

PLAYERS' PREFERENCES AND MAIN
MOTIVATIONAL FACTORS IN ONLINE
ROLEPLAYING GAMES: CASE VIETNAM

Master's Thesis
Chau Chu
Aalto University School of Business
Information and Service Management
Spring 2019

Author Chu Chau

Title of thesis PLAYERS' PREFERENCES AND MAIN MOTIVATIONAL FACTORS IN ONLINE ROLEPLAYING GAMES: CASE VIETNAM

Degree Master of Science in Economics and Business Administration

Degree programme Information and Service Management

Thesis advisor(s) Merja Halme, Esko Penttinen

Year of approval 2019

Number of pages 75

Language English

Abstract

This study aims to study (1) the Vietnamese players' valuations and their preference clusters, (2) how the preference clusters relate to the main motivational factors in online roleplaying games.

The study is based on the flow experience theory in games. It identified eight game factors that related to the flow experience in games (gaming experience). They were: concentration & immersion (graphics and sounds), challenges & skill, control (customization), feedback, social interaction (communication spaces and tools), variety & novelty, and storyline. These factors were used in a best-worst scaling experiment to find out how respondents value them. Using latent class analysis, respondents were segmented into five different clusters with different interests. People in cluster 1 are the story lovers, which are interested in the game's storyline. People in cluster 2 are the aesthetics lovers, which love the beauty aspect of games (graphics and sounds). People in cluster 3 are the socializers, which enjoy communicating and cooperating with others. People in cluster 4 are the achievers, which are about conquering, competition, and performance. Finally, people in cluster 5 are the local story lovers, which have a special interest in the local aspect of the game's story, e.g. local myths are embedded in games. In addition, players' main motivational factors were studied: they were achievement, social, and immersion. Furthermore, the motivational factors' average across the clusters were compared. Cluster 4 has the highest average mean in terms of achievement. In terms of social, cluster 3 and 4 have the highest average means. Meanwhile the immersion's average is the same across all the clusters.

To the best of the author's knowledge, the players' valuations in games have not been studied with a method of discreet choice (best-worst scaling method) before. On the practical level, the study findings can help game companies to develop and publish their games efficiently in the Vietnamese gaming market.

Keywords roleplaying games, RPG, Vietnamese, gaming market, gamers, gaming experience, flow experience, players' motivations, players' valuations

Table of Contents

1	Introduction.....	1
1.1	Research questions	2
2	Literature review.....	4
2.1	Flow and its elements	4
2.1.1	Flow experience and online games	4
2.1.2	The basic elements of games	6
2.1.3	The factors of flow	7
2.1.4	The subfactors of flow.....	13
2.2	Player motivational factors	16
2.2.1	Psychographic approach to player segmentation	16
2.2.2	Behavioral approach to player segmentation.....	17
3	Methods	20
3.1	Best-worst scaling.....	20
3.2	Latent Class Analysis	22
3.3	Multi-item scale development	23
4	Survey	25
4.1	Demographic questions	25
4.2	The player motivation questions	26
4.3	The best-worst scaling items and survey design	28
4.3.1	Considering an example game to assist in defining the final set of BWS items	29
4.3.2	Final set of BWS items.....	32
4.3.3	Designing the survey details.....	34
5	Results.....	37
5.1	Sample description	37
5.2	Player preferences	38
5.3	Motivational factors of the players	41
5.3.1	Players clusters and motivational factors	43
5.4	Profiling the clusters	43
6	Discussion	46
6.1	Research questions revisited	46
6.2	Theoretical implications.....	48
6.3	Managerial implications.....	49

6.4	Limitations, reliability and validity	50
6.5	Future research suggestion	51
	References	52
	Appendix A: Yee's (2006) questions.....	59
	Appendix B: Best-worst scaling design report	67
	Appendix C: The posted message in Vietnamese.....	68

List of Tables

Table 1. Factors that affect gaming experiences.	12
Table 2. The new set of questions.....	27
Table 3. Cronbach's alpha value of each dimensions in the new questions.....	28
Table 4. JX mobile game features in terms of flow's factors and subfactors.	30
Table 5. The final set of item for BWS.....	33
Table 6. Sample description.	38
Table 7. Rescaled score (0-100) of 15 items in BWS questions.	39
Table 8. Minimal log-likelihood and CAIC for LCA solutions with different groups.....	40
Table 9. Average score for each item in 5-cluster solution.....	41
Table 10. Chi square independence test results with cluster membership.	41
Table 11. Rotated factor pattern (orthogonal varimax).....	42
Table 12. Cronbach's alpha score of three dimensions.	43

List of Figures

Figure 1. Gaming experience framework.....	6
Figure 2. Basic elements of games.	7
Figure 3. The flow zone.	8
Figure 4. Example of 2.5D graphic (left) and 3D graphics (right).....	13
Figure 5. Gaming experience framework (updated version).....	15
Figure 6. Bartle's player types.	17
Figure 7. The game's promotion (top) and gameplay picture (bottom).....	30
Figure 8. Imaginary situation's description.	36
Figure 9. The minimum levels text.....	36
Figure 10. A set of 4 items in the BWS questions.....	36

1 Introduction

The global games market's revenue is estimated to reach approx. \$138 billion in 2018, and the game market is predicted to have a decade of double-digit growth (Newzoo Global Game Market Report, 2018). Therefore, it makes sense for game developers and designers to understand and identify the reasons why people play video games (Liu 2017). It has been shown that players' motivations are the key factor to understand their behaviors (Tychsen et al. 2008, Yee 2006). Thus, researchers have been working on quantify these motivations into different types, which are useful for game developers to learn how games can attract or alienate different players (Yee 2006). For instance, Steward (2011) showed that players in certain players' types are likely to play certain game genres. However, studies that focus on players' values in games are scarce. Understanding players' valuations in games can offer different perspectives on why people play games and how they are attracted to games.

This thesis concentrates on Vietnam, which is one of the fastest growing game markets in the Southeast Asian countries. It has over 30 million gamers and ranks 28th in terms of game revenue in the world (The Vietnamese gamers 2017). The Vietnamese play games in multiple platforms: PC, game console and mobile device, which indicates different ways for game companies to reach their customers. Out of all the game genres in Vietnam, the most profitable one is Massive-Multiplayer Online Role-Playing Games (MMORPGs) (Vietnam mobile game market 2017), which multiple players play different characters and interact simultaneously in a huge virtual world. This genre in Vietnam is heavily influenced by the Chinese culture, i.e. games that are related to Chinese myths and legends are popular. Even though the Vietnamese game market has a large player base and much potential, Vietnam does not have many local game developers as well as its own games (Vietnam mobile game market 2017). Few of notable Vietnamese game developers are DivMob, VNG corporation, VTC intercom, Gamota, and Funtap. Subsequently, all successful mobile games, e.g. Clash of Clan, Call of Duty, and Swordman Online, in Vietnam are imported from foreign companies (Vietnam Investment Review 2016).

The facts that Vietnam is a booming market for gaming companies and the local ones are not yet successful in terms of self-made games indicate that there might be a gap between players and local gaming companies. Besides, the Vietnamese literature on games and its

players are still its infancy. Most of the Vietnamese literature are about the internet and gaming addiction issues in the country, meanwhile studies on players' motivations and valuations are rare. Therefore, this thesis aims to understand players' valuations in games in general. However, since it focuses on the Vietnamese players, the study can offer some valuable insight about their preferences. The findings can help local companies to have a better understanding about its customers and to gain a competitive edge over foreign companies.

1.1 Research questions

This thesis aims to study players values in online games to have a better understanding about who they are, what they want, what motivate them, etc. As a result, the research questions are:

- 1) What do players value in roleplaying games (RPGs), and considering the heterogeneity in the values, what kind of preferences clusters can be found?
- 2) What are their motivations and how the preference clusters and main motivational factors relate to each other?

To study the first question, this thesis chose the flow experience theory (Csikszentmihalyi 1975) as a starting point and applied it to the gaming experience (Chen 2007, Liu 2017). Flow theory was chosen because studies have shown that players value games through their playing experiences (Liu 2017, Fan et al. 2012, Su et al. 2016). After that, a list of attributes was created based on the flow experience in games. They were the basic in the design of the best-worst scaling (BWS) questions aiming at eliciting players' valuation in games. Moreover, latent class clustering was used to study the players' heterogeneity in values. The second question was studied employing a set of questions based on Yee's (2006) work, which studied player motivations in games. This helped to identify the main motivational factors. Then the motivational factors were compared across the preference clusters. The comparison gave more insight into the players' valuation in RPGs.

The thesis consists of six sections. Section 1 introduces briefly the video games' background and the study's purposes. Section 2 reviews the flow experience and its factors in online games, and the players' motivational factors. Section 3 describes the methods used in this study: best-worst scaling, latent class analysis, and multi-item scale development. Section 4

explains how the survey was done: demographic questions, motivation questions, and best-worst scaling questions. Section 5 analyses the results of the survey. Section 6 summarizes and concludes the study with the findings, the theoretical and managerial implications, the limitation and suggestions for future studies.

2 Literature review

This review section will focus on the flow experience, which helps to identify different features in game that players value. Several flow experience factors and subfactors will be discussed. After that, the player motivational factors are examined.

2.1 Flow and its elements

2.1.1 Flow experience and online games

Mihaly Csikszentmihalyi introduced flow or optimal experience after interviewing people from different fields about their peculiar feelings when engaging in interested activities (Csikszentmihalyi 1975). It was described as an experience so pleasant and satisfying that people do not need any rewards, e.g. money, for doing it (Csikszentmihalyi 1975). Csikszentmihalyi (1990) found out people from all over the world experienced the same phenomenon with no differences in terms of gender, age, and social status. Their experiences all shared several common elements (Csikszentmihalyi 1990):

- Challenge and skill balance: The challenges should match one's skills. Flow experience is affected by the ability to balance these two factors.
- Clear goals: The purpose of the activity must be clear, and one knows precisely what to do next.
- Action and awareness merging: The combination is needed to achieve concentration and high performance.
- Immediate and direct feedback: It is used to control the progression of the activity, and it helps to meet the goals.
- Concentration on the task: When experiencing flow, people focus on the task and only the task. All irrelevant things are excluded.
- Sense of control: People usually feel a sense of control over the activity without any conscious effort.
- Loss of self-consciousness: In flow, people use most of their mental resources on the activity, thus leads to the loss of self-consciousness.
- Changes in sense of time: During the flow, perception of time can be changed as people feel like "time flies" when they are doing their activities.

- Autotelic experience: it is an experience when one does something not for the expectation of the external reward or benefit. The activity itself becomes its own reward.

An example of a flow experience is reading a book. It requires concentration and the knowledge of language. It has a clear goal (to finish and understand writers' messages) and readers can get immediate feedback (knowledge from the book). Readers are in control of the process and can immerse in its world, which can lead to lose track of time.

In general, the flow experience concept has been applied in many fields, not only in academic but also in different business areas, e.g. online shopping, education, online game, and management (Biasutti 2011, Liu 2017, Sweetser and Wyeth 2005). Even though it is not easy to achieve the flow experience, people can get it when (1) they focus on the task, (2) their skills are adequate for the task, (3) and they can direct what will happen during the work (Biasutti 2011). Besides, the ability to achieve flow depends on external and internal elements, such as the surrounding environment (quiet or noisy), and individual conditions (confident or nervous) (Biasutti 2011).

Moreover, studies show that players value their games based on the flow experience and it fosters their loyalty to the game (Liu 2017, Fan et al. 2012, Su et al. 2016). It means that for a video game to be successful, the game developers must be conscious of and develop the flow components to create a flow experience for gamers (Chen 2007, Lee 2009). Therefore, in the following sections, the below order will be employed when viewing the flow experience in games or in other words the gaming experience (Figure 1):

- First, the basic components of a game will be reviewed to show how game developers and designers look at the game.
- Then, different factors and subfactors of flow, which can be perceived easily by gamers, will be discussed.

The purpose is to show how the basic elements of games are connected to the flow factors, and how these factors improve the gaming experience.

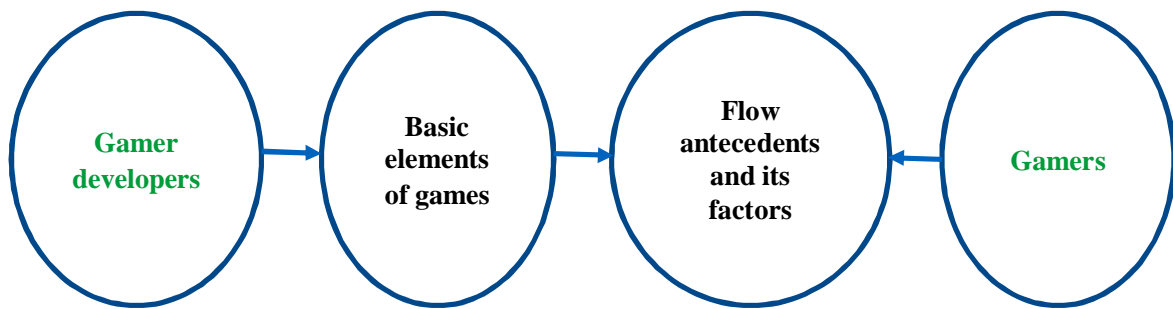


Figure 1. Gaming experience framework.

2.1.2 The basic elements of games

Schell (2008) states that a game essentially consists of four basic elements (Figure 2):

- Mechanics: define how games work, what the rules are, how games are played, how players interact with their games. In other words, it is the core of the game. It is what remains when all the other elements are taken away.
- Story: is the storyline that will happen and unfold in games. The story must be in synchronized with the mechanics of the game, as well as needs the help of the aesthetics and the technology element to be developed further.
- Aesthetics: is about how a game looks and sounds, i.e. the graphics, the sound effects and the music in games. It is an important element as it can be seen and experienced the most by players.
- Technology: in general technology refers to anything that make gaming possible, e.g. paper, pencil. In online games, technology refers to hardware, graphic cards, etc. In short, technology is the engine that enable games to run smoothly.

Among these basic elements, aesthetics is the most visible one to people and thus it usually can be regarded as the most important element. However, all these elements are equally important to a game and they are also interdependent.

