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IMPROVING THE GAME WITH USER GENERATED CONTENT: AN OVERVIEW OF SKYRIM MOD USERS

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ABSTRACT

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User generated content is an important, growing phenomenon in the video game culture. This thesis focuses on fan-made software modifications, called mods, which are used to change or increase the content in games. The objectives were to identify the motivations of mod users, and to determine the factors that affect overall mod use. The subject has been studied academically, but research done in the context of mod users was very limited. An in-depth inspection of the user made modifications available for the popular role-playing game, Skyrim was conducted. An exploratory and descriptive survey was conducted on members of a large Skyrim mod community. The survey inquired various mod use related habits, opinions, and experiences with structured and open-ended questions. Quantitative data was analyzed with descriptive statistics, and qualitative data was thematically analyzed. The results indicated that modifications are primarily used to improve games and to make them more enjoyable to play. This is achieved through improving various aspects of games, such as gameplay mechanics, graphics, and usability. Game developers' technological choices, support and leniency towards modifying their games affect the amount of mods that can be used. Modification use is reduced by the high interest, time, effort and technological skill requirements to succeed in the activity. The formation of online communities and the growing popularity of gaming related social platforms may positively influence the extent of mod use. Game modifications spread mostly through unofficial paths, and their existence relies on fan-based communities. Mod users prefer the activity to stay as open as possible, and generally view the possible monetization of mods negatively. Game companies should keep an open mind towards allowing modification of their products, because the benefits can be considerable.

Keywords: mods, modding, user generated content, computer games, game modification

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Käyttäjien luoma sisältö on merkittävä ja kasvava osa videopelikulttuuria. Tämä tutkielma tarkastelee fanien luomia ohjelmistomuokkauksia, modeja, joilla muutetaan tai lisätään sisältöä peleissä. Tutkielman tavoitteena on selvittää modien käyttäjien motivaatiota sekä tekijöitä, jotka vaikuttavat modien käyttämisen yleisyyteen. Vaikka modeja on tutkittu akateemisesti, on tutkimus modien käyttäjien näkökulmasta jäänyt hyvin vähäiseksi. Tässä tutkimuksessa tarkasteltiin suositun roolipelin, Skyrimin saatavilla olevia modeja. Empiirinen osuus toteutettiin kuvailevana kyselytutkimuksena, joka kohdistettiin erääseen suureen Skyrim-modiyhteisöön. Kyselyssä selvitettiin modien käyttöön liittyviä tapoja, mielipiteitä ja kokemuksia strukturoiduin ja avoimin kysymyksin. Kvantitatiivinen data analysoitiin tilastollisesti kuvaavilla menetelmillä, ja kvalitatiiviseen dataan käytettiin temaattista analyysiä. Tulosten mukaan modeja käytetään ensisijaisesti siksi, että peleistä saataisiin parempia ja niiden pelaamisesta nautittavampaa. Tämä saavutetaan parantamalla pelien eri osa-alueita, kuten pelimekaaniikkoja, grafiikoita ja käytettävyyttä. Pelikehittäjien teknologiset valinnat, tuki ja sallivuus peliensä muokkaamiseen vaikuttavat käytettävissä olevien modien määrään. Onnistunut modien käyttäminen vaatii käyttäjältä paljon kiinnostusta, aikaa, vaivannäköä ja teknologisia taitoja, mikä vähentää modien käyttämisen yleisyyttä. Uusien internetyhteisöjen muodostuminen sekä peliaiheisten sosiaalisten alustojen suosion kasvu voivat vaikuttaa positiivisesti modien käytön yleisyyteen. Modit leviävät pääasiassa epävirallisten kanavien kautta, ja niiden olemassaolo perustuu fanipohjaisiin yhteisöihin. Modien käyttäjät haluavat toiminnan pysyvän mahdollisimman avoimena ja he suhtautuvat modien mahdolliseen kaupallistamiseen enimmäkseen negatiivisesti. Peliyhtiöiden tulisi suhtautua modeihin avoimesti, sillä niistä saatavat kaupalliset hyödyt voivat olla merkittäviä.

Asiasanat: modit, modaaminen, käyttäjien luoma sisältö, pelit, pelin muokkaaminen

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1 Introduction

User generated content (UGC) in the digital world is a notable phenomenon that is growing at a rapid pace. This thesis studies the user generated contents in digital games, which are commonly called mods or game modifications. They are freely available additions or changes to commercial games that are made by enthusiastic game fans and their communities, usually made possible by development tools released by the original developers of the game. The number of mods has grown quickly because of growing popularity of games, the ease of sharing content over the internet and the benefits that mods can give to game companies. Some mods are of very high quality, sometimes becoming even successful commercial games themselves. There are numerous communities in the internet where mods are shared, discussed and developed. Mods have recently found their way into the game console market, potentially increasing the mod user base and thus the commercial interests towards mods and modding remarkably.

The most central concepts of this thesis are mods and modding. ”Mod” comes from the word ”modify” or ”modification” (Sotamaa, 2010). Poor (2014) defines modding as ”the act of changing a game, usually through computer programming, with software tools that are not part of the game. This can mean fixing bugs, modifying content to improve it, or adding content.”. Scacchi (2011) describes the modding process as a do-it-yourself approach to develop game software. Mods can vary from small changes such as new levels, textures or missions to total conversion mods, which can change the game's content entirely (Fromme & Unger, 2012, 518.). The makers of mods are called modders. According to Laukkanen (2005) ”a ”modder” is the amateur hobbyist participating in the craft of modding”.

I define mods in this thesis as modifications or additions to games that have been developed by non-commercial parties and that players can obtain free of charge. This rules out for example machinima (movies made with game engines), that Scacchi (2010) considers as mods, and so they are excluded from this thesis. Modding generally means making modifications, although sometimes the word modding is also used to mean the mere usage of mods

made by others that are already available. For clarity, I try to keep the terms separate in this thesis. In this thesis, a modder will generally mean a person who creates mods, unless clearly indicated otherwise in the context.

Game modifications are part of a larger phenomenon: user generated content in media. As communication technology has advanced and made creating and sharing content easier, consumers are now essentially becoming producers. What made this possible in large scale are often called ”Web 2.0” internet sites, platforms where internet users create, collaborate and interact together, harnessing the intelligence of the collective (O'Reilly, 2005). Examples of web 2.0 sites include social media sites like Facebook, media sharing sites such as Youtube and Flickr, wikis, and open source software sites like SourceForge. OECD defines user generated content and its requirements as ”i) content made publicly available over the Internet, ii) which reflects a certain amount of creative effort, and iii) which is created outside of professional routines and practices.” (OECD, 2007).

Modding sites act similarly as other web 2.0 sites and can be counted as such. Content is freely shared and discussed, social communities are formed and both often have content rating systems in place. There are some quite large differences between mods and user generated contents in other media which makes them a bit difficult to compare, though. While the user generated contents usually discussed in literature are often small contributions that don't need a lot of time or expertise to produce, game modification always requires some amount of technical knowledge, often a lot of time and collaboration with others, and in case of modifying commercial games, the ownership of a product that is not free.

Overall, studying games is seen as important because they are considered as drivers for innovation, and games are a large, rapidly growing industry. Gamers have high requirements from technology, user interfaces, functionality design, and complicated graphics and physics engines. Innovations in these areas spread to other media (Humphreys, 2003). Mods and modding are an important part of gaming culture, and PC games can be seen as platforms for user creativity. Game developers detect the value in modding, and actively try to harness it (Nieborg & Van der Graaf, 2008). Some of the most successful games of all time originated from mods. Example titles include DotA 2, Counter-Strike and its sequels. The popular Multiplayer online battle arena (MOBA) genre originated from mods, and it is a staple in the E-sports culture.

The subject is important because mods can provide free, quality media content to consumers, they provide commercial benefits to companies and are related to many growing phenomena in the digital world, such as crowdsourcing, free and open source software development, and prosumerism, where consumers are in essence turned into producers. Modding is a growing part of the culture and practice of technological advancement (Scacchi, 2011). The rate of growth of the modding phenomenon is astounding: in 2012 the largest modding site hosted 40 000 different mods for games and had two million registered users (Hong & Chen, 2013), at the end of year 2017 the site

hosts over 240 000 mods and has over 13,6 million registered users (Nexusmods, games list). Mods for the most popular game on the Nexus mods community have been downloaded for more than a billion times. Many researchers suggest that mods and modding have not been studied enough (Poor, 2014; Laukkanen, 2005). Previous research of mods has focused mostly on the content creators, their motives and communities (Sotamaa, 2010; Poor, 2014), modding practices (Hong, 2013), the use of mods and modding for educational purposes (El-Nasr & Smith, 2006; Loh & Byun, 2009), the labor of modders (Kücklich, 2005; Postigo, 2007) and the relationship of mods and the law (Postigo, 2008; Kow & Nardi, 2010). The users of mods, their motivations for using them and experiences of using them have been left almost untouched in research. The potential of mods to improve games has not been properly identified in the literature, either. A few studies have closely inspected the available user generated contents for some games, but even they didn't focus on the mods' potential to improve the games. Game customization increases enjoyment through increased feelings of autonomy, control, and to a lesser degree, attachment (Kim et al. 2015). More than two thirds of MMORPG players viewed that customization affected their enjoyment to a moderate or a large degree (Turkay & Adinolf, 2010). Since modding allows for much more significant changes in games than the customization options provided by most games, their potential to increase game quality and enjoyment must be immense.

The purpose of this thesis is to find out why people use mods, how they can make games better, what the experiences of mod users are and what factors increase and decrease the overall use of mods. Previous research done on the topics of mods and modding are looked into, and factors that affect mod availability and use are identified. So, the research questions are:

- RQ1: What are the motivations of mod users?
- RQ2: What factors increase and what factors decrease the use of mods?

The research questions were answered through a literature review, by inspecting available game modifications of the popular computer role-playing-game Skyrim at a deeper level, and through a survey. The empirical part of the thesis features a survey targeted at Skyrim mod users, and it gathered data for both research questions. The choice to focus on Skyrim was made because of its popularity, its large modding community and its developers' positive attitude and support towards modding.

In the next chapter, a systematic literature review on previous research done on mods will be conducted. The chapter describes the review process, results, and includes a brief conclusion on the findings. In chapter three, theories and models regarding the factors that make playing games fun and enjoyable are inspacted, and their possible implications regarding game modifications and how the factors can be improved with modifications are compared. In chapter four, conclusions from the previous two chapters are made in relation to the research questions. Chapter five describes the research

method and the research context. In chapter six, the results of the empirical study are described and analyzed. In chapter seven, the results are discussed in relation to the research question, and are compared to previous studies. Chapter eight concludes what was done in the thesis, what was found, and what needs to be researched in the future.

