To determine whether social identity moderates the connection between perceived usefulness and customer-to-customer online know-how exchange for Dota2 gamers.
7. To determine whether social identity moderates the connection between perceived ease of use and customer-to-customer online know-how exchange for Dota2 gamers.
8. To determine whether social identity moderates the connection between customer-to-customer online know-how exchange and motivation for Dota2 gamers.
9. To determine whether social identity moderates the connection between customer-to-customer online know-how exchange and opportunity for Dota2 gamers.
10. To determine whether social identity moderates the connection between customer-to-customer online know-how exchange and ability for Dota2 gamers.

1.6 Scope of Study

As this study attempts to investigate antecedents of C2C OKHE and SI as moderator between antecedents and C2COKHE of gamers in Indonesia, the scope covers only proposed antecedent variables taken from TAM and MOA theory and the SI variable from SI theory. The scope is limited to the gaming industry in particular Dota2 and only focused on active Dota2 gamers in Indonesia as its respondents. The study uses only quantitative approach applying survey method for data collection and it involves only 110 gamers. The limited scope means that the conclusions made for the study will be confined to the topic, industry, and gamers involved.

1.7 Significance of the Study

1.7.1 Theoretical Significance

The aims of this study are to investigate the relationship between technology acceptance and MOA as the antecedents with the C2C OKHE. In addition, social identity (SI) implies as to C2C OKHE among online consumers and online community.

This study argues that an integration of theories is needed as it can help in understanding the online behaviour of a customer. Unlike previous research, this study provides technological adoption behaviour as one of C2C OKHE predictors in the gaming industry, especially Dota2 as one of the most popular games in MOBA. In addition, studies that investigate the behaviour of players in the gaming industry are still limited. Therefore, this study will contribute practically and theoretically towards the field.

Prior studies explored MOA as the antecedent of C2C OKHE. C2C OKHE can affect values perceived by customers (Gruen, Osmonbekov, & Czaplewski, 2007).

Another study was conducted to investigate if social identity, motivation, ability and opportunity can be used to predict the C2C OKHE and propose outcomes in terms of product purchase decision making and actual purchase behaviour (Briliana et al., 2015).

In this study, PEU, PU and MOA act as antecedents of C2C OKHE while social identity serves as a moderator. With this integrated approach, it is expected that this study will give contribution related to theory, specifically in enriching the existing concept and developing framework on factors that influence C2C OKHE.

1.7.2 Practical Significance.

In terms of practical perspective, this study will further contribute to describe the process in C2C OKHE among gamers in Indonesia and Dota2 players will be used as the subject for this research. By conducting this study, it is hoped that gaming developers and publishers can comprehend and fulfil the needs and expectations of their customers. This study will also describe the importance of online community as a medium for gaming players in the process of C2C OKHE such as exchanging information and performing trading among players. The outcomes of this study will increase knowledge about the process of C2C OKHE among gaming players in Indonesia. Thus, it will help Indonesian gaming developers to understand the relationship between technology acceptance, MOA, SI with behaviour of players who engage in C2C OKHE via online community and recognise the needs of those players.

1.8 Definition of Terms

The terms used in this study are defined as follows:

1.8.1 Perceived Usefulness (PU)

PU is defined as the prospective user's belief of using a certain technology in order to enhance the performance (Pinho & Soares, 2011).

1.8.2 Perceived Ease of Use (PEU)

PEU is defined as a person's expectation of using a certain technology without encountering any problems (Pinho & Soares, 2011).

1.8.3 Motivation

Motivation refers to a person's willingness to get involved in the process of know-how exchange with other people (Gruen, Osmonbekov, & Czaplewski, 2006).

1.8.4 Opportunity

Opportunity refers to a state or condition which is favourable in obtaining a positive result (Gruen et al., 2006).

1.8.5 Ability

In MOA theory, ability refers to consumers' skills (MacInnis et al., 1991). Ability is defined as a person's skills to get involved in the process of know-how exchanges with other members (Gruen et al., 2006).

1.8.6 Social Identity

In this theory, it is suggested that an individual tends to develop a sense of belonging towards a social group and the individual's relationship between members of the respective group possesses a substantial value (Arenas-Gaitan et al., 2013).

1.8.7 Customer-to-Customer Online Know-How Exchange (C2C OKHE)

C2C OKHE takes place when people interact and share resources together in order to improve their welfare (Gruen et al., 2006).