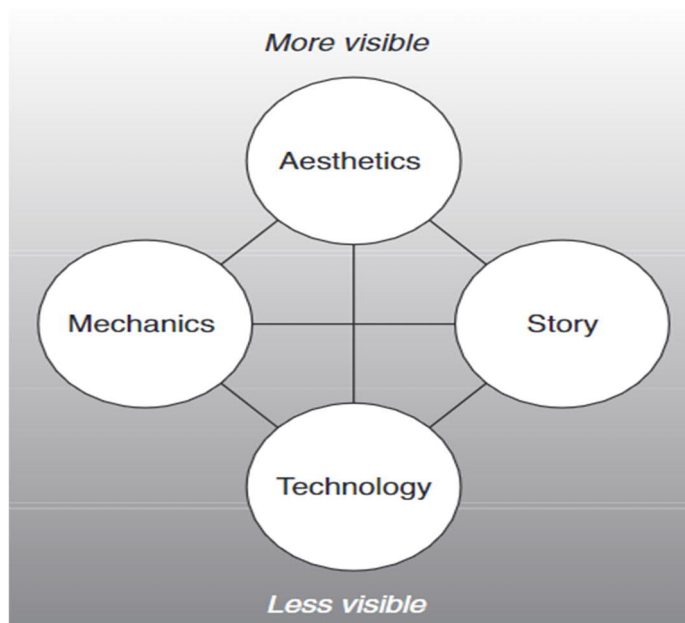


Figure 2. Basic elements of games (Schell 2008).

2.1.3 The factors of flow

There are studies dealing with some specific flow factors in the gaming context. To mention a few, Teng et al. (2012) pointed out that games' tasks and challenges are positively related to game loyalty. Huang and Hsieh (2011) showed that the sense of control, goal and achievement in games also lead to continuous playing. Different from these studies, Sweetser and Wyeth (2005) looked at all the factors of flow in games. They proposed a model based on flow experience called GameFlow for evaluating player enjoyment and experience in games. The model distinguishes good games from bad games and identifies why one game succeeded and the other did not. Their model consists of eight elements:

- Concentration: Games should require concentration from players.
- Immersion: Players should be able to engage deeply into the game and become less aware of their physical surrounding.
- Challenges: Games should be challenging and adequate for the players' skills.
- Skills: Games should create support and opportunity for players to develop and master their skills.
- Control: Players should feel control over their actions and their characters in games.

- Clear goals: This element is self-explanatory and straightforward. Games always have clear goals for players to pursue, e.g. be the strongest hero to save the kingdom, etc. Thus, this element is not going to be reviewed further.
- Feedback: Players should receive feedback on their actions in games.
- Social interaction: It is interesting to note that the social interaction element does not appear in the original flow experience. In this case, games should support player vs. player interactions.

The first two elements, *concentration and immersion*, are similar to the antecedents of flow: focused attention and telepresence suggested by Hoffman and Novak (1996). Liu (2017) showed that these antecedents have a positive influence on flow experience in online games. While focused attention matches its counterpart in GameFlow (concentration), telepresence is defined as the feeling that the virtual environment in games is more real than the actual surrounding (Novak et al. 2000). The idea is that games should provide many stimuli worth attending to, as well as have a reasonable number of tasks and challenges that suits players. It also needs to create an environment where players can immerse, a place where the perception of time is altered, and players can forget, even for a moment, their everyday life (Sweetser and Wyeth 2005). This notion fits into the aesthetics aspect of games (Schell 2008), which is about the game beauty, e.g. *graphic, sound effects, and music*. These elements are the keys to attract gamers' attention (Merikivi et al. 2017).

The *challenges and skills*, which GameFlow adopted directly from the original flow theory, must be in balance to keep player in the flow zone (Figure 3). Adequate challenges must be

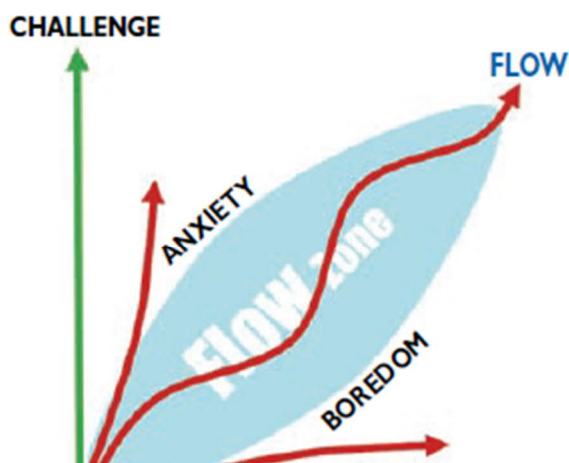


Figure 3. The flow zone (Chen 2007).

matched with players' skills, as it is perceived as pleasure (Ghani and Deshpande 1994, Hoffman and Novak 2009). Challenges also affect players' intention to replay and foster their loyalty toward their games (Huang and Hsieh 2011, Teng et al. 2012). Demanding challenges force players to concentrate that easily leads to the feeling of immersion in games. Players should also be able to start games without any specific skills but can improve it through tutorials and tasks (Sweetser and Wyeth 2005). This helps to reduce gamers' frustration when they start to play. In short, the balance between challenges and skills is vital to keep gamers' interests (Merikivi et al. 2017).

The *control* element refers to how easy and freely players can control their actions in games (Sweetser and Wyeth 2005). Studies have shown that the sense of control increases enjoyment in games (Davis 1989, Moon and Kim 2001, Huang and Hsieh 2011, Hsu et al. 2007). Game control should be easy enough for beginners and expandable for veterans (Johnson and Wiles 2003, Desurvire et al. 2004). Players should be able to wander around effectively and effortlessly through the virtual world (Sweetser and Wyeth 2005). In addition, one important aspect of control is *customization*, which refers to the degree to which games' features can be modified to satisfy gamers' desires (Teng 2010). Teng (2010) stated that, in a gaming context, the avatar (the representation of the player in games) is an excellent example of customization. Players can change their avatars' appearances (hairstyle, clothes, etc.) or even their races and occupations in games. This makes players feel more connect to their characters, and their unique identifications are presented (Soutter and Hitchens 2016). Moreover, gamers can also customize games' user interface or some games' mechanics to gain better performance (Turkay and Adinolf 2015). This is especially important to those who are more dedicated in competitions and achievements. To sum up, the sense of control or customization can increase the players' sense of immersion significantly and boost their loyalty toward games (Teng 2010, Turkay and Adinolf 2015).

The next important element is *feedback*, which in the gaming context is about the responses from the game system to players' actions (Choi and Kim 2004). The purpose of the feedback in games is to encourage or discourage players to a particular action (Rogers 2017). For example, conquering a challenge will give players a bonus, but killing others in games will give players a penalty. Feedback also gives players a sense of progress toward a specific goal (Sweetser and Wyeth 2005, Hattie and Timperley 2007). For instance, the scoring systems in games exist to inform the players about their results, and standings/rankings

(Sweetser and Wyeth 2005). These systems give the information of those on the top (e.g. top 10) and hence give a sense of competence, enjoyment, and motivation for continuous playing (Roger 2017, Fields and Cotton 2014). However, one thing should be noted is feedback can be a negative thing when there is too many information for the players to process (Rogers 2017). Therefore, quality feedback should be given out at appropriate time (Sweetser and Wyeth 2005).

Social interaction is vital for online games even though it is not an element of flow like the others. The interaction refers to players' competition, cooperation and connection (Lazzaro 2004). It can cause interruption in flow experience as real people reminds players of their reality (Sweetser and Wyeth 2005). However, Weibel et al. (2008) showed that interactions between players relate positively to the experience of flow and presence. Jong (2009) also argued that connection between players in games, or relationships in games, plays an important role in prolong gaming duration. Besides, social interaction in games leads to an optimal experience (Choi and Kim 2004), as it provides enjoyment and affects gamers' loyalty (Sweetser and Wyeth 2005, Huang et al. 2017, Teng 2018). To support social interaction, games should provide (virtual) *places* and *tools* for communication (Choi and Kim 2004). Places for communication are where players can gather and meet each other in the game, e.g. their clan/guild turfs, tavern, etc. Tools for communication can be chat boards, voice chat, and emojis. These factors are essential for virtual communities as chatting with online friends and joining clan/guild are one of the major attractions of online games (Cornett 2004). Furthermore, other features of games such as challenges and quests also increase the interaction between players. For instance, some quests in games require players to work in a group. Thus, players need to cooperate with their team members to conquer the task.

Besides the GameFlow elements, Merikivi et al. (2007) showed that the *variety* of games is also important. The variety refers to a situation when gamers become more familiar with the gameplay, challenges, tasks, and they lose interest in the game subsequently (Merikivi et al. 2017). Therefore, games should have a diversity of tasks, characters, maps, etc. Because they offer more things to do, more character types to try on, and more places to explore. Furthermore, variety is usually tied to *novelty*, which is about excitement, curiosity, and thrill (Huang et al. 2017, Merikivi et al. 2017). As a result, challenges and tasks in games should also have different levels of novelty. Gamers then will actively seek out and engage in these

challenges to satisfy their needs (Huang et al. 2017), and hence they will play games continuously. To sum up, games should regenerate itself frequently through updates and expansions to keep players' interests (Merikivi et al. 2017).

Furthermore, all the elements discussed belong to the three out of four basic pillars of games: Mechanics, Aesthetics, and Technology (Schell 2008). Concentration and immersion belong to the aesthetic element. Challenges and skills, control, and feedback are more about the mechanic and technology aspects of games. Variety and novelty are more about the technology side of games. Only the last pillar (*story*) has not yet been touched. Study showed that stories should be embedded into games' tasks and challenges to achieve immersion (Padilla-Zea et al. 2014). Stories can be used as a reward to give players a sense of novelty as well as progress (Bopp 2008). For example, to unveil the whole story of the game, players need to follow specific steps and tasks in it. In the RPG genre, which are the focus in this thesis, stories can be categorized into fantasy, historical, mythology, modern day, science fiction and horror (Darby 2011). Among these groups, fantasy, science fiction, mythology, or the hybrids of these three with other categories are the most popular styles within the genre. Finally, players get more involved when there is a background story, as they can immerse in the virtual world easier (Moore 2011).

In short, the factors that affect the flow experience or the gaming experience are presented in Table 1. From the table, seven factors affect the gaming experience of players, and subsequently affect their enjoyment and strengthen their loyalty toward the game. Moreover, several subfactors of flow, which were mentioned in the previous text, are also presented in Table 1. Since the factors have been described previously, their subfactors are being focused next.

Table 1. Factors that affect gaming experiences.

Game elements	Flow factors	Subfactors
Aesthetics (Schell 2008)	Concentration & Immersion (Sweester and Wyeth 2005, Hoffman and Novak 1996, Liu 2017, Novak et al. 2000)	Graphics (Merikivi et al. 2017)
		Sounds (Merikivi et al. 2017)
Mechanics (Schell 2008)	Challenge and skill (Sweester and Wyeth 2005, Chen 2007, Ghani and Deshpande 1994, Hoffman and Novak 2009, Huang and Hsieh 2011, Teng et al. 2012, Merikivi et al. 2017)	
Mechanics + Technology (Schell 2008)	Control (Sweester and Wyeth 2005, Davis 1989, Moon and Kim 2001, Huang and Hsieh 2011, Hsu et al. 2007, Johnson and Wiles 2003, Desurvire et al. 2004)	Customization (Teng 2010, Turkay and Adinolf 2015)
	Feedback (Sweester and Wyeth 2005, Choi and Kim 2004, Roger 2017, Hattie and Timperley 2007, Fields and Cotton 2014)	
Technology (Schell 2008)	Social interaction/Community (Sweester and Wyeth 2005, Lazzaro 2004, Weibel et al. 2008, Jong 2009, Huang et al. 2017, Teng 2018, Cornett 2004)	Communication spaces (Choi and Kim 2004)
		Communication tools (Choi and Kim 2004)
Technology + Storyline (Schell 2008)	Variety and Novelty (Merikivi et al. 2017, Huang et al. 2017)	
Story (Schell 2008)	Storyline (Padilla-Zea et al. 2014, Bopp 2008, Darby 2011, Moore 2011)	

2.1.4 The subfactors of flow

Graphic (the subfactor of concentration and immersion)

Graphics are the images generated by computers. Normally, graphics in games range from 2D (two-dimensional) graphics to 3D (three-dimensional) graphics. Meanwhile, 2.5D (two and a half dimensional) graphics are somewhere between the other two graphics (Figure 4).

- 2.5D graphics refer to a 2D graphical projections and others to create two dimensional images but have the appearance of being three-dimensional (3D). Fixed camera view (not able to rotate) is an easy way to differentiate 2.5D from 3D graphics. It also can be considered as fixed 3D graphics.
- 3D graphics refer to three-dimensional representation of objects in computers. 3D graphics have the 360 degrees rotatable view.

Another important aspect of graphics is resolution (number of pixels contained on a display monitor), and game devices in the market have a wide range variety of resolution, especially mobile games (Scolastici and Nolte 2013). Therefore, games should have the ability to fit into different devices and still have the highest resolution as possible.



Figure 4. Example of 2.5D graphic (left) and 3D graphics (right) (source: igg.com and tld3d.360game.vn).

Sound (the subfactor of concentration and immersion)

Sounds in games can be categorized into music, dialogues, voice-overs, ambient sounds, special effects and interface sound effects (Mitchell 2012). For simplicity, only three categories, music, ambient sounds and sound effects, will be discussed.

- Music refers to different kinds of background music in the game. It varies from music for different challenges, and situations.

- Ambient sounds refer to the virtual environment sound. For instance, the sounds of storms, rains, or the sounds of marketplaces, farms, etc.
- Sound effects refer to the sound of clashing swords, blasting guns, explosions, etc.

Customization (the subfactor of control)

Customization offers players the ability to customize their experiences in games (Turkay and Adinolf 2015):

- Customize own character (cosmetic customize) refers to the ability to change one's own avatar (player's representation in games), in terms of shapes, clothes, accessories, etc.
- Customize game interface refers to the ability to change the user interface, such as resolution, sounds, brightness, etc.
- Customize gameplay refers to the ability to change some gameplay, such as change the skill sets of one's character and the way to use it.

Communication places (the subfactor of social interaction)

Guilds and clans' features refer to group of players gather under a specific name (guild/clan's name). The purpose of guild/clan is to improve interactions between players, such as making friends, cooperation, and protection in games, etc. (Jong 2009). Furthermore, the bigger the virtual world is, the more places for players to communicate and interact with others.

Communication tools (the subfactor of social interaction)

Chat board and voice chat refer to tools that help players communicate to each other. Chat board can be represented as a small window in the devices' screen, where players can write and read messages to one another and to different groups. Furthermore, voice chat gives the ability to talk directly via the devices' microphone. The convenience of voice chat improves the quality of relationship between players. It also boosts the cooperation between gamers in a group, and especially in competition.

In conclusion, from the game developers' perspective, a standard game has four basic elements. When these elements encompass all the flow factors and subfactors, which can satisfy players' desires, then the game will be a huge success (Figure 5).