2 MODS AND MODDING

In this chapter, modding as a phenomenon will be described, and recent events related to it will be investigated. Previous research done on the topic of mods will be studied through a systematic literature review, and the different subtopics found will be elaborated in short chapters. The review needs to be systematic in order to identify all relevant literature, and to be able to conclude if certain contexts in modding have not been studied previously and if calls for additional research are warranted. The results will guide further decisions made in present study.

2.1 Systematic literature review process

The purpose of the review was to get a wide overview on the phenomenon, and to discover what concepts have been studied and what remains to be researched. Of special interest were studies that might focus on mod users and their experiences, as it is the context this thesis focuses on. The process of conducting the review was casually based on the methods described by Okoli & Schabram (2010). While numerous papers existed on various facets regarding mods, the review exposed a glaring lack of research in the context of mod users. Also, the potential of mods to enhance the game experience has been neglected in literature. In this chapter, the literature review process and the results found in the review will be described.

The literature review was intended to be as exhaustive as possible, so multiple databases and keywords were used, and the quality requirements for the papers to be included were set low. The results were sorted by relevance, and the decision to include papers were based on title and abstract. The search details had to be modified between some databases to gather as many results as possible, because of differences in the databases and their search functions. The Google Scholar search was concluded at 840th results out of 2210, when there

had been no relevant papers in the last 100 results. Some of the results from the different databases overlapped.

The majority of included studies were conference papers, followed by a large amount of journal articles, and a few doctoral dissertations. Table 1 shows the databases used, keywords used, the number of results found, and the number of studies included in the review.

TABLE 1 Systematic literature review results

Database	Keywords used	Search details	Results	Potentially revelant results included
Scopus	”Game” AND ”mods” OR ”modding” or ”game modification”	Title-abstract-keywords	232	46
ACM Digital Library	”game mods” OR ”game modding” OR ”game modification”	Any field	262	9
DiGRA	”game mods”, ”game modding”, ”game modification”	No options provided	20	6
IEEExplore	”game mods”, ”game modding”, ”game modification”	Full text and metadata	53	5
Google Scholar	”game mods” OR ”game modding” OR ”game modification”	Default settings (with all of the words)	2210	60

After the initial screening, a further 10 papers were discarded as not being relevant enough for the study. This left a total of 80 different papers to be included in the review. Several distinct central areas of focus could be identified in the papers:

- Modder labor, its characteristics and value, 5 studies
- Using mods and modding education, 18 studies
- Mod development practices and processes, 12 studies
- Mods and the law, 7 studies
- Modding communities, 5 studies

- Study of mods in a specific game, 7 studies
- Others, 21 studies

Most of the studies that included primary data were qualitative in nature. All of the included studies were inspected, but not every study was written about. As the goal was to get a wide overview of the phenomenon, the topics were not inspected at a very deep level, but rather the diversity of research was emphasized.

2.2 Mods and modding in education

The potential of modified games as a tool for learning and education has been identified in literature, but it has not been widely implemented in practice. Modding can be utilized in education by two main ways; having pupils modify games in classes to learn skills such as programming and game design in the process (El-Nasr & Smith, 2006), or by modifying existing games into ”serious” learning games, whose purpose is to teach the players the desired concepts while they play (Loh & Byun, 2009).

A large incentive to use mods for teaching lies in its potential monetary savings. Modding games, compared to designing them from scratch, saves time and money and requires much less expertise (Younis & Loh, 2010; El Nasr & Smith, 2006). There is a lack of serious teaching games available, and game companies probably won't start designing them in a large scale, and it is doubtful that a universal, easy to use game design kit would become available for public use (Loh & Byun, 2009). Thus, modding existing games becomes a viable, affordable option for many educational instututions.

George et al. (2013) claim that modding can be used to learn in any domain. This claim is supported by numerous studies. Modified games have been successfully used to teach at least history (Moshirnia, 2007) and physics (Lin & Chiou, 2010) to high school students, basic math to primary school students (Al-Washmi et al., 2014), and language to higher education students (George et al., 2013).

Younis & Loh (2010) say that modding is useful for the teaching and learning of instructional content, thinking skills and learning strategies. Modding as a constructionist activity allows modders to create personally meaningful products in an engaging context. In the process, they can explore concepts, apply their knowledge and test their creations and evaluate them, all while creating new knowledge structures. (Younis & Loh, 2010). Modifying games can be a holistic and highly engaging learning experience, and in some concepts that require applying knowledge to a real project, more efficient than standard teaching (El-Nasr & Smith, 2006).

El-Nasr & Smith (2006) argue based on their observations that designing or modifying games teaches numerous skills, including software development and design, programming concepts, artistic concepts and game concepts. These

include useful general skills such as teamwork, project management and collaboration. They note that choosing the right game engine to modify with regards to difficulty and student skills is important in order to achieve high levels of motivation in the students. (El-Nasr & Smith, 2006). Loh & Byun (2009) stress that research should be done on the features and limitations of different engines before making the choice. Yiannoutsou, Kyginos & Daskolia (2014) point out that the game modification tools that students are given should readily enable the modification of key elements relevant to the concepts that are being taught. For example, if a game focuses on sociology and class mobility, students should be able to directly change concepts related to class mobility in the game. The tools should also be usable without prior knowledge on programming or game design if those skills are not the subjects to be taught. (Yiannoutsou, Kyginos & Daskolia, 2014).

Yiannoutsou et al. (2014) argue that modifying games may be an effective way to teach complex or ”fuzzy” concepts such as ecological sustainability, by allowing students to creatively develop new ideas and see multiple perspectives of the issue while experimenting with the game. Game modding has also been useful in teaching artificial intelligence coding, where algorithms need to be put in a real game situation to see its complete effects and interactions (Bayliss, 2012).

The popularity of video games and students' familiarity with them seem to noticeably increase the motivation to learn when mods are used as tools in teaching (Moshirnia, 2007; El-Nasr & Smith, 2006). Modding increases students', especially female, self-efficacy, motivation towards IT skill learning, and basic IT skills (Yucel, Zupko & El-Nasr, 2006). Bayliss (2012) concluded that after a modding class, some students were so motivated that they continued modding games in their free time to build their game development portfolio.

Feron & Hofmann (2012) point out that in the case of modifying existing games into very serious learning games, such as ones meant to teach tactical combat casualty care to soldiers, some large challenges exist. The quality requirements will be high, needing a team of experts on several areas. Game development experts will be needed to code and model the game and make it interesting and engaging, and medical experts are needed to ensure the accuracy of simulating trauma and different situations in combat. (Feron & Hofmann, 2012). Still, the costs of modifying existing games would probably be less than to buy an existing or custom made simulator for this purpose.

Learning through modding requires more time from both teachers and learners than traditional teaching methods (George, Lavoué & Monterrat, 2013). Experience with playing digital games is also required from both the teacher and the students for serious games to be effective (Younis & Loh, 2010). In today's youth, this should not be a problem, but some older teachers might be resistant to the idea of utilizing serious teaching games. Luckily, as digital natives are now entering the teaching professions, using mods for learning might be increasing (Kaplan-Rakowski & Loh, 2010). In addition to having knowledge of games in general, the teachers should have familiarity with the

chosen game development kit or game to be modded, and the workings of the game's mechanics (Kaplan-Rakowski & Loh, 2010). Fortunately, there exists lightweight tools with pre-existing assets that allow modification with little knowledge of game design (Dahleen et al., 2014; Yiannoutsou et al., 2014). Also, the information available from various modding communities and wiki's can be of great help (Loh & Byun, 2009). Finally, as is usual for development projects, modifying games for education can lead to issues such as technical problems and time running out, and these potential issues should be taken into account in planning (Loh & Byun, 2009).

A very important aspect of modifying games into learning games is to keep them interesting and engaging to the player. For example, Al-Washmi et al. (2014) kept the original objective of defeating zombies in the game Minecraft, but modified it in a way that required the use of mathematics. In a game modification to teach chemistry concepts, Loh & Byun (2009) included a compelling backstory, several areas where the player can venture, characters with dialogue and even included educational side-quests.

McArthur & Teather (2015) note that modding as a teaching tool is flexible; it can be applied with single students or groups, and its' scale can be implemented at a one-class level or a whole semester lasting project.

The social aspects of learning seem to be emphasized on the topic of learning with mods. Most of the reviewed studies had students collaborate in groups or teams, whether by playing modified games or by actually modifying them. Research recommends and has utilized the use of social platforms alongside software development kits, much like in real game design (George et al., 2013). There are also positive experiences of teaching and learning through modding in online modding communities (Poor, 2014).

All in all, the potential of mods and modding in education lies in its potential cost savings, flexibility, and the fact that students usually have a high motivation to work with games, and have a lot of prior experience of playing games. Overall, the experiences have been very positive, and the utilization of modding in education seems to be a growing phenomenon. However, since some specific technological skills are required from teachers and teaching effectively with mods requires time and careful planning, it is difficult to see the method finding mainstream popularity in education.

2.3 Modder labor and its value

Postigo (2007) has calculated the value of the work by mod makers, and it is measured in the tens of millions. Game companies benefit from their work as fans produce content for their games, extending their scope and innovativeness (Poretski & Arazy, 2017). Of course, consumers also benefit from the extra content, and the content is also more diverse because companies might not take such creative risks as fan programmers.

Kücklich (2005) writes that ”The precarious status of modding as a form of unpaid labour is veiled by the perception of modding as a leisure activity, or simply as an extension of play”. The end user license agreements of modifiable games generally bar modders from profiting from their work, as the game developer gets all the intellectual property of all mods created by their engine. The heterogeneity of modders and their motivations makes them more vulnerable to exploitation and reduces their ability to strengthen their position as political actors. (Kücklich, 2005). Despite this seeming unfairness, Sotamaa (2005) argues that all mod makers are certainly not vulnerable, and for some of them the close co-operation with the industry is important, despite the lack of compensation. Even though some game companies openly address the importance of modders and their work, modders still lack the basic benefits that wage laborers get (Sotamaa, 2007).

There seems to be an unfair balance between the benefits that game companies and mod makers gain from modding. Modders rarely, if ever, get monetary compensation from their hard work, while the game companies get free labor, innovation and increased life spans for their products. The prospect of getting a job in the game industry through modding experience is also quite small, although the modders who aim for this seem to be in the minority (Poor, 2014). Perhaps for them, the idea that their work is being appreciated by other gamers is enough. The willingness of mod makers to contribute valuable labor for free to game companies' benefit may be partly attributed to game companies' projected image that emphasizes high quality, fun games and de-emphasizes profit seeking (Kücklich, 2005). This sentiment has somewhat changed recently, as many gamers view large game companies as greedy, often because of their strategy to release multiple, expensive downloadable contents to games that may seem incomplete at the time of original release. Overall, the consumer is maybe the biggest winner, potentially getting many times more content for their money's worth than they would without the existence modders.