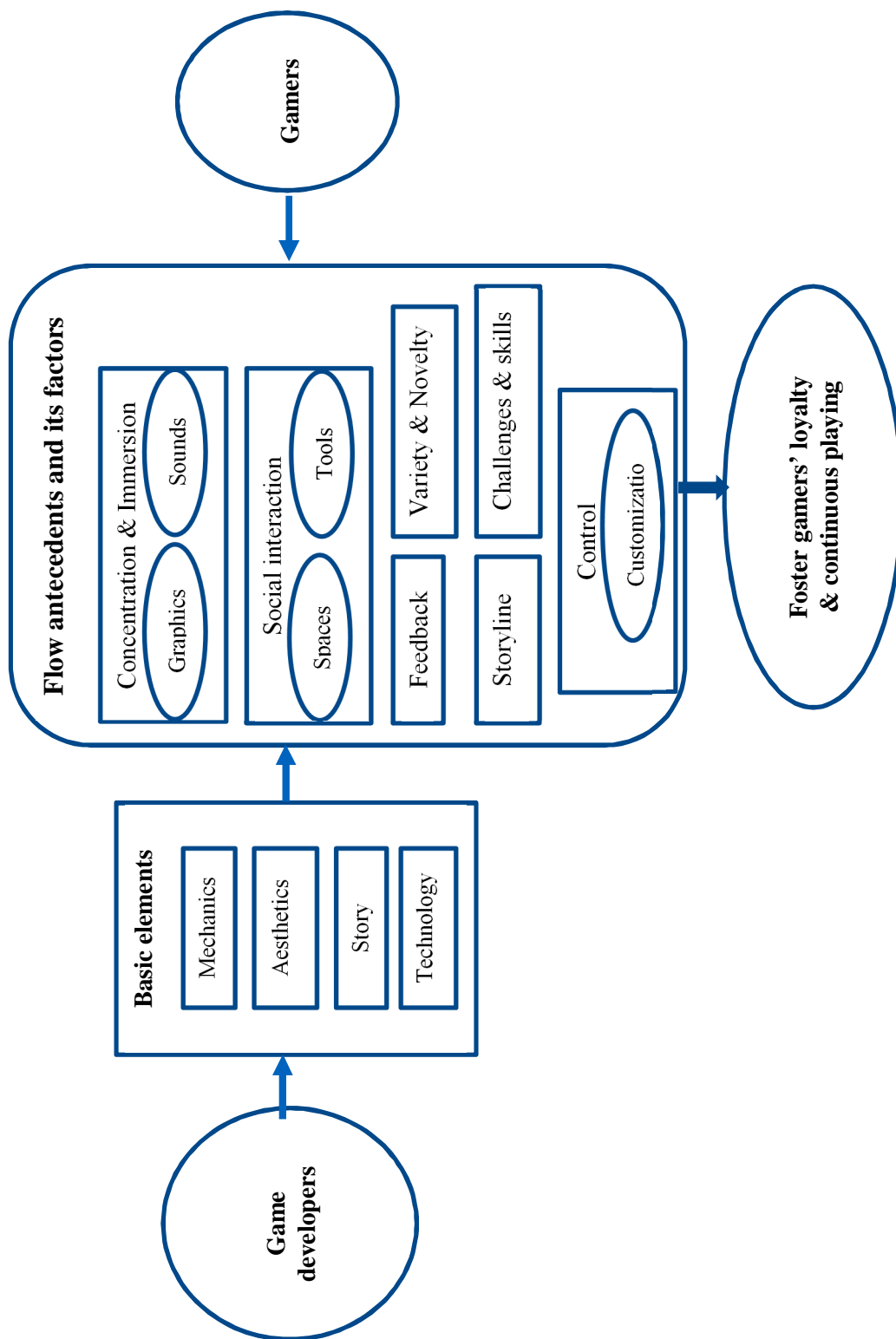


Figure 5. Gaming experience framework (updated version).

2.2 Player motivational factors

Study showed that player motivations play an important role in explaining how people behave in games and continue to play games (Billieux et al. 2013). As the number of players are increasing, how to identify and segment their motivations are essential (Tseng 2011). In the existing literature, players have been segmented in various ways (see e.g. Hamari and Tuunanen 2014): geographic, demographic, psychographic, and behavioral approach. However, the literature does not mention the basis of segmentation employed in this thesis: perceived value.

The author wished to extend the view of segments based on value with player motivational factors that are the basis of Yee's (2006) player segmentation, a behavioral approach to segmentation. Next, before introducing the factors, psychographic and behavioral approach to player segmentation are discussed.

2.2.1 Psychographic approach to player segmentation

This approach divides gamers into two major segments: hardcore and casual players (Hamari and Tuunanen 2014). Hardcore players are more motivated to master their games than casual players are (Ip and Jacob 2005). They want to become knowledgeable players: explore all places in games' worlds, conquer all hidden quests, etc. In short, they are more passionate about games. On the other hand, casual players are motivated by other reasons, such as: playing for fun, killing time, curiosity, etc. This approach is simple and easy to understand. However, scholars have criticized it for being too general and simple (Bateman et al. 2011, Hamari and Tuunanen 2014). If a game is complex, especially modern games, it will be challenging to identify whether a player is hardcore or casual (Hamari and Tuunanen 2014). For instance, one might be an expert in some aspects of the game but not all of it. Thus, one can be both hardcore and casual in different aspects of a game. Penttinen et al. (2018) also showed that online gamers in two different groups (extrinsically-motivated vs. intrinsically-motivated), which are close to the hardcore and casual type, are very similar in terms of preferences. Therefore, when talking about hardcore and casual, instead of dividing players into separate styles, it is better to use a scale, where players are somewhere between the two extremes (Hamari and Tuunanen 2014).

2.2.2 Behavioral approach to player segmentation

This approach tries to find patterns in the way players behave in games. For instances, some people prefer killing others in games, while some like to chat with others. Bartle's player type is one of the most popular studies in this approach (Hamari and Tuunanen 2014). Bartle (1996) categorized players based on their behaviors in the Multi-User Dungeons (MUDs) game into four types: achiever, explorer, killer and socializer (Figure 6).

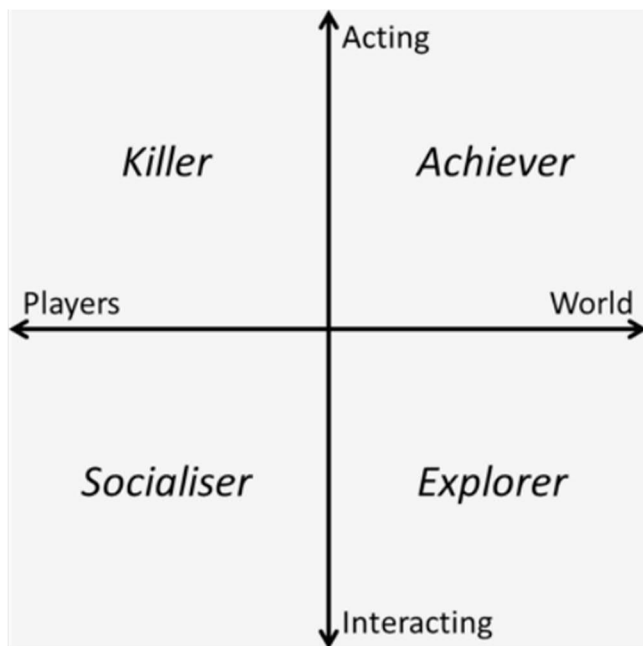


Figure 6. Bartle's player types (Bartle 1996).

From the figure above, there are two dimensions: player vs. world, acting vs. interacting. Each player type fits in to one quarter:

- Killers: People who are interested in doing things to others, for example, attacking players to show their superiority.
- Achievers: People who are interested in doing things (quests, tasks, challenges) in the game.
- Socializers: People who are interested in other players. They like to engage in conversations and get to know others.
- Explorers: People who are curious about the game (e.g. the virtual world). They play and explore the game with the sense of wonder.

Even though the Bartle's player type is more complex than the traditional hardcore and casual approach, it is still criticized for being too dichotomous (Hamari and Tuunanen 2014). However, Bartle's work has provided a good ground for further researches.

Yee (2006) has used Bartle's types as the reference for his work in understanding players' motivation in video games. He studied the Massively-Multiplayer Online Role-Playing Games (MMORPGs) and found three major motivational factors. These factors include ten components that motivate players in games. They are as following:

- Achievement: people who want to be powerful in games.
 - o Advancement: Players desire to progress quickly in games, gain power and wealth in games.
 - o Mechanic: Players are interested in understanding the underlying rules of games and want to optimize their character performance.
 - o Competition: Players are eager to compete with others.
- Social: people who want to socialize with others.
 - o Socializing: Players are interested in talking and helping others.
 - o Relationship: Players want to have a meaningful relationship with others (e.g. friends, and couple).
 - o Teamwork: Players prefer playing games in groups.
- Immersion: people who want to be someone else in the virtual world.
 - o Discovery: Players who want to find hidden things, e.g. secret missions and challenges.
 - o Role-playing: Players who create different personas to interact with others.
 - o Customization: Players who are interested in their avatar/character appearance.
 - o Escapism: Players who play game to avoid real life problems.

Even though, Yee's (2006) study only focused on a specific game genre, it gave a foundation for others to study player motivation in online games, especially in the RPG genre (Billieux et al. 2013). Billieux et al. (2013) conducted a study on approx. 1600 French players in the famous RPG, World of Warcraft. They used Yee's (2006) scale in a preliminary study to create a French version of the questions and used confirmatory factor analysis to test the factor structure (3 overarching factors and 10 subfactors, Billieux et al. 2013). Their results showed that players have three main motivational factors (Achievement, Social, and

Immersion) in online games. Thus, together with Yee et al. (2012) work, Billieux et al. (2013) have validated the Yee's (2006) scale.

In conclusion, understanding players' motivations is useful for game developers to design their games towards players' preferences. For example, Stewart (2011) specifically showed that people in different types belong to different genres. However, there are criticisms about its validity empirically. Busch et al. (2016) showed that games with high player type score do not necessarily mean they provide a good gaming experience.

3 Methods

In this section, the methods, which were used in this thesis, will be discussed. Each sub-section will explain why the method is needed and how it works. The first two sections will focus on how players' values are gathered and analyzed. The last sub-section will focus on the development method of the player motivational factors questions.

3.1 Best-worst scaling

When it comes to measure the customers' preferences of different items of a product or service, some methods are often used, such as constant-sum task, rating scales, and best-worst scaling (BWS) (Orme 2018). With the constant-sum tasks, respondents are asked to score a total of 100 points to different items. This method is difficult for people to do when there are too many items to score. On the other hand, rating scales, e.g. Likert scale, are fast and easy to do. However, respondents tend to have biases toward the scale, e.g. prefer the neutral option (Weijters et al. 2016, Friberg et al. 2006). Finally, the best-worst scaling method is quite easy for respondents to do and gives better information on respondents' preferences (Orme 2018, Penttinen et al. 2018).

Best-worst scaling method is developed by Jordan Louviere and his colleagues (Cohen 2003). It has been applied in different contexts from social sciences (e.g. psychology) to business (e.g. consumer behavior) (Nunes et al. 2016). It is used to elicit people preferences over multiple items through survey questions. BWS offers a predefined set of items to responders and asks them to choose the best and the worst item among the set (Finn and Louviere 1992). Nunes et al. (2016) have pointed out that BWS has two major advantages over traditional scaling methods. First, BWS is simple as it is easy to select the extremes (the best and the worst) than ranking all items. Second, BWS gives sufficient results that researchers can rely on. Moreover, respondents cannot choose the neutral answer/item in BWS (Cohen and Markowitz 2002). Marley and Louviere (2005) have stated that best-worst choices give a lot of information to researchers. For instance, in a set of 4 items A, B, C, D, if A is the best item and D is the worst, one can assume that $C > D$, $B > D$, or $A > C > D$, etc. In general, Lee et al. (2007) have concluded that BWS give more sensible and more discriminating results than the tradition rating scales.

Furthermore, BWS follows the random utility theory, which assumes that people are rational, and they will choose the item to maximize their utility (Louviere et al. 2013). In BWS, the utility U_i (with $i = 1, \dots, k$) is:

$$U_i = V_i + \varepsilon_i$$

where,

V : the observed value

ε : the random error

The error ε has a Gumbel distribution. This means that the choices are made according to the multinomial logit choice model (McFadden 1974): If k items with values as V_1, \dots, V_k are compared, the probability p_t that item t is chosen is:

$$p_1 = \frac{e^{V_t}}{\sum_{s=1}^k e^{V_s}}$$

In this thesis, BWS is run on Sawtooth's Maxdiff software. This software gives three different scales for each item utility: raw utility score, zero-center interval scale and rescaled score (0-100 scaling) (Aggregate Score Estimation via Logit Analysis, n.d.). Since rescaled score is on a ratio scale, a score of 6 is twice as preferred as a score of 3, therefore it is easier to interpret. As a result, the rescaled score will be used in this thesis. The scores are calculated follow this algorithm (Aggregate Score Estimation via Logit Analysis, n.d.):

$$(1) \quad Z_i = V_i - \frac{1}{k} \sum_{i=1}^k V_i$$

$$(2) \quad S_i = \frac{e^{U_i}}{(e^{U_i} + a - 1)}$$

Where,

V_i = the weight of the i^{th} item

Z_i = the zero-center score

S_i = the rescaled score

U = zero-centered raw logit weight for item i .

e^{U_i} is equivalent to taking the antilog of U_i .

a = number of items shown per set.

3.2 Latent Class Analysis

To obtain benefit segments from the BWS data, the Latent Class Analysis (LCA) is recommended (Cohen 2003). This method has a lot of common with cluster analysis, but it is more robust. LCA can work on both categorical and continuous data, and especially it has the prediction ability. It solves two problem that traditional aggregate methods have (The CBC Latent Class Technical Paper 2014):

- Since each respondent does not have the utility score, it is difficult to develop market segments based on gathered data.
- If there are distinct segments in the data, then the aggregate model is not reliable.

LCA identifies class membership among respondents, which means people who share similar preferences are put into one group. LCA considers that each respondent has a probability of belonging to different groups (The CBC Latent Class Technical paper 2014). For instance, in a 4-cluster solution, one might have the probability of 0.1 of belonging to cluster 1, 0.3 to cluster 2, 0.4 to cluster 3, and 0.2 to cluster 4. The LCA algorithm is optimizing simultaneously the values of those memberships and the values of the alternatives across all the clusters.

To decide the number of clusters, one needs to look specifically at the Consistent Akaike Information Criterion (CAIC). It is calculated by the following formula:

$$CAIC = -2 \log Likelihood + (n * k + k - 1) * (\ln N + 1)$$

where,

k : is the number of groups.

n : is the number of independent parameters estimated per group.

N : is the total number of choice tasks in the data set.

Additionally, DeSarbo et al. (1995) also suggested that beside the score of CAIC, the number of clusters should be decided based on the “managerially interpretable” aspect. It means one is chosen among others if it suits the manager’s needs and is easy to interpret.

3.3 Multi-item scale development

To develop the questions for player motivations, guidelines in scale development suggested by DeVellis (1991) were used. The guidelines have eight steps in total, and they are described briefly in the following.

- Step 1. Determine what you want to measure. You need to clarify whether your scale can be based on existing theories and literatures or not. You also want to decide the level of specificity and generality of the scale.
- Step 2. Create a question pool. You need to choose questions that relate to the purpose. Questions should be easy to understand and in adequate length to avoid respondents' confusion and frustration.
- Step 3. Determine the format for measurement. You need to choose which scale you should use, e.g. Likert scale, and how many responses in one question are adequate.
- Step 4. Ask experts to review the initial question pool. Experts can help you examine and validate your questions.
- Step 5. Consider adding validation questions. Social norms can influence the respondents' answers. They might choose a specific option because it is perceived as a positive one, not because they agree with the option.
- Step 6. Testing the scale. You need to test your questions in a small sample. The size of the sample varies from the scope of your study.
- Step 7. Evaluating the scale. Based on the test results, you need to evaluate the questions. For example, check the reliability of the question using coefficient alpha.
- Step 8. Optimize the number of questions. You need to decide the number of questions will be used from the pool. You can do that based on its reliability, e.g. remove the question that worsen the general reliability badly.

Furthermore, multi-item measures are preferred to one-item measures due to their reliability and validity (Diamantopoulos et al. 2012). When using or developing a scale (e.g. scale to measure player motivations), it is important to identify the dimensionality of the multi-item scale (Netemeyer et al. 2003). To check the dimensionality of a scale, using coefficient alpha is not enough (DeVellis 1991). Factor analysis, on the other hand, is a useful method to determine the dimensionality of the scale (Netemeyer et al. 2003, DeVellis 1991). The exploratory factor analysis (EFA) is the most applied approach as it is used when researchers have limited knowledge about the scale dimensions, and which items load on which factors.

Therefore, EFA shows the potential dimensions in the beginning of the scale development (Netemeyer et al. 2003, Carpenter 2018). Meanwhile, confirmation factor analysis (CFA) is used when researchers have prior hypotheses about the scale dimensions. It is used, as its name suggests, to confirm whether the hypothesis dimensions fit or do not fit the data (Netemeyer et al. 2003). In practice, EFA is preferred for scale development as researchers do not know the dimensions in advance and are often incorrect about the hypothesis dimensions (Carpenter 2018).

Additionally, before running factor analysis, a Kaiser-Meyer-Olkin (KMO) test should be used on the gathered data set. The reason is that the test measures how well the data are suited for factor analysis (Kaiser-Meyer-Olkin (KMO) test for sampling adequacy 2016). For the data to be adequate for factor analysis, the KMO value should be between 0.8 and 1. The formula for the KMO is:

$$KMO_j = \frac{\sum_{i \neq j} r_{ij}^2}{\sum_{i \neq j} r_{ij}^2 + \sum_{i \neq j} u}$$

where:

$R = r_{ij}$ is the element (i^{th} row, j^{th} column) in the correlation matrix

$U = u_{ij}$ is an element (i^{th} row, j^{th} column) in the partial covariance matrix

When assessing the reliability of a multi-item measures, Cronbach's alpha, which was developed by Lee Cronbach in 1951, is the most popular tool for examining the internal reliability of a scale (Netemeyer et al. 2003, Tavakol and Dennick 2011). It refers to whether all the items in the scale are correlated to each other or not. It makes sure that these items measure the same phenomenon. The general acceptable value of alpha ranges from 0.7 – 0.9 (Tavakol and Dennick 2011).

4 Survey

This section will explain how the main survey is created. The SSI Sawtooth Software SSI Web (8.4.8) was used. In the survey the demographic and player motivation questions were asked first, and then BWS questions follow.

4.1 Demographic questions

The demographic questions included the players' gender, age, and monthly spending in games. The age question had four response options, which were designed according to these categories: minor, student, young adult, and adult.

- Minor (<16 years old): Most RPGs in Vietnam have the age limit, especially violent games. However, there is no actual action to prevent minors to play these games. People in this group have time to play games but not a lot of money to spend on it.
- Student (16 – 22 years old): Vietnamese students normally finish their education (bachelor's degree level) at 22 years old. They have time to play games and some money to spend.
- Young adult (23 – 30 years old): After graduating from university, people start to work and have stable income. Players in this group seem to have more money to spend on games but less time to play.
- Adult (> 30 years old): After the age of 30, people generally have stable job and their own family. Players in this groups have much less time to play but much more money to spend on games.

The spending question also had four response options, which ranged from 0 to over 2 million VND. It was divided as 0 – 0.5 million VND (approx. 0 – 19 euro), 0.5 – 1 million VND (approx. 19 – 38 euro), 1 – 2 million VND (approx. 38 – 76 euro), and over 2 million VND (> 76 euro). The reason was that the Vietnamese average monthly wage is approx. 5 million VND (approx. 185 euro) (Vietnam Average Monthly Wages 2018). Therefore, higher spending options are not reasonable as the average monthly income is low.

4.2 The player motivation questions

Yee's (2006) scale of main motivational factors including thirty-nine 5-point Likert scale questions (Appendix A) was used. The scale has three main dimensions: achievement, social and immersion. These dimensions also have sub-dimensions:

- Achievement: advancement, mechanic, and competition.
- Social: socializing, relationship, and teamwork.
- Immersion: discovery, roleplaying, customization and escapism.

This thesis adopted the Yee's (2006) scale. The reasons were that Yee (2006) also studied the roleplaying game (RPG) genre, the method was relatively simple, and the results were easy to interpret. Besides, using Yee's (2006) scale helped to reduce the workload of developing the questions from scratch. As a result, only the last three steps of DeVellis's (1991) guidelines were needed: testing the scale, evaluating the scale, and optimizing the number of questions.

The pilot test aimed to check the scale's dimensions to reduce the number of needed questions, because thirty-nine questions in addition to the BWS questions was considered too exhausting. As the emphasis in the study is on the perceived value of the RPG features, it was not deemed necessary to measure all the Yee scale items – instead the emphasis was put to measure the three main motivational factors. The pilot questionnaires were sent to people in June 2018 through message applications, such as Messenger and Whatsapp. These potential respondents were the author's friends, who had been playing RPGs before and are familiar with the genre. The survey time was only a few days and 39 people answered the set of questions. Then, the exploratory factor analysis (EFA) was performed on the gathered data. The CFA was not proper as an important goal was to reduce considerably the number of questions.

The EFA results showed that the data did not quite behave as expected. With the eigenvalue > 1 , there were twelve different factors, which were more than what Yee (2006) had in his study (3 overarching dimensions and 10 sub-dimensions). Then, the orthogonal varimax rotation was used. In addition, other rotation options, such as oblimin and promax, were also tried, but the results were the same as the varimax. Quite a few questions loaded on unexpected factors, and they were removed. Finally, the questions were selected using

Cronbach's alpha seeing that questions load on the correct factor. All the subdimensions retained were supposed to have minimum two questions and the alpha score exceeding 0.7, if possible. The alpha for the main factors (3 dimensions) were also calculated. With that approach, a new set of questions was chosen (Table 2).

Table 2. The new set of questions.

ACHIEVEMENT	
Advancement	
No. 14	How important is it for you to level up your character as fast as possible?
No. 15	How important is it for you to acquire rare items that most players will never have?
No. 16	How important is it for you to become powerful?
Mechanic	
No. 1	How interested are you in the precise numbers and percentages underlying the game mechanics?
No. 3	How often do you use a character builder or a template to plan out your character's advancement at an early level?
No. 18	How important is it for you to know as much about the game mechanics and rules as possible?
Competition	
No. 25	How much do you enjoy dominating/killing other players?
No. 39	How much do you enjoy competing with other players?
SOCIAL	
Socializing	
No. 23	How much do you enjoy getting to know other players?
No. 24	How much do you enjoy chatting with other players?
Relationship	
No. 32	How often do you talk to your online friends about your personal issues?
No. 33	How often have your online friends offered you support when you had a real-life problem?
IMMERSION	
Customization	
No. 9	How important is it to you that your character's armor / outfit matches in color and style?
No. 10	How important is it to you that your character looks different from other characters?
Role-Playing	
No. 20	How much do you enjoy being immersed in a fantasy world?
No. 35	How often do you role-play your character?
Escapism	
No. 37	How often do you play to relax from the day's work?

The immersion factor's alpha score was a bit low (Table 3), but it was hoped that it will perform better in the final survey. In terms of sub-dimensions, due to low alpha scores, the teamwork and discovery sub-dimension were not kept. The same thing happened to escapism sub-dimension, however one of its question was still in the main dimension (Immersion) set to maintain the reliability of the set. The mechanic sub-dimension also had low alpha score (Table 3), but it was saved to maintain the reliability of the main dimension (Achievement) set. Finally, the new set of questions had three main dimensions and seven sub-dimensions. It was hoped that the final data will at least follow the three main dimensions structure of Yee (2006).

Table 3. Cronbach's alpha value of each dimensions in the new questions.

Dimension	Alpha
Achievement	0.748746
Advancement	0.827204
Mechanic	0.666333
Competition	0.692848
Social	0.778493
Socializing	0.770261
Relationship	0.828972
Immersion	0.666249
Customization	0.829577
Roleplaying	0.744330

4.3 The best-worst scaling items and survey design

This part focuses on designing a set of flow experience items the values of which are measured by best-worst scaling method (BWS). Flow was described as an experience so delight that people are willing to do it for its own sake (Csikszentmihalyi 1990). Its principles have been applied in many fields (Biasutti 2011, Liu 2007, Sweetser and Wyeth 2005), and especially several studies have shown that video game players value their games based on the flow experiences in games (Chen 2007, Liu 2017, Fan et al. 2012, Su et al. 2016). Through studies that focused on the flow theory (previously discussed in the literature review section), several factors and subfactors of flow or gaming experience were identified. These factors and subfactors were used in the final survey. They are listed as following:

- Concentration & Immersion (Sweetser and Wyeth 2005, Hoffman and Novak 1996, Liu 2017, Novak et al. 2000). It has two subfactors:

- Graphics (Merikivi et al. 2017).
- Sounds (Merikivi et al. 2017).
- Challenge and skill (Sweester and Wyeth 2005, Chen 2007, Ghani and Deshpande 1994, Hoffman and Novak 2009, Huang and Hsieh 2011, Teng et al. 2012, Merikivi et al. 2017).
- Control (Sweetser and Wyeth 2005, Davis 1989, Moon and Kim 2001, Huang and Hsieh 2011, Hsu et al. 2007, Johnson and Wiles 2003, Desurvire et al. 2004). Control has one subfactors:
 - Customization (Teng 2010, Turkay and Adinolf 2015)
- Feedback (Sweester and Wyeth 2005, Choi and Kim 2004, Roger 2017, Hattie and Timperley 2007, Fields and Cotton 2014)
- Social interaction (Sweester and Wyeth 2005, Lazzaro 2004, Weibel et al. 2008, Jong 2009, Huang et al. 2017, Teng 2018, Cornett 2004). Social interaction has two subfactors
 - Communication spaces (Choi and Kim 2004).
 - Communication tools (Choi and Kim 2004).
- Variety and Novelty (Merikivi et al. 2017, Huang et al. 2017).
- Story (Padilla-Zea et al. 2014, Bopp 2008, Darby 2011, Moore 2011).

For each factor above, a minimum level was defined, i.e. what the player will have at any case. These levels will serve as references for responders when they choose between options, which are the improved version of the minimum levels, in the survey. They help the respondents in pondering the tradeoffs between the items, the value of which is studied. To create a reasonable set of final items to be studied by BWS, an example game will be considered next.

4.3.1 Considering an example game to assist in defining the final set of BWS items

JX mobile or VoLamTruyenKy mobile, its Vietnamese name, is an outstanding RPG in the Vietnamese gaming community (Figure 7). It is a mobile game developed by Chinese companies, Kingsoft and Seasun Games, and published in Vietnam by VNG Corporation (Detailed information about the game and the company can be found on VNG website – www.vng.com.vn). It is a martial art role-playing game, which has different Chinese swordsman legends and traditional Chinese culture. Although the game has been translated

into Vietnamese, its original stories are kept. It also has a long history in the local market as its first franchise (PC version) had been published in Vietnam since 2005. Currently it has more than 500 servers and over 1 million downloads in Google store. The success of the JX franchise, especially the mobile version, in Vietnam makes it a good example to study the level of acceptant features. The game’s characteristics and features in terms of the flow’s factors and subfactors are described in Table 4.

Table 4. JX mobile game features in terms of flow’s factors and subfactors.

Factors and Subfactors	Description
Graphic	<ul style="list-style-type: none"> - 2D graphics in the early versions. - 2.5D graphics in the current version.
Sound	<ul style="list-style-type: none"> - Limited soundtrack. - Limited special sound effects & no ambient sound.
Challenge and skills	<ul style="list-style-type: none"> - Variety of challenges. - Easy to play with auto-playing option.
Customization	<ul style="list-style-type: none"> - Able to customize character to some extent. - Able to customize some gameplay & user interface.
Feedback	<ul style="list-style-type: none"> - Variety of scoring systems to rank players.
Communication spaces	<ul style="list-style-type: none"> - Guild and clan features.
Communication tools	<ul style="list-style-type: none"> - Chat board and voice messages in game.
Variety and novelty	<ul style="list-style-type: none"> - New updates in approx. 3 months
Storyline	<ul style="list-style-type: none"> - Story is based on Chinese cultures.



Figure 7. The game’s promotion (top) and gameplay picture (bottom) (source: vng.com.vn).

The game's graphics have been progressed incrementally from 2D to 2.5D. The detail in images has also been improved since the early versions of the game. The game's soundtrack includes one main theme song and five others. The background music for different scenes or maps is limited and runs in loop. The special sound effects are also limited. Especially, the ambient (environment) sound does not exist.

In terms of challenge and skill, the game offers a variety of challenges that range from solo to group missions. The difficult level has been increased gradually according to players' levels, but the difficulty level has been halted in the later stage of the game. The game also assists players with auto-playing option, which helps people do quests and challenges.

In terms of customization, players can change their characters' appearances to some extent. It offers a fixed set of avatars for players. It also allows players to "dye" their clothes and other accessories to different colors. Furthermore, the game often gives limited items (unique avatar frame, unique clothes, etc.) to players who can conquer some special tasks. The game also allows users to adjust image resolution and set the number of objects (i.e. some objects will not appear) in display to boost the game speed. Additionally, players can change some game mechanics, such as the order of skills, and how skills are casted.