2.4 Modder motivations

Both quantitative (Poor, 2014) and qualitative (Sotamaa, 2010; Postigo 2010; Postigo 2007) studies have shown that modders and their motivations are very heterogenic, and that there is no such thing as an average modder. The overwhelming majority of modders seem to be male (Sotamaa, 2010; Poor, 2014).

Sotamaa (2010) interviewed the first person shooter game Operation Flashpoint modders and identified five key motivations for modding that are playing, hacking, researching, artistic expression and cooperation. They are defined by the following characteristics:

- Playing: Modders like to play the game, and feel that it might be lacking something, or they have a great idea for an improvement for the game, so they implement it.

- Hacking: Modders are interested in the mechanics and inner workings of the game, so they take it as a challenge to play with the game's code to find out.
- Researching: Some modders are interested in the background information on parts of the game, for example historical information or detailed pictures of objects to be modeled. These modders may be more interested in gathering and documenting information than actual modding.
- Artistic expression: Some modders use modding as a medium of expression and creativity. The motivation may be purely aesthetic or political.
- Cooperation: Modders are more social than might be expected; they want to find like-minded people and enthusiastically work in a group towards the same goal.

Postigo (2007) identified three recurring themes in modder motivations: artistic endeavor, identifying with the game and increasing the enjoyment of gameplay, and acquiring a job in the game industry.

Another motivation for modding is the prospect of benefitting one's work career. Experience with modding can be beneficial in getting employed in the game development industry. It's difficult to get a job on the industry, as experience is required, and to be able to get experience, a job in the industry is required. Those who aim for this goal, take modding very seriously and have ambitious quality and scale requirements for their creations. They spend a lot of time modding, submit their works to mod competitions and sometimes even have a specific company in mind where they would like to work at in the future. (Hong, 2013). Poor's (2014) questionnaire results however show that for most modders, the prospect for getting a job through modding was not a motivator. Younger modders generally have higher hopes and ambitions to get a job through modding experience (Poor, 2014; Sotamaa, 2010).

A large motivator for modding is to make games more fun for the modder themselves, or for other players. Many modders do it just because it's fun. The challenge of modding is also important for many modders. (Poor, 2014).

Modding is inherently a creative activity, and some modders say that they even have a compulsion to mod. It is an outlet of self-expression and can be beneficial for self-improvement. (Hong, 2013). However, Poderi & Hakken (2013) point out that not all parts of modding promote enjoyment and creativity. The responsibilities and expectations from others may make modding more serious than one would wish. Some compulsory tasks such as repetitive play testing may actually make the mod developer resent the game of which they were originally a fan.

Some consider modding as a form of technical art. Modding is mostly a selfless act; modders want to give other people an enjoyable experience. It is also a way of making a game feel more like their own, by adding elements from popular or national culture that are important to the modder. (Postigo, 2007).

Targett, Verlysdonk, Hamilton & Hepting (2012) found three primary motivators for modding that were more on the technical side: an unmet need for a modification because of limitations in the original game, improving existing modifications, and learning about the modification process. Some modded for bragging rights and others to give back to the community (Hamilton & Hepting).
Scacchi (2010) summarizes his findings in the following words:

> Modders can also be viewed as independent and self–organizing actors who are acquiring the means for producing their own games or game conversions through self–serving investment in skill and knowledge acquisition, time, effort, and socialization with others like–minded.

This quote condenses nicely the motivations and general mechanisms of mod makers and their communities. As we can see, there are a wide variety of reasons why people make mods, but most of them share an aspect of selflessness and voluntariness. Just having fun by modding and doing it on your own terms is a very important part of the activity.

2.5 Mod development

Scacchi (2010) compares modding practices to free and open software development, noting their many similarities. They are both becoming a part of mainstream technology development culture. Both comprise of individuals that come together to learn, teach, share, discuss and develop software for their own use and for others. (Scacchi, 2010). Sotamaa (2010) also notes these similarities. The development work is seen as a communal project, and borrowing from others or reworking their work is not regarded as theft, as long as the original author is credited for their work (Sotamaa, 2010).

Modders usually specialize in different types of mods. For example, Sotamaa (2010) categorizes Operation Flashpoint modders into mission makers (people who make new playable missions), add-on makers (people who design new object or weapons etc.) and mod makers (people who make larger modifications or total conversions). He notes that the categories overlap, and modders usually start from simple modifications and advance to larger projects.

The increasing complexity of games also necessitates larger modding teams with people that have a diverse set of skills, such as scripting, modeling, texturing, interface design, sounds and music. Teams may be led by project leaders. The work done by modders is more dynamic than in commercial game development, because modders often work with many elements of the project simultaneously. This is in contrast to more specialized roles in commercial production. (Sotamaa, 2010).

Some ambitious mod projects use advanced techniques, similar to those used in professional game development. They use software to collaborate and

communicate, and even divide tasks to different developers to efficiently balance the workloads. (Sotamaa, 2005).

If the game developer releases the same toolkits that were used to design the original game, it is in fact possible for modders to make mods whose quality is on par with commercial games. The toolkits have great capabilities, though their complexity means that a lot of motivation and time is needed to master their use. This coupled with the requirement of large, self-organised teams that are willing to work without compensation, makes large scale, high quality mods rather scarce. (Schacchi, 2010).

Sotamaa (2005) notes that many commercial games are based on licensed game engines from other companies, meaning that they are basically mods themselves. Licensing game engines for development is a growing business, and the same tools can be used by both commercial third parties and mod makers. By using a ready-made tool, designers can focus on innovation rather than mechanics. The game engines are often modular, and support many different libraries and add-ons to provide flexibility. (Nieborg & Van der Graaf, 2008).

There are often a huge number of tools and utilities available for modding a game, both official and unofficial. For example, for the game the Sims, there are ten official tools release by the publisher, and over a hundred unofficial tools made by the community (Laukkanen, 2005). The tools are mainly used for content creation and editing, managing and organizing files and modifications. Some tools have a very specific purpose; for example one tool's sole purpose is to edit the career paths of different Sims. The quality and versatility of fan-made tools may often surpass those of the tools published by the game developer. (Laukkanen, 2005). This of course is probably only the case when the game developer didn't release the toolkit that they used for developing the game themselves. Moreover, many third-party toolsets such as 3d-modeling software often have plug-ins to interface with popular game engines (Nieborg & Van der Graaf, 2008).

The literature suggests that creating mods can be a hugely varied activity. The tools used can be simple or complex, versatile or specifically made for one purpose. The mod maker may be an amateur or a highly skilled and experienced developer, they can develop small modifications or large projects, alone or in a team. The most succesful mods seem to be developed iteratively, i.e. their authors are constantly improving them with newer releases based on feedback from the community.

2.6 Modding communities and modders' sense of community

The sense of community of modders is very strong. Almost all respondents out of 111 in Poor's (2014) survey felt that there was a community around the games that they modify, and that they belonged to them. Most of them feel fulfilled by their community, and feel that they have a connection, meaning and a say on

what's going on in the community. Almost every modder have thanked other modders for their work, and have commented on, or improved other modders' works. More than half have co-authored a mod with other modders, and some have even taken on the ownership of a mod whose original author has retired working on it. The author notes that there may be a bias towards pro-community opinions and helpful individuals in these results. (Poor, 2014).

Modding communities overall seem to be very helpful to members asking questions. Forums are used to ask for advice regarding technical questions and answers are given. Members write tutorials and publish them on the web. It is common to pool resources and join forces with other modders to work towards a mutual goal. The community even standardizes some ”base” mods that allow multiple mods to be compatible with each others. As made possible by the internet, the modding communities usually consist of people from all around the world. English is usually used as the universal language, but sometimes groups who use different languages can migrate to other forums and create smaller communities. (Sotamaa, 2010). Mod users commonly described the WoW user interface modding community as ”very helpful”, ”very friendly” and ”very active” (Targett et al. 2012).

There are cases where the game developer's lack of support for modding has lead to communities creating the resources and information needed themselves. For example, the developer of the Sims didn't support Macintosh users well, so some experienced programmers created a website with support for tool developers along with detailed documentation regarding how the game works. (Laukkanen, 2005). This can be seen as the ”hacker” motivation's manifestation.

2.7 Benefits of mods to game companies

Mods benefit the game companies in multiple ways. They add to the shelf-lifes of their products, increase customer loyalty and lessen the needs for marketing. Experienced modders can also be used as a talent pool to hire employees from. Mods can also benefit the whole industry by innovation and risk taking that would be too risky for commercial developers. After the immense success of Counter Strike, a mod based on the successful first person shooter Half-Life, many games with similar team based combat gameplay flooded the market. (Kücklich, 2005). Analysis of 45 companies done by Poretski & Arazy (2017) indicates that when game companies successfully engage with modding communities, the sales of their base product increases.

When there is an immensely successful mod available for a game, consumers may buy the game just to play the modification, as was the case with Half-Life and its total conversion modification Counter-Strike (Nieborg & Van der Graaf, 2008). Later, the developer of Valve hired the developers of Counter-Strike, and continues to profit from by developing sequels to the game. High quality mods also act as a form of free advertisement (Volk, 2007).

Game modification capability may allow developers to publish their product with less polish, trusting that modders will make improvements to the game (Targett et al., 2012). This is of course a very risky choice, as it may get a negative reception from consumers.

The feedback of players can also be used in designing games, and mods can be a viable way to enable the improvements after shipping the game. Targett et al. (2012) say that the interface of a game is best developed with the help of its users. The users know what they need, there are many experts among them and they are highly motivated towards developing them (Targett et al. (2012).

From game companies' point of view, it seems that allowing and encouraging the modification of games holds numerous large benefits with little to no drawbacks. In this light, it seems strange that not all companies are open to allowing modifying their products. When asked why companies are not more open to it, Todd Howard, the executive producer of Bethesda Softworks, a game company known for its support towards modding, replied ”I don’t understand why they don’t, I think it makes your games better” (Hong, 2013, 987.).

2.8 Game companies and game modifiability

Sotamaa (2007) closely ties the modding phenomenom to the increase of affordable personal computers and the internet. For users to be able to create modifications to a game, its developers need to release parts of its code and a developer toolkit with high usability (Volk, 2007). Some experienced modders may be able to modify games without these assets, though.

Game companies have great power in deciding and regulating how consumers can mod their products. Their stance towards modding can vary from prohibiting all activities related to it, to actively encouraging it (Nieborg & Van der Graaf, 2008). By releasing effective and easy to use tools they can stimulate the creation of fan-based content. In addition to software released by developers, modders are known to use other commercial or community-made software to mod specific games. (Sotamaa, 2005).