About feedback, the game has different scoring systems to ranking players, e.g. their strengths, their appearances, their achievements, etc. People, who are in top ten of the leaderboard, normally have special title added to their characters' names. The leaderboards will be updated hourly or after each specific event.

In terms of social interaction between gamers, JX mobile has "safe zones" (e.g. castle, villages) for meetings. Guild and clan features are different guild tasks and challenges, and siege wars between guilds. Players can communicate with each other via text messages, which are showed at a small window in the device's screen. The window can also be enlarged for readability. Players can also send voice message to others; however, the message's duration is limited (less than 30 seconds/message).

About the variety and novelty of the game, it usually has some special events, challenges approx. every 1-2 months, and new expansion, such as new classes approx. every 3-4 months. It also offers different sets of mission for players to follow. For example, new

players have special set of tasks, which will help them to advance quickly in the game. In the later stage of the game, players have different challenges every day and every week. The higher the average level of players is, the more quests they have.

Finally, the storyline of the game focuses on Chinese ancient events such as civil wars, foreign invasions, etc. and Chinese swordsman legends. The story started with the player's character wanders into the race for power between fictional individuals and groups, which is set in actual historic period in China. Later players get involved in foreign invasions, which are also based on Chinese ancient history.

4.3.2 Final set of BWS items

From the JX mobile features, the minimum levels were established as the following:

- Graphic: 2D graphics with normal resolution.
- Sound: Limited music, ambient and sound effects.
- Challenges and skills: A set of challenges from easy to difficult and auto-playing option.
- Customization: players can somewhat customize character, user interface and gameplay.
- Feedback: basic scoring systems, e.g. strength and achievement.
- Social interaction: virtual places like village, castle to meet up, guild and clan features for forming group, and chat board to communicate.
- Variety and novelty: update approx. every 3 months.
- Storyline: coherent story throughout the game.

Gamers would expect a worth-playing game to have at least the above features. The BWS items will be derived from these features and they should outdo the basic ones (Table 5). Each item will be discussed next.

In terms of graphic, the BWS items were set at 2.5D and 3D graphics. It is obvious that 3D graphics are better than 2.5D graphics, and both are better than 2D graphics. The idea here is to see whether respondents value the high-end graphics, or they are happy with the “good-enough” one.

Table 5. The final set of item for BWS.

Factors	Subfactors	Items
Concentration & Immersion	Graphics	<ul style="list-style-type: none"> - 2.5 graphic and high resolution. - 3D graphic and high resolution.
	Sounds	<ul style="list-style-type: none"> - Various soundtracks throughout the game. - Detail ambient sound and sound effects.
Challenge and skill		<ul style="list-style-type: none"> - Variety of challenges for solo and group. - Challenges requires complex skills.
Control	Customization	<ul style="list-style-type: none"> - Customize character freely: clothes, hair style & color, avatar, accessories. - Customize freely gameplay, user interface (UI).
Feedback		<ul style="list-style-type: none"> - Scoring systems in all aspects of games (e.g. best character costumes)
Social interaction	Communication spaces	<ul style="list-style-type: none"> - Extensive virtual world: e.g. Inter-server interactions (inter marketplace, inter guild alliance).
	Communication tools	<ul style="list-style-type: none"> - Voice message (up to 30s/message). - Instant voice chat.
Variety and Novelty		<ul style="list-style-type: none"> - Frequent update in every 1-2 months.
Storyline		<ul style="list-style-type: none"> - Foreign style: western/Asian legends, fairy tales. - Vietnamese style: Vietnamese legends, fairy tales.

In terms of sound, the items were chosen because they enhance the game's attractiveness. Players can easily spend hours on game continuously and thus they can get tired of listening to the same songs and sounds. Subsequently, different songs and lively sounds will get players completely immerse in games.

In terms of challenge and skill, the idea is similar to the sound items, as people like their games more if they have many things to conquer. The variety of challenges can show the level of interest in the game's tasks as well as the level of newness. The level of difficulty can show players' interest in mastery, achievement, and competition.

In terms of customization, the items give more autonomy to players. If they like to customize characters' appearance, they can be interested in the aesthetics of the game. They can also like to interact with others because they want their characters to have the best look.

Meanwhile, if they like to customize the gameplay and user-interface, they can care more about how the game works and want to optimize their performance.

In terms of feedback, this item gives players more information about their progression. People can know where they stand with the other players in all aspects of games. Thus, it improves competition and advancement in game.

In terms of social interaction, the communication space item improves not only the social interaction between players (chatting, trading, and competition), but also helps players immerse in games. The communication tools were set to make chatting and cooperation in games easier. Therefore, depend on respondents' choice, their preferences in games can be revealed.

In terms of variety and novelty, it makes sense to set the update circle as short as possible. Shorter update circle means there are always new contents in games. Thus, the option was given to see if players give more weight to the novelty of the game.

In terms of storyline, an interesting story is a must in every game. Therefore, the author decided to see whether the players want a foreign or local based story. Thus, two options were given to see if players like their local stories are embedded into the game or not regardless of the style of the story (mythological, historical, fictional story, etc.)

4.3.3 Designing the survey details

The total number items in the BWS question were 15 as showed in Table 5. There should be either four to five items per BWS task, as more than four items per task is not beneficial (Maxdiff Tutorial and Example, n.d.), and each item should appear at least 3 times for each respondent (Orme 2005). To keep the choice tasks simple for the respondents, this survey has chosen four items per task and each item will appear three times, which is the recommended minimum number. The minimum number of BWS questions for each respondent should follow this formula (Maxdiff Tutorial and Example, n.d.):

$$\text{Number of sets} = 3(K/k)$$

Where,

K : total number of items


k : number of items per set.

Therefore, the minimum number of set for this question is $3(15/4) = 11.25$. For simplicity and avoiding respondents' exhaustion, the number of sets was set as 12. Additionally, among the BWS 15 items, 2.5D graphics and 3D graphics item were prohibited to appear together. Even though 3D graphics does not guarantee a better graphic quality than 2.5D ones, it seems to be a better option in common sense. Thus, gamers would always prefer 3D to 2.5D graphics.

Furthermore, the Appendix B shows the design report of the BWS sets. The report shows that there were 300 version of the questionnaire, which is more than enough since the maximum number of respondents is 250, which is due to the academic license used in the program. Multiple versions of the questionnaire help to maintain the stability of the item scores as well as reduce psychological order and context effects, which can happen if respondents get the same combination of items (Maxdiff Tutorial and Example, n.d.).

Moreover, to motivate and guide the respondents, some simple instructions were used. Figure 8 shows how the imaginary situation was set up, so that responders know what is going to happen. Next, the minimum levels were shown (Figure 9). After that, 12 BWS questions were shown (Figure 10) to respondents, and each respondent sees a different version of the questions. Besides, the key words in each item were in bold to increase readability. Originally, the respondents were reminded of the minimum levels in the bottom part of the choice task screen in small font. However, the text was removed due to respondents' feedback that it offered no help and irritated them. Finally, it should be noted that since the targeted responders are Vietnamese, the survey has been translated into the local language.

Let imagine you are playing a **role-playing mobile game**. For example:



Source: vltk.m.zing.vn

I want to understand what you like in this role-playing game by asking you to evaluate **a set of 12 questions**. Each question will have 4 features of role-playing games.

You need to choose which feature (among the set of 4) you **like the most**, and which one you **like the least**.

Figure 8. Imaginary situation’s description.

Let's assume all RPG games have some minimum features, and in every case the game has at least these following characters:

- Graphics:** 2D graphic with normal resolution.
- Sound:** Limited amount of theme song, some environmental sound (e.g. windy sound), and some special sound effect (e.g. clashing swords).
- Challenges & skill:** Limited set of challenges (easy to difficult) + auto-playing option.
- Feedback:** Basic ranking and scoring systems (e.g. strength ranking).
- Customization:** Limited choices to change character appearances (e.g. costume), and to change user interface + gameplay according to players' preferences.
- Social interaction:** Players can meet up in game, can form and join guilds to meet and play with others. They can communicate via text messages.
- Variety & novelty:** Updates every 3 months in average (e.g. new class).
- Storyline:** A coherent story and style, which are influenced by a particular culture (e.g. Chinese legends and historical events).

The improvement characteristics of the above features will be valued next.

Figure 9. The minimum levels text.

Please choose which feature is the MOST IMPORTANT and which feature is the LEAST IMPORTANT.

Remember that you will see these features appear **several times**, please be patient and select what is important to you.

(1 of 12)

Most Important	Features	Least Important
<input type="radio"/>	Detailed environmental sound and sound effects	<input type="radio"/>
<input type="radio"/>	2.5D graphics and high resolution	<input type="radio"/>
<input type="radio"/>	Instant voice chat (e.g. like Sykpe)	<input type="radio"/>
<input type="radio"/>	Various scoring systems (e.g. top 10 best costume)	<input type="radio"/>

Figure 10. A set of 4 items in the BWS questions.

5 Results

5.1 Sample description

The survey fielding period started from July to December 2018. The survey was posted to different groups on Facebook, such as: Võ Lâm Truyền Kỳ Mobile – VNG, Thiên Long Bát Bộ 3D Mobile, Anh Hùng Xạ Điêu 3D – Gamota, WTF Cộng đồng du học sinh Việt Nam tại Phần Lan, Khảo sát xã hội học. These groups ranged from small private one (30-100 members) to large community one (>1000 members). The survey was first posted on RPG groups, then general gaming ones. Some gaming group did not allow the survey to be posted, thus later the survey was posted on other social groups, e.g. student groups. Furthermore, the survey was also sent to the author's gaming friends via message applications. The posted message on Facebook was in Vietnamese (Appendix C), and it can be translated literally as:

I am working on a survey (for my thesis) about players' preferences on RPGs.
There will be 10 GIFTS (prepaid phone card or game card - 100.000 VND/card) for 10 lucky participants. Please leave your email address at the end of the survey.
The survey will take roughly 10 minutes. I hope that everyone can help me with the survey (Please click on the survey link below)
(Survey Link inserted here)
Thank you for your help!

The message was reposted several times to get more responses. The old messages were deleted before posting new ones to avoid spamming. After fielding, there are 196 qualified responses in total. The respondents' background information is showed in Table 6. One can see that most players (approx. 87%) are from 16 – 30 years old. The majority of respondents (approx. 73%) do not spend or spend very little on games. Moreover, it is interesting that the percentage of male and female respondents are close to each other (52% and 48%, respectively), even though it was assumed that there are more men playing games than women.

Table 6. Sample description.

	Frequency	Percent
Gender		
Male	102	52.04
Female	94	47.96
Age (years old)		
< 16	6	3.06
16 – 22	70	35.71
23 – 30	101	51.53
> 30	19	9.69
Spending (in million VND)		
0 – 0.5	144	73.47
0.5 – 1	22	11.22
1 – 2	18	9.18
> 2	12	6.12

5.2 Player preferences

The aggregate result of the BWS items scores was first considered. Table 7 shows the BWS rescaled score (0-100) of 15 items from the highest to lowest value. On one hand, respondents show a lot of interests in the challenges, the graphic and the virtual world of the game. After these features, the challenges' difficult, the update frequency and the customization are also valued highly by the respondents. On the other hand, participants show less interest in the communication tools (especially the voice messages), the soundtracks and the scoring systems.

Segmenting on the basis of preferences using Latent Class Analysis (LCA)

Latent class analysis was performed on the BWS data for segmentation using the Sawtooth Software SSI Web 8.4.8. The LCA was used because it is robust and works better compare to other segmenting method (Cohen 2003, The CBC Latent Class Technical Paper 2014). It is also a method specifically used for Choice-Based Conjoint analysis and BWS.

Table 7. Rescaled score (0-100) of 15 items in BWS questions.

Factors	Subfactors	Items	Average
Challenge and skill		Variety of solo and group challenges	10.63
Concentration & Immersion	Graphics	3D graphics and high resolution	10.62
Social interaction	Communication spaces	Extensive virtual world	10.53
Challenge and skill		Demanding challenges	8.95
Variety and novelty		Frequent updates in every 1-2 months	8.03
Control	Customization	Customize character freely	7.22
	Customization	Customize freely gameplay & user interface	6.86
Storyline		Game story is influenced by Vietnamese culture	6.13
Concentration & Immersion	Graphics	2.5 graphics and high resolution	5.61
	Sounds	Detailed environmental sound and sound effects	5.29
Storyline		Game story is influenced by foreign culture	4.98
Social interaction	Communication tools	Instant voice chat	4.72
Feedback		Various scoring system	4.17
Concentration & Immersion	Sounds	Various game soundtracks	3.97
Social interaction	Communication tools	Voice messages	2.25

Table 8 shows the log-likelihood and CAIC values for best replications for 2-7 groups. The CAIC starts leveling off with four clusters and the CAIC scores for the 4-7 cluster solutions are about the same. From the managerial point of view, the 6 and 7-cluster solutions have too many clusters and its segments' sizes are too small. As a result, they are not selected. Meanwhile, the 4-cluster and 5-cluster have proportional segment size and appear to be good solutions. In comparison, both solutions have similar cluster types. For instance, they have an aesthetic-oriented cluster and a social interaction-oriented cluster. However, the 5-cluster solution has one unique cluster that the 4-cluster one does not have. It is the cluster which players prefer the local stories are embedded in the game. This is interesting since this thesis aims to study the Vietnamese. Thus, the 5-cluster solution might have offer more significant insights than the 4-cluster one. As a result, the 5-cluster solution was chosen.

Table 8. Minimal log-likelihood and CAIC for LCA solutions with different groups.

Groups	Log-likelihood	CAIC
2	-5789.06364	11852.35616
3	-5610.55528	11637.18196
4	-5475.31577	11508.54549
5	-5389.37830	11478.51308
6	-5317.15474	11475.90848
7	-5253.00221	11489.44594

Table 9 shows the rescaled score (0-100) of each item in every cluster in the 5-cluster solution. The clusters' scores are described briefly in the following:

- Cluster 1 scores high in the storyline in general. It also has high score in the “extensive virtual world” item. Besides, it has low scores in the communication tools, the variety and novelty, and the character customization item.
- Cluster 2 has high scores in 3D graphics and sounds items. However, it has low scores in the communication tools items.
- Cluster 3 scores high in social interaction and the characters' customization items. It also has relatively high score in 3D graphics item. It has low score in the foreign storyline, and relatively low scores in the challenge and skill items.
- Cluster 4 has very high score in challenges, extensive virtual world, and update frequency item. It has exceptionally low scores in the Vietnamese storyline, the voice message, the various game soundtracks, and the 2.5 graphics item.
- Cluster 5 score high in Vietnamese storyline in games, the variety and difficulty of challenges item. However, it has very low score in the voice message item, and relatively low scores in the voice chat, and scoring systems item.

Next, to compare the demographic variables across the clusters, the Chi square test was used. The risk level was set to 0.05. As can be seen in Table 10, the spending and gender variable are dependent across the clusters, while the age class is not.

In terms of gender, approx. 40% and 30% of female respondents belong to clusters 2 and 5, respectively, while the figures for male respondents are approx. 23% and 18%, respectively. Approximately 30% of the male respondents belong to cluster 4. In terms of spending, people do not spend much on game in general. However, out of those who do not spend much on game, 30% and 28% belong to cluster 2 and 5, respectively. Meanwhile, out of

those who spend 0.5-1 million VND/month, 27% and 32% belong to cluster 3 and 4, respectively. Cluster 3 and 4 also have more people who spend approx. 1-2 million VND/month (22% and 44% respectively) compare to other clusters. Out of those who spend over 2 million VND/month, 42% belong to cluster 2, while 33% belong to cluster 4.

Table 9. Average score for each item in 5-cluster solution

Cluster	1	2	3	4	5
Cluster size (196 in total)	10.6%	27.2%	18.9%	19.9%	23.3%
Items					
2.5 graphics and high resolution	4.39	7.93	4.67	2.11	8.74
3D graphics and high resolution	5.02	13.35	10.48	8.78	10.67
Various game soundtracks	2.77	8.59	4.07	1.26	2.36
Detailed environmental sound and sound effects	3.92	9.58	4.22	4.71	3.03
Variety of solo and group challenges	10.00	8.34	3.32	15.48	14.98
Demanding challenges	7.73	8.48	3.73	11.79	11.10
Customize character freely	2.50	9.44	12.60	2.76	7.64
Customize freely gameplay & user interface	5.65	6.95	6.37	8.72	5.29
Various scoring system	7.38	5.14	4.17	4.93	1.71
Extensive virtual world	13.03	6.05	12.85	15.18	7.52
Voice message	2.80	2.11	5.95	0.80	0.73
Instant voice chat	2.24	2.26	14.77	3.70	1.52
Frequent updates in every 1-2 months	2.32	5.26	5.59	15.77	7.80
Game story is influenced by foreign culture	15.85	4.71	1.82	3.01	3.89
Game story is influenced by Vietnamese culture	14.38	1.80	5.38	0.99	13.00

Table 10. Chi square independence test results with cluster membership.

Chi square test for	DF	X value	p
Age	12	11.5869	0.4794
Gender	4	16.6898	0.0022
Spending	12	23.5220	0.0236

5.3 Motivational factors of the players

The player motivation data were handled in the same way as the pilot data. However, before running the EFA on the data, the KMO test was employed to test the data adequacy for factor analysis. The result was 0.87, which indicated that the data were suitable for factor analysis. After that, the EFA was performed on the player motivational data. With the eigenvalue >1, there were four factors and the eigenvalue of the fourth factor was 1.02. It seemed obvious that it was reasonable to try and use only the main three factor of Yee's (2006) scale.

Next, the factor loadings were examined. According to the Yee's (2006) structure, the achievement dimension has the following questions/variables: 1, 3, 14, 15, 16, 18, 25, and 39 (see Table 2 for the questions' numbers). The social dimension has the questions/variables: 23, 24, 32, and 33. The immersion dimension has the questions/variables: 9, 10, 20, 35, and 37. These dimensions, achievement, social, and immersion, are colored red, green, and blue, respectively (Table 11). From the table, most questions loaded on the expected factors, except for question numbers: 15, 25, 35, 37, and 39. Question number 15 and 25 should load on factor 2, achievement, but instead loaded on factor 3, immersion. Question no. 39 also loaded on factor 1, social, while it should load on factor 2, achievement. Finally, question no. 35 and 37 should load on factor 3, immersion, but they loaded on factor 1, social. Subsequently, those questions were removed from further consideration.

Table 11. Rotated factor pattern (orthogonal varimax).

Rotated Factor Pattern			
	Factor1 - Social	Factor2 - Achievement	Factor3 - Immersion
no1	0.23159	0.77559	0.08029
no3	0.31354	0.70649	-0.00834
no9	0.05812	0.02249	0.83168
no10	0.23961	0.05690	0.77143
no14	0.13941	0.56898	0.37883
no15	0.29989	0.44860	0.52881
no16	0.11261	0.53955	0.50864
no18	-0.06819	0.80301	0.09851
no20	0.23264	0.35903	0.50331
no23	0.72737	0.32618	0.12378
no24	0.74537	0.18007	0.02883
no25	0.29577	0.33480	0.35439
no32	0.78463	0.21155	0.17801
no33	0.71461	-0.05763	0.14590
no35	0.55618	0.13532	0.20033
no37	0.36192	-0.03509	0.19316
no39	0.63488	0.30277	0.07879

With the updated set of questions (12 out of 17 questions left), the Cronbach's alpha was calculated for achievement factor (question no. 1, 3, 14, 16, 18), social factor (question no. 23, 24, 32, 33), immersion (question no. 9, 10, 20) (Table 12). The alpha scores were good enough. The immersion score was improved compared to the pilot result. The final score was 0.69 which was close to being acceptable.

Table 12. Cronbach's alpha score of three dimensions.

Cronbach Coefficient Alpha	
Dimension	Alpha
Achievement	0.79
Social	0.81
Immersion	0.69

5.3.1 Players clusters and motivational factors

This sub-section focuses on the differences between the motivational factor across the clusters using ANOVA. Furthermore, the pairwise comparison of the cluster averages of the factors was carried out using Tukey's test. The ANOVA results showed that the motivational factors achievement and social differed across the clusters (for both $p < 0.0001$), but the immersion did not. In the Tukey standardized range test, in terms of achievement, cluster 4 is different from the rest showing the highest mean. In terms of social, clusters 3 and 4 differs from the others showing higher means. As the mean difference between clusters 3 and 4 in terms of social is not significant.

5.4 Profiling the clusters

This section will summarize the information of each cluster in the 5-cluster solution based on previous analyses.

Cluster 1: Storyline lovers

This is the smallest cluster with approx. 10% of the sample size. In terms of gender, approx. 11% of men belong to this cluster whereas the corresponding figure of women is 10%. In terms of spending, 81% of people in this cluster do not spend much on games. Cluster 1 has significantly high scores in storyline (foreign and local story) compare to other clusters. On the other hand, it has low scores in communication tools (voice chat and voice message), the game's variety, and the character customization. People in this cluster also show some interests in the challenges, and the vastness of the game's world. This might explain why this cluster has an average score of both achievement and social. Furthermore, high score in games' story shows that people in cluster 1 love the story of games: how the plot is set up, how it is unfolded, and how it is developed further. They do not care whether the story is local or foreign, they only want a good story in their games. In short, these players are more

about playing for fun and curiosity. They like to do the games tasks and to explore the world to learn about the story, the meaning behind the gameplay.

Cluster 2: Aesthetics lovers

Cluster 2 is the biggest cluster (27.2%) and it has high scores in the graphics and sounds of games compare to other clusters. However, it has low scores in the communication tools (voice message and voice chat). In terms of gender, approx. 23% of men belong to this cluster whereas the corresponding figure of female is 40%. In terms of spending, even though most of the cluster members (81%) do not spend much on games, out of those who spend over 2 million VND/month on games, 42% belong to this cluster. It means that people who are willing to pay will spend a lot for cosmetic items in games. In short, people in this cluster are passionate about how the game looks and sounds. They want the graphic looks stunning and the sound is lively. This might explain why more women (40%) are in this cluster than others. The relatively low scores in other aspects of the game can also indicate that people still want to play even if other features are at mediocre level.

Cluster 3: Socializers

This cluster, which accounts for approx. 19% of the sample size, has high scores in the social interaction (communication space and tools), the customization of character, and the virtual world. It has low score in the foreign storyline and relatively low scores in the variety and difficulty of challenges. In terms of gender, approx. 20% of men belong to this cluster whereas the corresponding figure of female is 17%. In terms of spending, approx. 33% of people in this cluster spend some money on games monthly (>0.5 million VND). Besides, this cluster has the highest mean of social across other clusters. This shows that people in cluster 3 are interested in interaction with other players in games. Especially, they prefer real time conversation (talking directly) with others rather than just sending messages. Games are more a place for them to meet new people. Therefore, games with large number of players and have great communication tools are this cluster's favorite. Besides, they also prefer games' challenges and tasks that require group effort to conquer.

Cluster 4: Achievers

This cluster, which accounts for approx. 20% of the sample size, has high scores in the challenges, extensive virtual world, and frequent update item. It also has relatively high scores in the level of customization in gameplay and user-interface. However, it has

exceptionally low scores in the Vietnamese storyline, the voice message, the various game soundtracks, and the 2.5 graphics item. In terms of gender approx. 29% of men belong to this cluster whereas the corresponding figure of female is only 8%. In terms of spending, 40% of people pay from 0.5 to 2 million VND/month. In addition, out of those who pay 1-2 million VND/month, 44% belong to cluster 4. It indicates that people appear to be more serious and more commit to games. Besides, this cluster has the highest mean of achievement. This shows people in this cluster are more about the tasks and the optimization of performance in games. Especially, they are much more interested in the newness of the game than the others. These interests might explain why they score high in the extensive virtual world item, as the bigger the game world is the more challenges there are for them to explore and conquer. Their interests might also explain why there are more men (29%) in this cluster than others, as men are usually aggressive and competitive. In short, people in cluster 4 are more serious and commit to games' achievements and competitions.

Cluster 5: Local story lovers

Cluster 5 is the second biggest cluster in size (23%). In terms of gender, approx. 18% of men belong to this cluster whereas the corresponding figure of female is 31%. In terms of spending, most people in this cluster (85%) do not spend much on games. Cluster 5 has relatively high scores in the variety and difficulty of challenges. On the other hand, it has very low score in the voice message item, and relatively low scores in the voice chat, and scoring systems item. However, what is unique about this group is that people in cluster 5 show special interest in the Vietnamese culture over foreign culture. They want their culture and history to be embedded in games. Besides, the size of the cluster (23%) indicates that the number of Vietnamese players who are interested in the local culture is considerable. In short, this cluster are interesting to gaming companies as it gives them a valuable insight into the mind of players.

6 Discussion

6.1 Research questions revisited

Players' preferences and preference clusters

To study what players value in roleplaying games (RPGs), the previous gaming literatures have been studied. The thesis then found out that players value their games because of the gaming experience. If the experience is positive, player will keep playing. If the experience is negative, they move on to other games or other things. This gaming experience however it is close to the flow experience. The flow experience describes an experience so pleasant that people are willing to do it for the joy they get during the practice. Based on flow studies in games, a survey measuring the value of different game features in terms of flow's factors was designed.

To have a good gaming experience, a game needs the following factors: concentration and immersion, challenges and skills, control, feedback, social interaction, variety and novelty, and story. At the first glance of the results, players appear to value the challenge and skill, the graphics, and the extensive virtual world factor in games. This is reasonable and understandable. Since playing game requires people to do some tasks that need concentration and skills. Playing game is also more fun when you have friends to play with. However, when looking into the heterogeneity in the players' valuations, there are much more interesting things about their preferences. Using the latent class analysis, five distinct clusters were identified. The clusters are presented next.

The first cluster (the story lovers) has people who are interested in the storyline of games. They love how games are told, how conflicts are built and solved along the games' progress, how their actions can affect the story, and how the story relates to the real world, i.e. is it based on a specific culture.

The second cluster (the aesthetics lovers), which is the largest one, includes people who are interested in the beauty of the game. It represents through the graphics (how games look) and the sounds of games. These features can create a virtual world so real that players can often forget about their real life when playing games. To these players, other game features can be at mediocre level, they will still enjoy the game.

The third cluster (the socializers) has people who love to interact with others in games. The more people there are in games, the more they enjoy it. They like to interact and form a meaningful relationship with others. Even though players can communicate to one and another in different ways in games, they prefer that they can talk directly to each other. They also care how their characters look in comparison with their gaming friends. To these players, the more social interactions in games they have, the better their gaming experiences are.

The fourth cluster (the achievers) has people who are interested in the games' achievements. Players value how the challenges in game are, how difficult they can be, and how they can overcome these challenges with their skills. They also value the ability to customize the mechanic of games, how they can change their control and movement to optimize their performance. Finally, since they are hungry for achievement, they like to have new tasks, new quests in games, or in other words they want their games to be updated frequently.

The fifth cluster (the local story lovers) is the special one. People in this cluster love the game story like the first one, but they like to have their own cultures in games. In another word, these players prefer to see their local myths and folk tales to be embedded in games. They like to meet their childhood heroes in the virtual world.

In conclusion, the players value in general the challenge and skill, the graphics, and the vastness of the game world. However, their preference clusters give a better picture about what they value in RPGs.

How player preferences and player motivational factors relate to each other

A set of questions, which was adopted from Yee (2006), was used to study the main motivational factors of the players: Achievement, Social, and Immersion. When comparing the main motivational factors across the preference clusters, some interesting patterns emerge.

People, who belong to cluster 4, have significantly higher mean in achievement than others. This is understandable as the achievement motivational factor descriptions suit their interests. Meanwhile, players, who belong to cluster 3 and 4, have higher mean in social factor than others. This is interesting since it makes sense that people like to interact with

others have high score in the social factor, but people in cluster 4 are more about their achievements in games. This means that cluster 4 people also interested in social interaction. The reason might be that since they like to accumulate wealth and power as quick as possible, they need others to show-off their achievements. It will be boring if their characters are powerful, but others do not know about them. In short, these players need their own audiences.

One more interesting thing is that the average means of immersion motivational factor are the same across all clusters. This is unusual when comparing to the other two factors. The reason might be that people first play game because they are curious about it, they are attracted to its beauty, and they can be a hero in the game. These are the things draw people to play game in the first place. After that, they might want more from the game. For example, one wants to play a specific game because it looks beautiful, after that, one prefers to conquer all the quests in the game, and he likes to do it with his gaming friends. The fact that people play games because they want to immerse in it, and be a part of it, can explain why there is no difference in terms of immersion factor across all clusters.

6.2 Theoretical implications

To the best of the author's knowledge, the best-worst scaling method has not been applied earlier in studying preference segments in gaming. Instead of relying on traditional rating scales, the study used best-worst scaling to ask respondents to make trade-offs between different factors. Thus, the results are more informative and reliable. Besides, previous studies focused on players' behaviors in online games to explain and describe their motivations in video games. This thesis however looked at what players value in games to understand players' behaviors and motivations. This valuation approach can help researchers to study players from a different perspective.