Game companies can spark interest in modding by holding modding competitions with valuable prizes (Sotamaa, 2007), by maintaining websites that allow the distribution of mods and by hiring community managers who interact with consumers (Sotamaa 2005). Providing modding tutorials or holding discussion groups may also boost the participation of modders, and thus increase the amount of mods available, and by extension the sales of the product (Poretski & Arazy, 2017).

Games that are small in scale, short in play time and featuring a linear, closed environment tend not to get much attention from modders and have fewer modifications available as a results. By contrast, games with a large world, filled with lots of characters and quests that provide an open-ended experience

to the player, usually have a large modding community providing lots of extra content for them. This may be because modders are able to add or change specific contents of the game without affecting the game's structure or flow on a larger scale. (Poretski & Arazy, 2017).

A game's genre and design choices dictate the modifiability of the game to a large degree. First person shooters have typically had many possibilites for modding through large availability of tools, and openness of the game technology. By contrast, MMORPGs don't allow anything more than user interface modifications, if even that. (Nieborg & Van der Graaf, 2008). For some games, using mods is cumbersome, sometimes requiring specific utilities, which can scare casual players away from mod use (Laukkanen, 2005).

Mods are popular probably for the simple reason that they can enhance the game experience, and that they do it for free. While studies have not been focusing on their potential to make games better, researchers Poretski & Arazy (2017) felt that mods greatly enhanced their gaming experience.

2.9 Different mods in different games

Not many papers have studied mods themselves, their characteristics and their variety on a deeper level. This might be because different games have vastly different modifications available, depending on game genre, design, popularity, community and the level of support towards modding from the game developer. Because of these factors, creating general categories of mods is also problematic. Some categories that apply more or less to all games can be found on a few studies, however.

According to Scacchi (2010), the most common form of mods are perhaps game conversion mods. He lists seven categories of them; mods that add or modify the following aspects:

- characters, their appearances and capabilities, including non-player characters
- objects like weapons, spells and other resources
- play levels, zones, terrains or landscapes
- game rules
- play mechanics
- total conversions that create entirely new games from existing games
- parodies

Another mod category are user interface modifications that change how the game displays information and how the game can be controlled. Targett et al. (2012) and Nardi & Kallinikos (2010) have studied user interface modding of the popular MMORPG World of Warcraft. Since the game is played online, only

user interface modifications are allowed in it, because the game play must remain the same for all players. User interface mods allow players to see information that they normally wouldn't, for example the coordinates of their location in the game world, they allow players to more efficiently manage their inventories and communicate better with their friends, and to customize the interface to their preference. (Targett et al. 2012).

The most complex and advanced type of mod is the total conversion that changes the game mechanics and the majority or entirety of its content. In addition to game development skills, it requires even managerial and marketing skills to make. Serious total conversion mod teams use the same rigorous development practices as commercial developers. However, because of high ambitions and a lack of resources, many of the total conversion projects fail. (Nieborg & Van der Graaf, 2008). Total conversion modifications tend to have their own webpages, full with news updates, download links and discussion boards for support and feedback (Laukkanen, 2005). The most successful total conversion mod of all time is probably Counter-Strike, based on Half-Life, which remains very popular to this day along with its sequels. It changes the game from a scifi-shooter to a team based tactical combat online game. (Nieborg & Van der Graaf, 2008).

Laukkanen (2005) goes into great detail in inspecting the modding communities and different types of mods available for three different games. He broadly categorizes modifications into audio-visual modifications and mechanics modifications. Audio-visual modifications include new gameplay environments, custom character, custom items, interface elements and sounds. Mechanics modifications include scripting and programming changes. For the first person shooter game Half-Life, Laukkanen categorized modifications into several groups: maps, textures, prefabs, map models, skins, character models, weapon models, sprites, sounds, and code modifications. Most or all of these types can be found in the total conversion mods. For example, the total conversion of Half-Life, Day of Defeat, follows a World War 2 theme and is nothing like the original game. The different types of mods available for Sims are skins (textures for persons), meshes, objects, building parts, and lots (game environments). These are mainly visual changes. The most notable difference to Half-Life mods, is the lack of code modifications, which limits the potential that mods can have on changing the game dramatically. Because of these limitations, there are no total conversion mods available for the Sims. (Laukkanen, 2005).

2.10 Mod users

There is a surprising lack of research done in the context of mod users. Only one quantitative study (Targett et al., 2012) was found that primarily studied mod users and their experiences. Poor's (2014) survey had some questions regarding mod use, but it was targeted only at mod makers. The other

qualitative studies did not often discuss about the perspective of the mod user either.

Targett et al. (2012) surveyed WoW players to investigate their user interface mod use. The survey addressed attitudes toward mod use, the use itself, and the motivations of users who create and share modifications. It needs to be noted that this survey is quite limited because of the online nature of the game. Only user interface modifications are allowed, which change only one part of the game. More than half of the respondents considered themselves as experts in general computer proficiency, and almost no respondent considered themselves as beginners. More than half also considered their skill level in WoW to be expert. Around half thought that playing WoW wouldn't be as enjoyable without the use of mods. Over a half of the respondents said that the use of modifications provided them with an advantage over other players, but the advantage was not seen as unfair because mods are available for everyone.

Poor's (2014) survey had a section regarding attitudes towards play, with most questions having to do with playing games with mods. In this sense, the mod makers that the survey was targeted as, can be seen as mod users. Around 70 % of the respondents thought that playing games with mods is better than playing them without mods, indicating that mods have a high potential to improve games. Two thirds preferred to play moddable games as opposed to playing games that don't allow modification. More than 90% of the respondents said they enjoy how modding gives them some control over the game, implying that the customization options that mods give are a very important aspect of mods.

The users of mods share their experiences with others and help them use and configure them, indicating that not only the mod makers are social and helpful towards others in the community. Using mods is a creative means by which players make the game more fitting to their personalities, interests, orientations and play styles. The ability to customize the game according to one's preferences makes the interaction more pleasurable. (Nardi & Kallinikos, 2010)

These findings seem to indicate that the users of mods are generally proficient with computers. They also seem to know what kind of game experience is the best for them, and think that using mods can improve the experience. This area needs a lot of further research regarding mod users' motivations, their mod use habits and overall experiences.

2.11 Mods and the law

Research on mods and the law usually focuses on the difficult question of ownership of the mods, copyright laws and possible copyright law infringements. There remain many uncertainties about what the actual situation of mods is in the legal sense, and also in the moral sense.

A legal precedent was set in the United States in 1998, stating that ”no amount of modification to a copyrighted or patented game element voids the owner's rights”. This was in a case where Micro Star Software sold a compilation of user made mods for FormGen's game, Duke Nukem. FormGen sued, claiming the compilation to be a derivative work of their product, and eventually won the ruling. (Kushner, 2003). Rosen (2004) views that whether a mod is a derivative work or not, must be decided on a case-by-case in the case of most mods. Notable factors determining this decision are whether the modification looks and feels like the original game and if the original game's story has been used. Also, Rosen adds that it is unclear whether the mod can be used legally on a game engine that's license prohibits using mods, even if the mod is decided to not be a derivative work. Wallace (2014, 224.) has a stricter view; he writes that ”…mods are viewed as derivative works…”, and ”mods can only legally exist through the permission of the copyright holder…”. Furthermore, he claims that mods are not protected by the fair use doctrine. He adds that modding is thriving because of the consent of game developers.

Kow & Nardi (2010) argue that there are two ways that game companies can govern how their games are modded: through legal enforcement or through changing the software platform (which is the game). They argue that the better choice is the latter, since the former may get a negative reaction from the gaming community. Through disabling unwanted mods or modding capabilities from their game, game companies can matter-of-factly state what kind of modifications are allowed without resorting to the iron fist of legal threats. Disabling certain mods may not be done because a game developer feels threatened about its intellectual rights, but rather because mods generally have no quality standards, which might lead to unwanted substandard content being distributed for the product. (Kow & Nardi, 2010)

There have been numerous occasions where a team of modders have introduced copyrighted content into games. For example, one team made a ”G.I. Joe” mod for the FPS game Battlefield 1942, introducing recognizable characters and vehicles into the game. These projects commonly end after getting ”cease and desist” letters from the copyright holders, and the modding team will often have to stop development. This often results in some backlash from the fandom towards the party threatening with legal action. Some modders argue that since they don't have an intention to make profit from their mods, they should be allowed creative use of copyrighted material under the terms of fair use. (Postigo, 2008)

In conclusion, the copyrights of mod makers for their own mods seem to be thin if not nonexistent, and their ability to continue making and using mods rests heavily, or almost entirely, on the decisions and leniency of the game developers and copyright holders. There have not been many situations that ended up in court, probably because of the strong precedent against modding and the lack of resources and motivation to defend what is essentially a hobby from mod teams.

2.12 Conclusion of the literature review on mods

The literature base on mods and modding is surprisingly large and well varied, but the context of mod users remains vastly understudied. It can be concluded that game modifications are a diverse and flexible means to accomplish multiple purposes, most of which have to do with entertainment or learning.

The process of mod creation is varied, and can be amateurish or professional-like, ranging from single person projects to commercial-like productions developed by large, skilled international teams. The process is often similar to open source software development, where borrowing, collaboration, and free sharing of ideas is encouraged. The motivations for making mods range from a creative past-time activity to job prospecting. The resulting modifications can be small fixes or changes to minuscule features, or large productions that completely change the face of the game. Modding is made possible in large scale by the internet and advancements in information technology, and it is a prime example of prosumerism, where the distinction between consumers and producers becomes blurred.

Modifications can be seen as having many potential benefits for game players, mod makers and game companies alike. Players are introduced to vast amounts of new content for their games, and they get to customize the game experience to their liking. However, it seems that there is a great imbalance of the benefits compared to the used effort. Mod makers rarely get monetary compensation for their work, whereas game companies reap most of the commercial benefits of mods.

Mods are an interesting and growing phenomenon that combines technology, internet communities, collaboration, creativity, entertainment and even education. The conclusions drawn here lead to the decision that the empirical part of this thesis should be extensive, to explore many of the aspects of mod use that have not yet been studied.

2.13 Recent developments regarding mods

This subchapter is not part of the systematic literature review. It explores some notable recent mod related developments that couldn't be found from academic literature.

Game consoles Xbox One and PlayStation 4 have recently started supporting mods with several games, although with certain limitations compared to their PC counterparts. The mods may have to be pre-approved by the game developers, and in some cases mods can only use modified assets found in the original game, instead of being capable of using external assets as well (Fletcher, 2016). Compared to most modding done on the PC, the process on consoles is much simpler, as a convenient in-game menu can be used to search, download and install modifications. This development is interesting, as

it noticeably increases the potential ”market” for mod usage. It remains to be seen how many games will start supporting user created modifications, and to what extent console game players start adopting mod usage. The possibilities at the moment are still quite limited, as only a few games support modding and the amount of mods available is somewhat limited compared to PC.