Moreover, the study has found out that the immersion motivational factor is essential as its average means are the same across all the clusters. It means that even though people have different reasons to play games, we can agree that everyone plays games because they want to immerse into the virtual worlds.

Furthermore, the literature in Vietnamese players in games and game market is still in its infancy. There are several studies about the connection between online gaming and addiction in Vietnam. However, there are only few studies about the players' values and motivations in online games. Therefore, this thesis is one of the first studies focusing on the Vietnamese valuations in online games at the moment. As a result, this study can provide the basic knowledge for future studies to better understand the Vietnamese players and the Vietnamese game market.

6.3 Managerial implications

For game developers and publishers, especially the local ones, it is always a difficult decision to choose what games they should develop and what games they should import. A successful game in one foreign market or multiple markets do not guarantee that it will success in Vietnam. Moreover, the cost of developing or licensing a game is not cheap. Thus, choosing a wrong game can give a fatal hit to companies. Therefore, the understanding of local players' valuations and their motivation can help gaming companies tremendously.

Based on the findings, companies can focus on the preferred features in terms of flow's factors to plan strategies in developing and publishing their games efficiently. For example, companies can focus heavily on the beauty of the game, as the study shows that almost a third of the sample size (27%) value the graphics and the sounds aspect of games. To attract more players, companies can also pay more attention to the game's story. Especially, when the game has some local elements (e.g. local legend, local myth), then it will draw even more players to the game regardless the quality of other aspects. As the study shows that about 23% of the sample like the game if they see their cultures are presented in it. Moreover, the results point out that approx. 10% of the sample interested in the game's story in general. This indicates that with a good local story in the game and high quality in graphics and sounds alone, companies can potentially attract approx. 60% of the players to their games. Therefore, to increase the chance a successful launch for their games in the market, companies should pay extra attention to the beauty of the game and its story.

Furthermore, the results are not only help companies to attract more players, but also help them boost players loyalty. After the game is released, it needs to be further developed and reinvented through updates and expansions to keep the game fresh and interesting. The

players' preferences can give companies ideas how to develop their games continuously. For example, even though there are a significant number of people prefer the local story in games, they are also like the game's challenges and quests. Therefore, to keep the players' level of interest high, the next thing companies should improve in their games is the variety of tasks and its difficulty.

Finally, companies should pay more attention to the important of the localness in games. It has been mentioned above that the local story can bring more players to games. However, the local elements can be applied not only in the story but also in other aspects of games. For instance, instead of designing a western-looking item, it can be designed in the local style. The idea is companies do not have to restrict themselves in the way of using local element in games.

6.4 Limitations, reliability and validity

Limitations

One of the study's limitations is that the sample size was small (196 respondents), and in retrospect there was not enough background information about the respondents. For instance, where people live can give more insight why they prefer a certain thing and why they behave in a specific way in games. Especially, since all the respondents are Vietnamese, the results might be influenced by the country unique characteristics.

Reliability

BWS experiment have individual fit statistics to identify whether a respondent chose the items randomly or not. In the final survey, the number of items per set was four, and each item was shown three times to each respondent. The minimum fit statistic to achieve 95% correct classification of random responders with the used setting (4 items/set, each item appears 3 times) is 0.336 (Identifying bad responders, n.d.). It means that those with the figure below 0.336 are likely to choose the items randomly and can be removed from the data. In the BWS data, 21 out of 196 have fit statistics lower than 0.336. One of the reasons for respondents choosing randomly is that they do not familiar with the BWS style and thus they get confused and frustrated easily.

Moreover, the motivation scale was tested before using in the final survey. The questions that loaded on unexpected factors were removed. In the Yee's (2006) study, which the used questions were based on, there are ten extra sub-dimensions under the three main ones. In the final survey's results, only the three main motivational factors, achievement, social, and immersion, could be used. While giving up the subfactors the main factors had solid reliabilities.

Validity

The BWS results are acceptable as the items were developed based on the basic of flow theory and how flow theory was applied in game design. However, some factors that influence the gaming experience were omitted. For instance, the network latency is an important issue in online gaming. It refers to the time your machine (PC, mobile devices) send data to the game server and receive it back. A long delay in game can ruin the whole gaming experience. Even though, this is more an issue for a network company than for gaming ones, there are still different ways that gaming companies can improve, such as the location of the game's servers. Another example is the customer services in online games. Bad customer services can drive players away even though the game itself is excellent. Furthermore, the thesis did not look deeper into the important of the social interaction and community in games. Social media such as Facebook group can improve the gaming experience tremendously. Especially, the offline (real life) events are also essential to the gaming experience. Players can have weekly meet up to talk about games, their achievements, etc. This strengthens their relationship and enhances their royalty to the game. Consequently, the BWS results are restricted to the features of the game. In addition, the Yee's (2006) scale, which was adopted in this thesis, is an established one. It has been validated by other studies, such as Yee et al. (2012), and Billieux et al. (2013).

6.5 Future research suggestion

Future researches can focus on how to utilize the local elements in games: How to use it efficiently, and whether companies should make a hybrid of local and foreign style, if yes then how the combination should be, etc. Additionally, future studies can also focus on how external factors, which are not the game features, can affect the gaming experience. For instance, the important of players' community in real life, how it works in different cultures.

References

- Aggregate Score Estimation via Logit Analysis. Available from: https://www.sawtoothsoftware.com/help/lighthouse-studio/manual/maxdiff_aggregate_logit_analysis.html [Accessed on 29 December 2018].
- Bartle, R. 1996. Heart, Clubs, Diamonds, Spades: Players Who Suit MUDS. <http://www.mud.co.uk/richard/hclds.htm>.
- Bateman, C., Lowenhaupt, R. and Nacke, L. 2011. Player Typology in Theory and Practice. In Proceeding of DiGRA 2011 Conference: Think Design Play. Hilversum, Netherlands, September 14-17, 2011.
- Biasutti, M. 2011. Flow and Optimal Experience. Encyclopedia of Creativity (2nd edition), 522-528.
- Billieux, J., Van der Linden, M., Achab, S., Khazaal, Y., Paraskevopoulos, L., Zullino, D. and Thorens, G. 2013. Why do you play World of Warcraft? An in-depth exploration of self-reported motivations to play online and in-game behaviours in the virtual world of Azeroth. *Computers in Human Behavior*, 29, 103-109.
- Bopp, M. M. 2008. Storytelling and motivation in serious games. Part of the Final Consolidated Research Report of the Enhanced Learning Experience and Knowledge Transfer – Project ELEKTRA, a project supported by the European Commission (contract number 027986).
- Busch, M., Mattheiss, E., Orji, R., Fröhlich, P., Lankes, M. and Tscheligi, M. 2016. Player Type Models – Toward Empirical Validation. 10.1145/2851581.2892399.
- Carpenter, S. 2018. Ten steps in Scale Development and Reporting: A Guide for Researchers. *Communication methods and measures*. 12(1), 25-44.
- Chen, J. (2007). Flow in games (and everything else). *Communications of the ACM*, 50(4), 31-34.
- Choi, D. S. and Kim, J. W. 2004. Why people continue to play online games: In search of critical design factors to increase customer loyalty to online contents. *Cyberpsychology & Behavior*, volume 7, number 1.
- Cohen, S. 2003. Maximum different Scaling: Improved measured of importance and preference for segmentation. 2003 Sawtooth Software Conference Proceedings, Sequim, WA.

- Cohen, S. H. and Markowitz, P. 2002. Renewing market segmentation: Some new tools to correct old problems. ESOMAR 2002 Congress Proceedings, 595-612. Amsterdam, The Netherlands: ESOMAR.
- Cornett, S. 2004. The usability of massively multiplayer online roleplaying games: Designing for new users. In Proceedings of the 2004 Conference on Human Factors in Computing Systems. ACM press, New York, 703-710.
- Csikszentmihalyi, M. (1975). *Beyond Boredom and Anxiety*. Jossey Bass, San Francisco, CA.
- Csikszentmihalyi, M. (1990). *Flow: The psychology of Optimal Experience*. Harper Perennial, New York.
- Darby, J. 2011. *Wizards and Warriors: Massively Multiplayer Online Game Creation*. Course Technology.
- Davis, F. D. 1989. Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*, 13(3), 319-340.
- DeSarbo, W. S., Ramaswamy, V. and Cohen, S. H. 1995. Market segmentation with choice-based conjoint analysis. *Marketing Letters*, 6(2), 137-147.
- Desurvire, H., Caplan, M. and Toth, J. A. 2004. Using heuristics to evaluate the playability of games. In *Extended Abstracts of the 2004 Conference on Human Factors in Computing Systems*. ACM press, New York, 1509-1512.
- Devellis, R. F. 1991. *Scale development: Theory and application*. Applied Social Research Methods Series, volume 26. SAGE publications.
- Diamantopoulos, A., Sarstedt, M., Fuchs, C., Wilezynski, P. and Kaiser, S. 2012. Guidelines for choosing between multi-item and single-item scales for construct measurement: a predictive validity perspective. *Journal of the Academy of Marketing Science*, 40(3), 434-449.
- Fabrigar, L. R. and Wegener, D. T. 2011. *Exploratory Factor Analysis*. Oxford University Press, Incorporated. 159p.
- Fan, L., Gu, J. C., Suh, Y. H. and Lee, S. C. 2012. How to attract Chinese online game users - An empirical study on the determinants affecting intention to use Chinese online games. *Asian Journal on Quality*, 13(1), 7-21.
- Fields, T and Cotton, B. 2014. *Mobile and Social Game Design: Monetization methods and Mechanics*. 2nd ed. Chapman and Hall, chapter 7, 122-123.
- Finn, A. and Louviere, J. 1992. Determining the appropriate response to evidence of public concern: the case of food safety. *J. Public Policy Mark*, 11(1), 12-25.

- Friborg, O., Martinussen, M. and Rosenvinge, J. H. 2006. Liker-based vs. semantic differential-based scoring of positive psychological construct: A psychometric comparison of two versions of a scale measuring resilience. *Personality and Individual Differences*, 40(5), 873-884.
- Ghani, J. A. and Deshpande, S. P. 1994. Task characteristics and the experience of optimal flow in human-computer interaction. *Journal of Psychology*, 128(4), 381-391.
- Hamari, J. and Tuunanen, J. 2014. Player types: A meta-synthesis. *Transactions of the Digital Games Research Association*, 1, 29-53.
- Hattie, J. and Timperley, H. 2007. The power of feedback. *Review of Educational Research*, 77(1), 81-112.
- Hoffman, D. L. and Novak, T. P. 1996. Marketing in hypermedia computer-mediated environments: conceptual foundations. *Journal of Marketing*, 60(3), 50-68.
- Hoffman, D. L. and Novak, T. P. 2009. Flow Online: Lessons learned and future prospects. *Journal of Interactive Marketing*, 23(1), 23-34.
- Hsu, C., Lu, H. and Hsu, H. 2007. Adoption of the mobile internet: An empirical study of multimedia message service (MMS). *Omega*, 35(6), 715-726.
- Huang, H. C., Huang, L. S., Chou, Y. J. and Teng, C. I. 2017. Influence of temperament and character on online gamer loyalty: Perspectives from personality and flow theories. *Computer in Human Behavior*, 70, 398-406.
- Huang, L. Y. and Hsieh, Y. J. 2011. Predicting online game loyalty based on need gratification and experiential motives. *Internet Research*, 21(5), 581-598.
- Identifying bad respondents. Available from: https://www.sawtoothsoftware.com/help/lighthouse-studio/manual/hid_web_maxdiff_badrespondents.html [Accessed on 2 January 2019].
- Ip, B. and Jacobs, G. 2005. Segmentation of the games market using multivariate analysis. *Journal of Targeting, Measurement and Analysis for Marketing*, 13(3), 275-287.
- Johnson, D. and Wiles, J. 2003. Effective affective user interface design in games. *Ergonomics* 46, 13/14, 1332-1345.
- Jong, H. W. 2009. *Innovation and Strategy of Online Games*. Imperial College Press.
- Kaiser-Meyer-Olkin (KMO) test for sampling adequacy. Available from: <https://www.statisticshowto.datasciencecentral.com/kaiser-meyer-olkin/> [Accessed on 7 January 2019].

- Kim, J. and Mueller, C. W. 1978. Introduction to factor analysis: what is it and how to do it. Beverly Hills, Calif. : SAGE cop.
- Lazzaro, N. 2004. Why we play games: Four keys to more emotion without story. http://www.xeodesign.com/whyweplaygames/xeodesign_whyweplaygames.pdf Online Feb. 1, 2005.
- Lee, J. A., Soutar, G. N. and Louviere, J. 2007. Measuring Values Using Best-Worst Scaling: The LOV example. *Psychology & Marketing*, 24(12), 1043-1058.
- Lee, M. C. 2009. Understanding the behavioural intention to play online games – An extension to the theory of planned behaviour. *Online Information Review*, 33(5), 849-872.
- Liu, C. C. 2017. A model for exploring players flow experience in online games. *Information Technology & People*, 30(1), 139-162.
- Louviere, J., Lings, I., Islam, T., Gudergan, S. and Flynn, T. 2013. An introduction to the application of (case 1) best-worst scaling in marketing research. *Intern. J. of Research in Marketing*, 30, 292-303.
- Marley, A. A. J. and Louviere J. J. 2005. Some probabilistic models of best, worst and best-worst choices. *Journal of Mathematical Psychology*, 49, 464-480.
- Maxdiff Tutorial and Example. Available from: https://www.sawtoothsoftware.com/help/lighthouse-studio/manual/hid_web_maxdifftutorial.html [Accessed on 19 September 2018]
- McFadden, D. 1974. Conditional logit analysis of qualitative choice behavior. Available from: <https://eml.berkeley.edu/reprints/mcfadden/zarembka.pdf>
- Merikivi, J., Tuunainen, V. and Nguyen, D. 2017. What makes continued mobile gaming enjoyable? *Computers in Human Behavior*, 68, 411-421.
- Mitchell, B. L. 2012. *Game Design Essentials*. John Wiley & Son, Incorporated. Chapter 8.
- Moon, J. and Kim, Y. 2001. Extending the TAM for a World-Wide-Web context. *Information & Management*, 38(4), 217-230.
- Moore, M. E. 2011. *Basics of Game Design*. Boca Raton: A K Peters/CRC Press.
- Netemeyer, R. G., Bearden, W. O. and Sharma, S. 2003. Scaling procedures: issues and applications. SAGE Publications, Inc. Chapter Dimensionality.
- Newzoo Global Game Market Report 2018. Available from: <https://newzoo.com/insights/trend-reports/newzoo-global-games-market-report-2018-light-version/> [Accessed on 30 December 2018]

- Novak, T. P., Hoffman, D. L. and Yung, Y. F. 2000. Measuring the customer experience in online environments: A structural modelling approach. *Marketing Science*, 19(1), 22-42.
- Nunes, F., Madureira, T., Oliveira, J. V. and Madureira, H. 2016. The consumer trail: Applying best-worst scaling to classical wine attributes. *Wine Economics and Policy*, 5, 78-86.
- Orme, B. 2005. Accuracy of HB Estimation in Maxdiff Experiments. Available from: <https://www.sawtoothsoftware.com/support/technical-papers/maxdiff-best-worst-scaling/accuracy-of-hb-estimation-in-maxdiff-experiments-2005> [Accessed on 7 January 2019].
- Orme, B. 2018. How good is Best-worst scaling?. Available from: <https://www.quirks.com/articles/how-good-is-best-worst-scaling> [Accessed on 7 January 2019]
- Padilla-Zea, N., Gutiérrez, F. L., López-Arcos, J. R. and Abab-Arranz, A. 2014. Modeling storytelling to be used in educational video games. *Computers in Human Behavior*, 31, 461-474.
- Penttinen, E., Halme, M., Malo, P., Saarinen, T. and Vilen, V. M. 2018. Playing for fun or profit: how extrinsically-motivated and intrinsically-motivated players make the choice between competing dual-purposed gaming platforms. *Electronic markets*, 1-22. <http://doi.org/10.1007/s12525-018-0298-1>
- Rogers, R. 2017. The motivational pull of video game feedback, rules, and social interaction: Another self-determination theory approach. *Computer in Human Behavior*, 73, 446-450.
- Schell, J. 2008. *The Art of Game Design: A book of lenses*. Amsterdam, CRC Press, 39-43.
- Scolastici, C. and Nolte, D. 2013. *Mobile Game Design Essentials*. Packt Publishing.
- Soutter, A. R. B. and Hitchens, M. 2016. The relationship between character identification on flow state within video games. *Computers in Human Behavior*, 55, 1030-1038.
- Stewart, B. 2011. Personality and Play Style: A Unified Model. Available from: http://www.gamasutra.com/view/feature/6474/personality_and_play_styles_a_php
- Su, Y. S., Chiang, W. L., Lee, C. T. J. and Chang, H. C. 2016. The effect of flow experience on player loyalty in mobile game application. *Computers in Human Behavior*, 63, 240-248.
- Sweetser, P. and Wyeth, P. 2005. GameFlow: A model for Evaluating Player Enjoyment in Games. *ACM computers in Entertainment*, 3(3), article 3A.

- Tavakol, M. and Dennick, R. 2011. Making sense of Cronbach's alpha. *International Journal of Medical Education*, 2, 53-55.
- Teng, C. I. 2010. Customization, immersion satisfaction, and online gamer loyalty. *Computers in Human Behavior*, 26, 1547-1554.
- Teng, C. I. 2018. Managing gamer relationships to enhance online gamer loyalty: The perspectives of social capital theory and self-perception theory. *Computers in Human Behavior*, 79, 59-67.
- Teng, C. I., Chen, M. Y., Chen Y. J. and Li, Y. J. 2012. Loyalty due to others: The relationships among challenge, interdependence, and online gamer loyalty. *Journal of Computer-Mediated Communication*, 17, 489-500.
- The CBC Latent Class Technical Paper (Version 3) 2014. Available from: <https://www.sawtoothsoftware.com/download/techpap/lctech.pdf> [Accessed on 29 December 2018].
- The Vietnamese gamer. Available from: <https://newzoo.com/insights/infographics/vietnamese-gamer-2017/> [Accessed on 7 January 2019].
- Tseng, F. C. 2011. Segmenting online gamers by motivation. *Expert Systems with Applications*, 38, 7693-7697.
- Turkay, S. and Adinolf, S. 2015. The effect of customization on motivation in an extended study with a massively multiplayer online roleplaying game. *Cyberpsychology: Journal of Psychosocial Research on Cyberspace*, 9(3), article 2.
- Tychsen, A., Hitchens, M. and Brolund, T. 2008. Motivations for play in computer role-playing games. *FuturePlay 2008*, November 3-5, 2008, Toronto, Ontario, Canada.
- Vietnam Average Monthly Wages. Available from: <https://tradingeconomics.com/vietnam/wages> [Accessed on 3 July 2018].
- Vietnam Investment Review. Available from: <http://www.vir.com.vn/vietnamese-game-market-enriches-foreign-gaming-firms-48467.html> [Accessed on 19 September 2018].
- Vietnam mobile game market. Available from: <https://allcorrectgames.com/insights/mobile-game-market-index/vietnam/> [Accessed on 19 September 2018].
- Weibel, D., Wissmath, B., Habegger, S., Steiner, Y. and Groner R. 2008. Playing online games against computer- vs. human-controlled opponents: Effects on presence, flow, and enjoyment. *Computer in Human Behavior*, 24, 2274-2291.

-
- Weijters, B., Baumgartner, H. and Geuens, M. 2016. The calibrated sigma method: An efficient remedy for between group differences in response category use on Likert scales. *International Journal of Research in Marketing*, 33(4), 944-960.
- Yee, N. 2006. Motivations for Play in Online Games. *CyberPsychology & Behavior*, volume 9, 772-775.
- Yee, N., Ducheneaut, N. and Nelson, L. 2012. Online Gaming Motivations Scale: Development and Validation. In Paper presented at the SIGCHI conference on human factors in computing systems, Austin, Texas, USA.

Appendix A: Yee's (2006) questions

These questions focus on your general gameplay preferences

1) How interested are you in the precise numbers and percentages underlying the game mechanics? (i.e., chance of dodging an attack, the math comparing dual-wield to two-handed weapons, etc.)

- Not Interested At All
- Slightly Interested
- Somewhat Interested
- Very Interested
- Extremely Interested

2) How important is it to you that your character is as optimized as possible for their profession / role?

- Not Important At All
- Slightly Important
- Somewhat Important
- Very Important
- Extremely Important

3) How often do you use a character builder or a template to plan out your character's advancement at an early level?

- Never
- Seldom
- Sometimes
- Often
- Always

4) Would you rather be grouped or soloing?

- Much Rather Group
- Rather Group
- In-Between
- Rather Solo
- Much Rather Solo

5) How important is it to you that your character can solo well?

- Not Important At All
- Slightly Important
- Somewhat Important
- Very Important
- Extremely Important

6) How much do you enjoy working with others in a group?

- Not At All
- A Little
- Some
- A Lot
- A Great Deal

7) How important is it to you to be well-known in the game?

- Not Important At All
- Slightly Important
- Somewhat Important
- Very Important
- Extremely Important

8) How much time do you spend customizing your character during character creation?

- Not At All
- A Little
- Some
- A Lot
- A Great Deal

9) How important is it to you that your character's armor / outfit matches in color and style?

- Not Important At All
- Slightly Important
- Somewhat Important
- Very Important
- Extremely Important

10) How important is it to you that your character looks different from other characters?

- Not Important At All
- Slightly Important
- Somewhat Important
- Very Important
- Extremely Important

11) How much do you enjoy exploring the world just for the sake of exploring it?

- Not At All
- A Little
- Some
- A Lot
- A Great Deal

12) How much do you enjoy finding quests, NPCs or locations that most people do not know about?

- Not At All
- A Little
- Some
- A Lot
- A Great Deal

13) How much do you enjoy collecting distinctive objects or clothing that have no functional value in the game?

- Not At All
- A Little
- Some
- A Lot
- A Great Deal

How important are the following things to you in the game?**1) Leveling up your character as fast as possible.**

- Not Important At All
- Slightly Important
- Moderately Important
- Very Important
- Tremendously Important

2) Acquiring rare items that most players will never have.

- Not Important At All
- Slightly Important
- Moderately Important
- Very Important
- Tremendously Important

3) Becoming powerful.

- Not Important At All
- Slightly Important
- Moderately Important
- Very Important
- Tremendously Important

4) Accumulating resources, items or money.

- Not Important At All
- Slightly Important
- Moderately Important
- Very Important
- Tremendously Important

5) Knowing as much about the game mechanics and rules as possible.

- Not Important At All
- Slightly Important
- Moderately Important
- Very Important
- Tremendously Important

6) Having a self-sufficient character.

- Not Important At All
- Slightly Important
- Moderately Important
- Very Important
- Tremendously Important

7) Being immersed in a fantasy world.

- Not Important At All
- Slightly Important
- Moderately Important
- Very Important
- Tremendously Important

8) Escaping from the real world.

- Not Important At All
- Slightly Important
- Moderately Important
- Very Important
- Tremendously Important

How much do you enjoy doing the following things in the game?**1) Helping other players.**

- Not Enjoyable At All
- Slightly Enjoyable
- Moderately Enjoyable
- Very Enjoyable
- Tremendously Enjoyable

2) Getting to know other players.

- Not Enjoyable At All
- Slightly Enjoyable
- Moderately Enjoyable
- Very Enjoyable
- Tremendously Enjoyable

3) Chatting with other players.

- Not Enjoyable At All
- Slightly Enjoyable
- Moderately Enjoyable
- Very Enjoyable
- Tremendously Enjoyable

4) Competing with other players.

- Not Enjoyable At All
- Slightly Enjoyable
- Moderately Enjoyable
- Very Enjoyable
- Tremendously Enjoyable

5) Dominating/killing other players.

- Not Enjoyable At All
- Slightly Enjoyable
- Moderately Enjoyable
- Very Enjoyable
- Tremendously Enjoyable

6) Exploring every map or zone in the world.

- Not Enjoyable At All
- Slightly Enjoyable
- Moderately Enjoyable
- Very Enjoyable
- Tremendously Enjoyable

7) Being part of a friendly, casual guild.

- Not Enjoyable At All
- Slightly Enjoyable
- Moderately Enjoyable
- Very Enjoyable
- Tremendously Enjoyable

8) Being part of a serious, raid/loot-oriented guild.

- Not Enjoyable At All
- Slightly Enjoyable
- Moderately Enjoyable
- Very Enjoyable
- Tremendously Enjoyable

9) Trying out new roles and personalities with your characters.

- Not Enjoyable At All
- Slightly Enjoyable
- Moderately Enjoyable
- Very Enjoyable
- Tremendously Enjoyable

10) Doing things that annoy other players.

- Not Enjoyable At All
- Slightly Enjoyable
- Moderately Enjoyable
- Very Enjoyable
- Tremendously Enjoyable

How often do you do the following things in the game?

1) How often do you find yourself having meaningful conversations with other players?

- Never
- Seldom
- Sometimes
- Often
- Always

2) How often do you talk to your online friends about your personal issues?

- Never
- Seldom
- Sometimes
- Often
- Always

3) How often have your online friends offered you support when you had a real life problem?

- Never
- Seldom
- Sometimes
- Often
- Always

4) How often do you make up stories and histories for your characters?

- Never
- Seldom
- Sometimes
- Often
- Always

5) How often do you role-play your character?

- Never
- Seldom
- Sometimes
- Often
- Always

6) How often do you play so you can avoid thinking about some of your real-life problems or worries?

- Never
- Seldom
- Sometimes
- Often
- Always

7) How often do you play to relax from the day's work?

- Never
- Seldom
- Sometimes
- Often
- Always

8) How often do you purposefully try to provoke or irritate other players?

- Never
- Seldom
- Sometimes
- Often
- Always

Appendix B: Best-worst scaling design report

Number of Items (Attributes): 15
 Number of Items per Set: 4
 Number of Sets per Respondent: 12
 Number of Versions: 300
 Number of Iterations: 1000
 Random Number Seed: 89
 Number of Prohibitions: 1
 Iteration 184 was chosen

One Way Frequencies:
 Item Times Used

Item	Times Used
1	960
2	960
3	960
4	960
5	960
6	960
7	960
8	960
9	960
10	960
11	960
12	960
13	960
14	960
15	960

Mean = 960
 Std Dev. = 0

Two Way Frequencies:

Item\	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	960	0	222	222	221	222	222	222	221	221	222	222	221	222	221
2	0	960	222	221	221	221	221	221	223	222	222	221	222	222	221
3	222	222	960	203	203	204	203	203	203	203	202	203	203	203	203
4	222	221	203	960	203	203	203	203	203	203	204	202	203	203	204
5	221	221	203	203	960	203	204	203	203	203	203	203	204	203	203
6	222	221	204	203	203	960	202	203	203	203	203	203	203	203	204
7	222	221	203	203	204	202	960	203	203	203	203	204	203	203	203
8	222	221	203	203	203	203	203	960	203	203	203	203	203	204	203
9	221	223	203	203	203	203	203	203	960	203	203	203	203	203	203
10	221	222	203	203	203	203	203	203	203	960	204	203	203	203	203
11	221	222	202	204	203	203	203	203	203	204	960	203	203	203	203
12	222	221	203	202	203	203	204	203	203	203	203	960	204	203	203
13	221	222	203	203	204	203	203	203	203	203	203	204	960	202	203
14	222	222	203	203	203	203	203	204	203	203	203	203	202	960	203
15	221	221	203	204	203	204	203	203	203	203	203	203	203	203	960

Off Diagonal Non-prohibited Elements

Mean = 207.69231
 Std Dev. = 8.0073

Positional Frequencies:

Item	Pos. 1	2	3	4
1	240	239	240	241
2	240	240	239	241
3	241	240	240	239
4	240	240	240	240
5	240	240	240	240
6	240	240	240	240
7	240	240	240	240
8	240	240	239	241
9	239	240	240	241
10	240	240	240	240
11	240	240	241	239
12	239	240	241	240
13	240	240	240	240
14	241	240	240	239
15	240	241	240	239

Mean = 240
 Std Dev. = 0.54772

Appendix C: The posted message in Vietnamese



Chau Chu shared a link.

August 12, 2018

Mình đang làm khảo sát cho luận văn tốt nghiệp về sở thích của người chơi game nhập vai.

Sẽ có 10 PHẦN QUÀ (thẻ game hoặc thẻ đt trị giá 100k vnd) dành cho 10 người may mắn khi tham gia khảo sát. Ace nhớ để lại địa chỉ hòm thư ở cuối bản khảo sát nhé!

Mong mọi bỏ chút thời gian (khoảng 10p) để giúp mình khảo sát (bấm vô đường link ở dưới).

Link khảo sát: <https://gamesurvey.sawtoothsoftware.com/login.html>

Xin chân thành cảm ơn mọi đã gúp đỡ!

GAMESURVEY.SAWTOOTHSOFTWARE.COM

gamesurvey.sawtoothsoftware.com



Le Thu Hien and 7 others

1 Share