Steam is a gaming focused digital distribution platform made by Valve Corporation. It provides automatic installation and updates for games, cloud hosting for game files, and social networking capabilities among many other features. It is considered to be the largest digital game distribution platform, and at the end of 2015 it had over 125 million registered user accounts. (Steam (software)) It also supports mods for various games. Users can submit, find, rate and download contents for their games. In a few games, some fan made content is selected to be included in the official game, usually in the form of cosmetic in-game items that can be bought with real money. This is a way in which content creators can actually earn money from their contributions. By early 2015, Valve had paid over 57 million US dollars to 1500 contributors from around the world. (Steam Workshop) But when money and game-changing mods are mixed, it is a different beast entirely.

In 2015, Valve and Bethesda implemented the ability for Steam users to put for sale and purchase modifications for Skyrim, ultimately to much controversy. One of the goals was to enable serious modders to focus on modding full-time by giving them compensation from their work, and in that way to make better mods for players. Valve had had positive experiences with monetizing user generated content previously, but they didn't know the established modding scene of Skyrim well enough for a successful implementation. (Prescott, 2015). So, numerous problems arose. In Skyrim modding, it is usual for mods to rely on assets provided by other mods in order to work. The situation gets complicated when permissions are needed to use said assets with paid mods, especially if the parties' stances on paid mods differ. Some modders think that mods should always remain free, and are understandably against someone else getting paid for using their assets. On top of this, there were blatant cases where users put mods made by other people on the marketplace to gain undeserved profits. Valve had a 24 hour unconditional money-back guarantee policy and other means to protect consumers, which probably alleviated the backlash.

There were also fears that the quality of free mods would suffer, fears of a closed marketplace instead of open modding, criticism that the portion of proceeds that went to mod makers was too small, and , among other grievances. A petition to remove the paid mods functionality was signed by over 130 000 people. (Grayson, 2015) The feature was removed entirely shortly after it was implemented, and anyone who had paid for mods got their money back. The attempt generally left a negative impression of paid mods to the gaming community, and a huge spike of negative user reviews on Steam can be seen around the this time. Though, there were many modders, users and game developers who viewed the idea as a positive development.

During the summer of 2017, Bethesda introduced the Creation Club, which provides new game content for their popular games Fallout 4 and Skyrim on the PC, PS4 and Xbox One platforms. The content is created in cooperation with Bethesda's developers and outside development partners, including modders, who receive monetary compensation for their work. To avoid the problems previously encountered with the paid mods attempt, all content must be new and original, and they go through the a full development cycle, including localization, polishing and testing. Instead of modders getting a share of sold content, they are paid directly by Bethesda, from the first acceptance of their content proposal and through development milestones. Bethesda doesn't regard the content provided by the Creation Club as paid mods. (Creation Club FAQ)

Controversies are common in the modding world, and they can affect a large part of the gaming community, and therefore game companies' commercial interests as well. Another example is a recent controversy with the popular title GTA 5. The game's publisher sent a cease and desist letter to the developers of a popular modding software, OpenIV, claiming that it enabled malicious mods to the detriment of online players of GTA 5 and their play experience. The letter, which effectively caused limitations to modding the game, lead to a surge of negative user reviews on Steam. (Matuleff, 2017) The use of the software was allowed a while later, and no legal action was taken. It would seem that game publishers and developers need be careful with their engagements with the modding community. Damage control is needed in many cases in order to deal with the uproar of vocal, disappointed gamers.

2.14 User generated content in other media

User generated content is a wide concept, and it encompasses media that is used for entertainment, socializing, or for utilitarian purposes such as seeking product information. This also means that it is not sensible to compare all the different kinds of user generated content and the motives behind their consumption. Game mods are more comparable with user generated media (UGM) that are more focused on entertainment or self expression such as videos or blogs, than for example product reviews or wikis that are more aligned with information seeking.

The focus of the research on user generated content seems to be in the content creators rather than content users. Similarly to the creation of mods, the motivations to create content in other media seems to be largely intrinsically motivated (Stoeckl, Rohrmeier & Hess, 2007; Daugherty, Eastin & Bright, 2008; Shao, 2009). Stoeckl et al. (2007) found in their literature review that the three main motivators for producing weblogs and videos are the documentation of (useful) information, fun and entertainment, and the expression of oneself. In their empirical interviews, they found that content creators were motivated by enjoyment, distribution of information, personal documentation and the desire

for contacts. All of the factors related to intrinsically motivated activities, though it was noted that the lack of extrinsic motivations may be due to an almost complete lack of monetary compensation mechanics available on UGC platforms at the time. The situation may have changed dramatically by now, as many platforms offer ways for compensation. Daugherty et al. (2008) identified that ego-defensive and social functions play important roles in motivating the creation of UGC. Creators wish to feel important and reduce their insecurities, and they want to do things that facilitate socializing that are accepted by others and. Utilitarian and knowledge functions had no effect on the attitude towards producing user generated content.

Shao (2009) argues that producing UGM is mainly done for self-expression and self actualization, participating in it is done for social interaction and community development, and consuming it is done for information and entertainment. When producing UGM, people fulfill their inherent need to present their identity and individuality, which often emphasizes one's own impression to others in a positive light. Individuals may also present parts of themselves online that they couldn't do in the constrains of their everyday life. They may also create content to gain fame or recognition. Participating in UGM occurs when people for example rate, comment on or share contents on various web based platforms. The activity acts as a way to fulfill their social needs, while also contributing to the creation and sustaining of virtual communities. (Shao, 2009)

UGM can be consumed to learn new things from almost anything from other people, whether it's from wikis, videos or community created guides. However, it seems that UGM is more often used for entertainment purposes, much like mass media in general. For example, entertainment, sport, humor and music are among the most popular content in Youtube. UGM may also be used for mood management. For example, boredom may be alleviated by watching exciting videos, and stressed people can seek help from relaxing contents. Using UGM is easy, and the convenience of its use is very important. UGM is often designed to be consumed in bite-sized portions, which is suitable for the needs of busy consumers seeking for quick fun or relaxation. It is also important that consumers have control over when and where to use UGM, and what kind of content is available for use. (Shao, 2009)

It can be argued that game mods have more interactivity than many other forms of user generated content. In addition to having elements such as finding, commenting and rating other people's creations like with other user generated content, they include the aspect of playing modified games afterwards. Moreover, most other forms of user generated content is meant for light and quick use, whereas it would be doubtful that people would seek and install modifications to their favorite games with only light usage in mind. The similarities between game mods and other user generated contents are notable, which may arise from the fact that both are generally products of creative activity that is done for free.

3 WHAT MAKES GAMES FUN AND CAN MODS IMPROVE THEM?

This chapter focuses on what factors make a good game that is fun to play, the factors that motivate people to play games, and different player typologies. It is important to know these factors because mods can directly change or improve the parts of games that influence these factors and thus make users interested in using them. The assumption here is that mod users are generally knowledgeable on their perception of what makes a game fun, and that they know that using mods can make their play experience better and more suitable to their tastes. Different types of players are motivated differently and seek different things in games, and this changes the elements that are important for them in games. Inspecting the typologies may help in identifying which types are likely to play role playing games, and how their behavior may differ from other players. This will also relate to their possible mod use.

The emphasis is on factors that easily relate to single player role-playing games, and that are potentially modifiable. Later on, these factors will be compared to mods available for Skyrim, and their potential to improve gameplay will be evaluated. This knowledge will help in planning the survey about the experiences, motivations and use habits of mod users.

3.1 Why do we play?

There are numerous different ways to explain the allure of games and why people like to play them, but there is no generally agreed upon model to explain the motivations for playing. Most studies seem to agree that playing games is an intrinsically motivated activity instead of extrinsically motivated (Lafrenière, Verner-Filion & Vallerand, 2012; Ryan & Rigby, 2006). This means that games are played for the sake of enjoyment or the experience of playing itself rather than because of some separate reward or outcome, as theorized by the Self-determination theory (Ryan & Deci, 2000). There are of course

exceptions to this. For example, when games are played competitively in the context of e-sports, the motivations may be far from intrinsic.

Motivations of course also differ per game type. Hamari & Keronen (2017) used traditional information systems methods in their large meta-analysis to find out why people play games. The results were mostly as expected; in hedonic games that are played for fun, enjoyment leads to user acceptance, whereas in utilitarian games that serve other purposes their perceived usefulness is of more significance. What was surprising was that for hedonic games, perceived usefulness was also significantly correlated with enjoyment. This may be because usefulness in hedonic games might be interpreted as satisfying hedonic needs for players.

Motivation for playing and enjoyment are deeply linked, and studies often use enjoyment as a variable (Hamari & Keronen, 2017). Ryan & Rigby, (2006) suggest that people usually play games because they are intrinsically satisfying. Their findings indicate that enjoyment is related to satisfying psychological needs. They use the self-determination theory and its sub-theory, cognitive evaluation theory (Ryan & Deci, 2000) as a theoretical basis to their research, and hypothesize that games are primarily motivating to the extent that players experience autonomy, competence, and relatedness while playing. Other factors related to motivation included in the study are presence and intuitive controls. The factors that modify intrinsic motivations in game play are characterized as follows:

- Autonomy: Freedom of choice in activities increases intrinsic motivation, as opposed to conditions that limit the sense of choice or seek to control behavior. In games, designs that provide flexibility in movement and strategy or designs that allow decision making in terms of reaching goals and objectives are expected to enhance feelings of autonomy.
- Competence: The opportunity to use skills in appropriately challenging tasks, to learn new skills and to receive positive feedback increase the perceived competence of the player, in turn increasing intrinsic motivation and satisfaction.
- Presence: The sense that the player is inside the game world and holds some importance there, rather than just controlling the game from outside, influences intrinsic motivation. The experience can be enhanced by a compelling story and high quality graphics.
- Intuitive controls: A good set of controls that are easy to grasp and feel natural without interfering with the player's sense of being in the game, can improve the sense of competence and freedom of players.
- Relatedness: Especially in multi-player games, social interactions and social connection can induce feelings of relatedness that contribute to intrinsic motivation.

The importance of each of these factors presumably varies game by game and from person to person. Intuitive controls forms the basis for a good game, since other qualities don't really matter if the game can't be properly controlled. Competence is also important for most games, since if the game is too easy or too hard, players will easily lose interest or quit playing in frustration. The factor autonomy would be most important to the popular open world genre of games, because their aim is to give as much freedom as possible to the player in almost everything they choose to do or not do in the game. Multiplayer games need to facilitate communication and social interaction between players, which means that great detail must be put in to the user interface. In single-player games, relatedness might manifest as attachment to the player character or avatar rather than social interactions.

3.2 Game mechanics and meaningful play

To create a game experience that is meaningful is maybe the most important goal of game design. According to Salen & Zimmerman (2004, 33.), meaningful play is a concept that can take many forms, but it ”emerges from the interaction between players and the system of the game, as well as from the context in which the game is played”. Salen & Zimmerman (2004, 34.) define meaningful play in two ways. Their descriptive definition is:

> Meaningful play in a game emerges from the relationship between player action and system outcome; it is the process by which a player takes action within the designed system of a game and the system responds to the action. The *meaning* of an action in a game resides in the relationship between action and outcome.”

Their evaluative description is: ”Meaningful play is what occurs when the relationships between actions and outcomes in a game are both discernable and integrated into the larger context of the game.” (Salen & Zimmerman, 2004, 37.). Discernibility means that the game has to communicate a noticeable result of the actions that a player makes, essentially telling the player what happened. An integrated outcome from an action has an effect in the larger context of the game and the play experience, telling the player how their action will affect the rest of the game. (Salen & Zimmerman, 2004, 34-35.)

Let's make an example of this in the context of a role playing game. You are a strong warrior and you hit a bandit with a mighty blow from your battle axe; you hit the enemy, he makes a grunt, but not much else happens. The action of hitting the enemy is not really discernible; you would expect the enemy to lose a limb, or to at least fall down, wailing in agony. The action is not integrated either; if you cannot easily defeat a bandit, how could you hope to defeat a dragon? Luckily, this can probably be changed with a mod that makes combat more deadly, and thus makes this action of hitting an enemy have more

meaning. It could also be changed by a mod that makes bandits easy to you when you are powerful enough to defeat a dragon. Simple mods can change the fundamental aspects of games like these that make playing them fun. They can fix the bad design choices in a game, or design choices perceived as bad by individual players.

Every game has a core mechanic that players perform again and again during game play. It can be a single action in simple games, or consist of multiple actions in more complex games. It is an essential activity, through which larger patterns of experiences are formed, and so it needs to be fun. (Salen & Zimmerman, 2004, 316-317.) In Skyrim (and many other RPG:s), the core mechanic would be adventuring in the game world, finding new items, doing quests, battling against enemies and learning new abilities.

While the core mechanic isn't something that can be easily changed with mods, many parts that it consists of can probably be improved and customized with them. For example, questing might not be rewarding enough, combat might be too simple and easy, or learnable abilities could feel boring and underwhelming. In the case of Skyrim, there are multiple mods available to improve all of the aspects in the examples (see chapter 5.2, Research context: Skyrim).

Games possess a quality called ”same-but-different”. It means that players are able to get pleasurable experiences from them each time they play, because while the basic structure of the game remains the same, the way the game's rules play out each time is different. Part of the enjoyment from this quality comes because players are already familiar and comfortable with the game, and are eager to find something new and different. (Salen & Zimmerman, 2004, 340.) Modding can be intimately connected with this quality. Not only can players change the rules of the game, they can also change the game's basic structure, providing almost limitless possibilities for new experiences. This is one of the key reasons why it is presumed that modding keeps people interested in the same game for a longer time.

3.3 Enjoyment

Sweetser & Wyeth (2005) introduce a model to describe the elements needed for enjoyment in games. It addresses eight criteria from previous gaming literature that enable a game to be enjoyable. The model was tested on two games and it was concluded to successfully distinguish between high-rated and low-rated games and to identify the reasons why one game succeeded and the other failed. The model was chosen for closer inspection because it was evident that many of the important elements in games it identifies can be improved by mods. In a later paper, the authors clarify that GameFlow is a model of enjoyment, rather than flow that the model's name might apparently indicate. The elements in the GameFlow model are:

- Concentration: Games should provide a lot of stimuli that are worth attending to, but players shouldn't be burdened by unimportant tasks. Games should capture the players attention and maintain their focus. Games should have a high workload appropriate for the players' limits.
- Challenge: Challenges in games must match the players skill levels, and players should be able to change the difficulty level to suit their skills. The level of challenge should increase as the players' skill level increases, and the pace of introducing new challenges should be appropriate.
- Player Skills: Starting the game without reading the manual should be possible and the game mechanics and interfaces should be intuitive. Learning the game should be fun and tutorials should feel like playing the game. The player should be able to get help in-game. Players should be rewarded appropriately as their skill level advances.
- Control: Players should feel a sense of control over their character and their actions in the game world. Players should feel sense of control over the game interface, input devices and the game shell (starting, stopping, saving etc.). Players should feel that they can play the game the way they want and that their actions impact the game world.
- Clear Goals: Important goals should be clear and presented early. Intermediate goals should also be clear and presented at appropriate times.
- Feedback: Players should receive feedback on progress toward their goals and they should receive immediate feedback on their actions. Players should always know their status or score.
- Immersion: Players should experience deep but effortless involvement in the game. Players should become less aware of their surroundings, less self-aware and less worried about everyday life. Players should experience an altered sense of time and should feel emotionally and viscerally involved in the game.
- Social Interaction: Games should support competition, cooperation and social interaction between players. Games should support social communities inside and outside the game.

Some of these qualities depend heavily on the type of the game and the design choices made during its development, and may be difficult to improve with mods. For example, social interaction usually can't be applied to single-player games, although there have been attempts to enable multi-player capability through mods, with varying levels of success (Nexus mods, Tamriel Online). Feedback and clear goals are factors that may be more difficult to improve with mods, because they usually have to do with the larger contexts of the game, such as how the main story unfolds and what kind of quests there are. These

are elements that are rarely changed by mods. Control, on the other hand, can be readily improved with mods that improve the user interface, and these mods are often among the most popular (Nexusmods, SkyUI). Challenge level can be changed in numerous ways by mods. It can be changed by for example modifying game mechanics such as how combat plays out, by making enemies stronger or appear in larger numbers, or even by making their artificial intelligence smarter. For example, Skyrim and especially its' predecessor, Oblivion, were criticized by many because of its mechanic that scaled the power level of opponents in the world according to the player's level, breaking immersion and making the challenge level static and unexciting. Mods that fixed these problems were available promptly after the games were released (Nexusmods, Skyrim Scaling Stopper). Mods can change the Player Skills factor in both directions, but usually mods are targeted at more adept players. Experienced players may be annoyed by tutorials, and there are mods that enable the player to skip them. There exists mods that change the tutorial or the game's starting sequence completely, even allowing the player to change their character's back-story, allowing more control to the player and improving the game's replayability (Nexusmods, Alternate Start - Live Another Life). Immersion may be improved with mods that improve the quality of the game's graphics and atmosphere, add new sounds, details or objects, or that remove elements that ”break immersion”, such as a dragon slaying warrior having trouble defeating regular bandits. The concentration factor may be improved through small or large modifications to games, which may make menial tasks more interesting (or remove them altogether), improve certain game mechanics such as combat, or fix bugs that could impair focus, but this factor is probably very difficult to measure in any meaningful way.

The impact of customization on game enjoyment is of particular relevance to present study, because modding is a very deep form of customization. Also, one of the key reasons for modding games is presumably to increase enjoyment, which seems to be the primary motivator for playing games. Kim et al. (2015) studied the effect of customization on enjoyment by two controlled experiments. In the first experiment, the subjects played the space shooter game Frantic 2, and one group were given options to customize their ship and its abilities, which had immediate and observable gameplay effects. Compared to the control group that couldn't customize their ship, the group experienced elevated feelings of autonomy and control, both of which positively affected enjoyment. The second experiment was made with the same measures as the first one, but it focused on aesthetic customization with the racing game Forza Motorsport 2. The group that was allowed customization of their car's appearance reported greater feelings of control and autonomy, which also reflected positively on enjoyment, though the connection with autonomy and enjoyment was not statistically significant (p=0,05). Klimmt, Hartmann & Frey (2007) studied the effects of effectance (a sense of interactivity, essentially what Salen & Zimmerman refer to as discernibility of actions and outcomes) and control on enjoyment with a simple web-based game. They found that

effectance had a direct and significant positive relationship with enjoyment. Control had a more complex relationship with enjoyment, having no significant effect on it. It was discussed that lower control level could elevate challenge, which can also be a source of enjoyment.

3.4 Player typologies

In order to better understand player motivations, it is useful to examine different player typologies. Ip & Jacobs (2005) divided players into two broad categories: hardcore and casual, based on their attitudes, playing habits and game buying habits. Hardcore players are more knowledgeable of the game industry, seek gaming related information and discuss games with friends and on forums more than casual players. They play games for the exhilaration of defeating the game, and are more likely to modify or extend the games they play.

Several studies have categorized players more specifically according to their psychographics and behavior (Tuunanen & Hamari, 2012). Of course, players and their motivations will always vary and nobody will fit exactly into these categories, but they are nonetheless helpful in identifying certain types of player groups.

In their meta-synthesis, Tuunanen & Hamari (2012) identified seven concept-centered player typologies from previous research. Each typology emphasizes a distinct concept, named after the common ideas discussed in the respective papers. Even in these typologies, some overlaps can be detected. For example, Immersion and Exploration share many similar items. Of particular interest to present study are the concepts of Exploration, Immersion and Achievement, because these are all important concepts in the game Skyrim. The concept of Gaming intensity and skill might also describe some players. The other three aspects, sociability, in-game demographics and killer have a large focus on on-line interactions, and thus are not relevant in the case of Skyrim, since it is a single-player game. Stewart (2011) lists Achiever and Explorer as the core play styles of open-world role playing games such as Skyrim.

According to Yee (2006a), players who score high on the ”Immersion” factor enjoy the role of being someone else in a fantasy world. For them, the story-telling aspects of games are important, and they enjoy creating characters that fit in the world's lore. Closely related to Immersion is the ”Escapism” factor, which measures how much a player uses the game world to temporarily avoid real-life stress and problems. In a later paper, Yee (2006b) includes ”Discovery” and ”Customization” in the concept of Immersion. These include activities such as exploring the world and finding hidden things, and customizing the appearance and style of one's character to their liking. Kallio, Mäyrä & Kaipainen (2011) describe the games played with the immersive mentality as being mostly ”complex and extensive games where it is possible to put one's soul into it”. In these types of games, it is important that the characters, plot and

game world are detailed and that the player has choices on how to play the game.

Bartle (1996) describes Explorers as being interested in having the game surprise them. They long for the sense of wonder that the virtual world gives them. Explorers try to gather as much knowledge of the game world as they can, and they are interested in the intricacies of the game's mechanics and rules as well. They tend to be willing to disclose their knowledge to other players too. In case of Skyrim, explorers might be the players who create documentation on the numerous wiki's and information repositories about the game.

Achievement oriented players seek personal accomplishments and success in the game world (Whang, 2004). They set game-related goals to themselves and eagerly set out to finish them (Bartle, 1996). They want to advance their characters' power in the most efficient ways possible, and to accumulate in-game symbols of wealth (Yee, 2006b). This type of player is often catered to today by many games that offer numerous hard to attain in-game achievements.

Gaming intensity and skill players enjoy playing games kind of like sports. To them, things like speed, progress, flow and skillfulness are more important than the story or characters of the game. They are typically heavy users, who regularly play for long periods of time. (Kallio et al, 2011)

It is quite safe to assume that a mod user's player type will affect their inclination to use certain types of mods. Immersion and Exploration players will be more likely to use mods that enhance the visual and auditory details of the game. Gaming intensity and skill players will probably use overhaul mods that for example increase the difficulty level of combat or increase the variety of character skills to expand the ways to build one's character. Achievement players might use mods to expand the amount of late game content in the game, effectively increasing the amount of goals achievable. For the hardcore explorer type of player, even the vast world of Skyrim might not be enough, so they might resort to mods that extend cities or introduce completely new areas.

Applying these typologies to Skyrim players might be somewhat undermined because most of the research they rely on are conducted on MMORPGs or other online games. For example, the concept of exploration in Tseng's (2011) paper also extends to interaction with other players. On the other hand, Skyrim is a role-playing game, and its game play has much in common with MMORPGs. The elements in most of the typologies are readily indentifiable as relevant to Skyrim players.

3.5 Conclusion

People play games mostly for enjoyment, and are motivated to play because the activity is intrinsically satisfying. There are certain requirements that a game needs to have in order to be enjoyable. These include a challenge level that matches the player's skills and capabilities, clear and intuitive controls, a sense of presence and immersion in the game world with meaningful consequences

from player actions, and freedom of choice regarding the completion of objectives. The ability to customize a game seems to have a direct positive relationship with enjoyment. Many of the factors that affect intrinsic motivation to play described by Ryan & Rigby (2006) and the elements described by the GameFlow model can be directly altered with mods, which is a deep form of customization.

There are clear links between the intrinsic motivational factors, and the criteria for gaming enjoyment identified in the GameFlow model. Presence is linked with immersion, competence is linked with player skills and challenge, and autonomy is linked with control. The importance of these factors to individual players will vary greatly, depending on which player typology the player belongs to. This is why the ability to customize the game is so important; the game must be able to cater to the widely varying requirements of individual players. There is evidence that many of these factors can be improved with modifications. It is worth noting that the most popular mod of all time for Skyrim is SkyUI, a modification that makes the user interface and controls more intuitive and customizable (Nexusmods, Skyrim mods top lists). Among the top of the lists are also modifications that specifically try to make the game more immersive, as stated in the names of modifications like Immersive Armors, Immersive Weapons and Immersive Creatures. Dey, Massengill & Mockus (2016) used a data driven approach to find out which types of mods were the most popular. They concluded that ”mods that improve the Look-and Feel of a game, improve the ease of interaction with the game, and overall provide a more immersive gameplay experience tend to be more popular.” This is very much in line with the importance of immersion, controls and meaningful play elements identified earlier in this chapter. Mods that claimed to be ”lore-friendly”, meaning that they fit in the game world and are believable additions to it, were also very popular.

Literature identifies a large amount of factors that affect motivations to play and the enjoyment experienced during play. Each person will have differing preferences, and hence some factors will play a more central role for them. The power of mods could lie in the fact that people are able to deeply customize the specific parts of the game that are most important to them. Mods can widen the depth of possible customization, surpassing the level originally intended by the game's developers. For example, if a game gives too few options to change the challenge level, mods will often be available to provide more options in either direction. They can help in correcting what some may regard as oversights from the developers part, and in effect turn good games into great games.

4 CONCLUSIONS FROM THE LITERATURE REVIEW

In this chapter, conclusions will be made from the literature inspected in the two previous chapters in regards to the research questions. Other observations about the research of mods and modding will also be made.

4.1 Notes about previous research on mods

The whole subject of research on game mods and modding has only really emerged from the early 00's onward. Since then, there has been a steady flow of academic papers on the subject. Surprisingly, the rate of new research papers being published hasn't noticeably increased during the last few years, while modding seems to have become more popular than ever before. Their recent introduction on gaming consoles opens a large potential market, which will also increase the prospects of monetized mods. Therefore, mods should become more interesting to researchers as well in the future. A few researchers have produced a notable amount of papers, namely Scacchi, Postigo and Sotamaa. Each have made considerable contributions in describing various phenomena related to mods and modding.

Utilizing mods for educational purposes was the largest single topic in the literature review. The research was often preliminary and experimental in nature, and their use in education has not seen widespread use to my knowledge, despite the mostly positive experiences garnered from the research. The potential of mods in education lies in their affordability, flexibility, and high interest to students, especially if the used platforms are already familiar to students. The downsides are high technological expertise and time requirements from the staff.

Another large topic was the practice of making mods along with its processes and contexts. Modding is often communal in nature, and has many similarities with free and open source software development. Borrowing, sharing, and extending on others' work is encouraged. Mod makers often have

specializations, either to specific games or certain types of mods. Some larger modding project consist of skilled, international teams that use the same kind of techniques and professional development software that professionals in the game industry use. Modding communities were viewed as helpful and friendly, and mod makers generally felt that they are a part of the community and have an impact on it.

There were surprisingly few studies available that focused specifically on mod users. No quantitative study on mod users where the variety of mods would be large, as only user interface mods were studied this way. This is a meaningful notion since UI is only a small part of what makes a game, and the impact of mods that affect game mechanics among other things can be far larger. Several papers discussed the different types of modifications available for games, but not for many different games and the inspection was rarely comprehensive. The only quantitative study that focused on mod users was a multiplayer game, which also incurs severe limitations to the diversity and power of possible mod use. There were no theories or models that would try to explain how modding affects games and the game experience. In this sense, the research done on one of the most fundamental aspects of mods seems lacking.

The situation of mods in terms of law is interesting, and the topic was studied in moderate amounts. It seems that the game industry identifies the value of mods and in most cases, accepts their continued existence. The benefits of mods to the industry include added shelf-life of games, improved game quality, new innovations, and free advertisement and market research. Ultimately, the leniency of game companies makes larger scale modding possible. There have been clear copyright infringement cases, and in those cases the modding has usually quickly ceased. In order not to clash with a large part of the game's enthusiastic players, it may be better for game companies to disable unwanted modding with software changes or to reach an agreement with the modding community, instead of resorting to law enforcement.

The contrast between what tangible benefits mod makers get and the amount of work they put in their creations is very stark, and it was noted in several papers. It would seem unfair that they don't have the copyright for their work and in most cases don't receive any compensation from it, especially as their labor benefits game companies even financially. Most of the benefits would be in self improvement and self actualization, which is in line with the notion that modding is mostly an intrinsically motivated activity.

4.2 Motivations to use mods

There were not enough relevant papers to answer research question 1 adequately, at least not in the way of quantifiable primary research data. According to the literature review, playing games is an intrinsically motivated activity that is done mainly for enjoyment. Mods have vast potential in improving games in terms of quality, amount of content, and their lifetime.

From the results of Poor (2014) and Targett et al. (2012) we can argue that playing modded games is generally more enjoyable than playing unmodded games. Thus, increasing the enjoyment one gets from playing games is likely to be a key motivator for mod use.

From the review it can be inferred that people use mods to improve their games, enhance their play experience and increase the longevity of games they like. Mods are used to enhance the factors that affect game enjoyability by customizing the parts of game that the player deems important. The literature review identified multiple motivations for the creation of mods, such as artistic expression, learning new skills and potentially finding a job in the game industry, and removing limitations from games. Some of the motivations can reasonably be extended to mod users as well. They include introducing elements from popular culture to games to identify with them better, learning technological skills through installing and using mods, or just to see what kind of mods are available and what kind of content is possible with the game's engine, a kind of manifestation of the ”hacker” motivation. Finding, installing and seeing the results when one mods a game might be thought of a kind of meta-game. Using mods itself could be seen as intrinsically motivated activity, where a sense of accomplishment of learning something new that potentially makes a favored pastime activity even more enjoyable.

To get a better understanding on the motivations, the empirical part of this thesis will try to answer what specific kinds of mods are popular and to what ends they are used for.

4.3 Factors that affect mod use

As research question 2 was conceptually broad, a lot of information for answering it was found. In order for mods to be used, they will first have to be made by fan creators of content, the modders. The tentative situation of mods in the sense of copyright laws may lower the amount of created mods. Cease and desist letters have shut down some modding projects, and the uncertainty of how different game companies would react to modding their game and publishing the mods might lead to some modders not even begin development. Therefore, when a game has an established base of mods, and the game company's attitude towards mods is already known, a positive feedback loop may form where more mods are created and used. This kind of situation seems to have happened with Bethesda, as most of its titles have a large modding base. The more meaningful factor however, is companies' attitude towards modding in the first place, even before their games are released. This materializes as the release of development tools, support towards modding in various forms such as guides or even built-in distribution and installation support in games, and communication and interaction with the modding community. Another large factor is the popularity of the game. When there are a lot of players, it's more likely that some of them will experiment with modding the game. If a popular

game doesn't have development toolkits that are released by the developer, the community may create such tools, which will increase the creation of mods.

Other large, overarching factors that increase mod use are the rise of prosumerism and digitalization. As modding is often a social act that happens in internet communities, the growing number of such communities and gaming related social platforms will probably increase the occurrence of modding. However, game companies must maintain a balance between supporting modding for their product and their commercial interests. After all, if huge amounts of free content are available for a game, why would people pay for official add-ons or sequels? Especially, if they were to implement paid mods in any form, great care must be taken not to enrage the often very vocal and absolute gaming community. Clearly there is interest for such endeavors because they continue to be implemented in different forms despite previous failures. Successfully implemented paid mods could increase the overall adoption of mods. Finding, using and installing modifications is a task that requires technical knowledge in varying amounts depending on the game and available tools. If these skills increase in the overall gaming demographic, mod use can be supposed to also increase.

As the research that has been conducted in the context of mod users was lacking, there remained many questions that were left unanswered. For example: what are the things that people like the most about mods? What are the biggest problems with mods they have had? Do people have negative experiences related to them? Do people know how and where to get mods? Do they generally even know their existence? What are their attitudes toward them? Are their knowledge and technological skills lacking so as not to be able to use them, or do they think they aren't skillful enough to use them? The answers to these questions would all help in identifying the factors that increase and decrease the overall use of mods. The empirical part of this thesis will try to answer some of these questions.

5 RESEARCH METHOD

This chapter describes the research methods used in the study, motivations to use the chosen methods, the research context, the characteristics and sample of the survey, and the methods used in analyzing the data.

The research method was mainly quantitative in the form of a survey administered through the internet. Qualitative aspects were also present in the form of several open-ended questions in the survey. There were several reasons why the survey strategy was chosen. The setting was suitable in regards to data collection; there are numerous large online communities of mod users. Most prior research in the topic has been qualitative, and there have been calls for more quantitative studies. There is a lot of information available on game enjoyment, motivation, and modding in general, and the researcher also has intimate knowledge of the research context, so a strictly qualitative approach was not required. Numerous prior gaming related surveys have been made, some of which were used as reference in the survey's design. Finally, the motivations of mod makers have been studied both qualitatively and quantitatively, and some of the data is presumed to be relevant to mod users as well.

As mods have not been studied extensively in the context of mod users, the nature of the research was exploratory and descriptive. The primary aim of the study was not to find causalities or to prove hypotheses, but rather to seek new insights on the phenomenon and establish some basic knowledge about the motivations to use mods, opinions related to mods, and modification use habits of gaming enthusiasts.

5.1 Research questions

The first objective of the study was to establish basic knowledge of the opinions, attitudes, motivations, and mod use tendencies of people who use modifications in games. The objective was motivated by the noted lack of

research done on the subject in the context of the mod user. The second objective was to find out what factors reduce the usage of modifications in games, and what factors increase their usage. This objective The research questions were as follows:

- RQ1: What are the motivations of mod users?
- RQ2: What factors increase and what factors decrease the use of game modifications?

Additionally, the disposition of mod users towards potentially paying for mods was investigated, because it bears financial interests to game developers and may become a large part of mod culture in the future. Several assumptions were made based on the literature review:

- An important motivator to use game modifications is to change the game more to one's liking
- Modifications improve the game experience in various ways
- Modifications increase the amount of time a game can be enjoyed

The assumption is that through using various mods, players can improve certain important aspects of games previously identified in the literature review (Ryan & Deci, 2000; Sweetser & Wyeth, 2005), which inceases the intrinsic motivation to play the game. These positive changes, along with all the numerous new contents available from mods will make players interested in playing the game for a longer time.

The central aspects of quantitative research include utilizing the conclusions and theories produced by previous research, presenting hypotheses and defining constructs, selecting a sample from a defined population, and planning of the data collection in a way that facilitates numerical measurement and statistical analysis, which usually includes describing the results with percentage tables, and testing for statistical significance. (Hirsjärvi, Remes & Sajavaara, 2007, 136.)

Qualitative research is characterized by favoring people as the source of data, and relying on observation and discussion with the research subjects. Data collection methods where the research subjects can express their views in a natural context are preferred. Theoretical sampling is used instead of random sampling. The type of analysis used in qualitative research is inductive, where the aim is detailed and multilateral inspection of the research material, instead of testing theories or hypotheses. (Hirsjärvi, Remes & Sajavaara, 2007, 160.) Quantitative and qualitative research can complement each other, for example by utilizing simple mathematical techniques to extend results acquired through intensive qualitative means to relate to the whole sample (Hirsjärvi, Remes & Sajavaara, 2007, 132-133.). Trochim (2006b) views that ”…quantitative and qualitative data are, at some level, virtually inseparable”, and adds that both need to be used in order to conduct good research.

The chosen research strategy was an electronic survey administered through the internet. A survey is a data collection method where the data is gathered in a standardized way from a sample that represents a population (According to Hirsjärvi, Remes & Sajavaara (2007, 188-190.) a survey is an efficient method to collect large amounts of data from a large amount of subjects, and it allows for quick and precise statistical analysis when utilizing a computer. The required time and expenses can be evaluated fairly accurately. Though survey research has its basis in quantitative research, survey results can be analyzed both quantitatively and qualitatively, depending on the survey's design (Lähdesmäki, Hurme, Koskimaa, Mikkola & Himberg).

Surveys can be used to collect information about facts, knowledge, values, attitudes, opinions and beliefs, among others. There are three main types of questions used in surveys. The first ones are open-ended questions, where a question is asked, and the respondent can freely write their own answer for it. Open-ended questions allow for respondents to show their knowledge on the issue, can reveal what aspects of the issue they deem important, and how they feel about it. The second type are multiple choice questions, where the respondent can choose one or more of premade options. The third type are scale questions, where a statement is made and the respondent is asked to which degree they agree or disagree. An often used example of this question type is the Likert scale which uses five or seven options, the lowest number of which means ”strongly disagree”, the middle point a neutral stance, and the highest ”strongly agree”. (Hirsjärvi, Remes & Sajavaara, 2007, 192-196.)

There are several potential issues that may skew the results of surveys. One of them is non-response bias, which occurs when the acquired sample differs from the ideal sample that would represent the population. The group of would-be respondents who chose not to participate in the survey could have different answers than the average of the population. While non-response bias often cannot be avoided, its negative effects are alleviated increasingly as the sample size increases. (Barribeau et al., 1994-2012) Another problem is the difficulty in ensuring that the questions are worded properly for the respondent's point of view. It is difficult to control for misinterpretations from their part. It is also impossible to be certain that respondents answer carefully and truthfully. (Hirsjärvi, Remes & Sajavaara, 2007, 190.)

Survey was chosen as a method because of its flexibility and ability to utilize a large sample in the constraints of present study. The designed survey included multiple choice questions, open-ended questions and scaled questions in order to gather various types of information and to enable both quantitative and qualitative analysis of the results. Open-ended questions can provide a lot of new insight on the topic, especially as the target population was deemed to be experienced and knowledgeable of it.

5.2 Research context: Skyrim

In this subchapter the inspected game, Skyrim, will be described. The modifications available for it, and its largest modding community will also be looked into. The purpose is to get a good look at what is possible in modding Skyrim, and how these modifications affect the game. Inspecting the available mods is important to be able to design the survey, because many questions asked will be directly related to them.

The Elder Scrolls 5: Skyrim (commonly called just Skyrim) was released in 2011 for PC, Xbox 360 and Playstation 3 to wide critical acclaim. It is a single-player action role-playing game with a large, open world to explore. The player is free to go anywhere in the world at any point of the game. The choice can be made to focus on exploring the world and doing side quests rather than following the main quest that sets the player to defeat an evil dragon trying to destroy the world. Along the way, the player gains power, learn different skills and spells, and fights various adversaries while collecting items of legendary power. The player can join either faction of the ongoing civil war in Skyrim, or any of the numerous guilds the game has to offer.

The game's developer, Bethesda Softworks is known for its support towards modding. The software development kit for Skyrim, the Creation Kit, was released shortly after the launch of the game, along with tutorial videos on how to use it. The game's developer still features several mods made by the community every month in their website. The electronic games distribution platform, Steam, also allows the distribution of Skyrim mods via its Steam Workshop. At the end of 2016 Skyrim Special Edition was released, which improves the graphics of the game and also offers mod support for consoles.

5.2.1 Nexus mods community

Nexus mods is the largest modding community site on the internet (Poretski & Arazy, 2017). It hosts a total of around 230.000 mods for 439 games, has almost 13 million registered users, and the mods have been downloaded a total of almost 2 billion times. (Nexusmods). Its purpose is to provide mod makers a platform to easily upload and distribute their works, and for users to find and download mods. In addition, users can discuss various topics in the sites forums, as well as provide feedback to mod makers through ratings, bug reports and comments. Registering as a user and using the services are free, as the site is financed through donations and ads. (About this site).

Several mods were picked for closer inspection from the top 100 most endorsed mods of all time (non-adult) list. Endorsements are recommendations by mod users, and are essentially positive reviews. The choice to pick the mods from the non-adult list was made because the adult list consists largely of character body modifications that are very similar in nature. A few mods were picked outside the list to provide more examples for all mod categories.

Modifications even when inspecting just one game cannot be always strictly categorized, since they often alter multiple elements of the game. Skyrim Nexus has 59 different categories for Skyrim mods. For the purposes of this thesis, this categorization is too specific. Instead, a categorization of my own design will be used, which aims to draw together related concepts. It is based on the categorization of Nexus mods, but tries to capture all the types of mods in a condensed form.

Popular mods often have a verbose description in the download page, including readme's, lists of features, installation instructions, system requirements, utility mod requirements, frequently asked questions and answers, and sometimes even version histories. These details indicate that experienced mod makers try to make their mods as user friendly as possible. Mod pages will also sometimes display awards or acclaims that the mods have been given, or if they have been mentioned in a notable gaming website or magazine.

5.2.2 Skyrim mod types

Adult mods
Adult mods are among the most popular Skyrim mods. There are a few popular ”base” female body mods that change the female body model, often also removing the underwear from the original model. These bodies are fully modifiable by the user in at a very detailed level by a set of tools made by the community. A ”better males” mod is also available, that does the same things to the male character models. Many other mods are based on these body mods, including armor and outfit mods that make them more revealing. Animations and different character poses are also available, and they can even add physics simulation to the body. There also exists a modding site completely dedicated to adult mods in games, the Loverslab.

Fixes and unofficial patches
Unofficial Skyrim Patch is the fourth most endorsed mod of all time in Skyrim Nexus. Its ambitious goal is to eventually fix every bug not adhered to by the original game developers. In a game with such a vast scale as Skyrim, bugs are almost certain to exist. The mod's design team claims that the patch fixes hundreds of gameplay, quest, NPC (non-player character), object, item, text and placement bugs. (Unofficial Skyrim Patch) This mod is an example of the power of users in finding and fixing errors in software. The authors ask players to report bugs they encounter directly to them, and there are over 10000 posts in the comment section, many of which are bug reports.

User interface mods
SkyUI: SkyUI is the most popular mod of all time on Skyrim Nexus with over 15 million total downloads. It improves most of the menus in the game, displaying more information on the screen, and introduces inventory

management features as text search, sorting, and extended data columns. It allows grouping of item sets and spells to hotkeys for the players that wish to rapidly change their play style. Most of the features are customizable. A large part of the mod is the addition of the Mod Configuration Menu into the game, which allows other mods to be customized directly in-game. SkyUI's mod page has documentation for other modders on how to make mods work with the menu. (SkyUI) This is a prime example of collaboration and interoperability in the design of mods. Skyrim's original user interface when played on PC faced some backlash from game reviews and users as well, as it was seen to be designed mainly for consoles in mind. The immense popularity of SkyUI can be attributed to so many players finding the original UI lacking.

A quality world map replaces the original world map by a more detailed map with roads added. With the original map, the player couldn't always be certain what routes were passable. The mod comes with options, and includes a hand drawn paper map. (A Quality World Map and Solstheim Map - With Roads)

Graphics mods

These mods are used to improve the visuals of the game, for example by improving texture size, object fidelity or by introducing various graphical effects. Graphics mods come at a cost, though, as many of them can negatively impact the game's performance in terms of frames per second and loading times, especially if the user's computer is not a powerful gaming PC. One incentive to use graphics mods may be to utilize the computing power of today's gaming PC's. Skyrim came out in 2011, so its graphics are getting outdated.

Skyrim Flora Overhaul is a mod that aims to improve the variety and graphical quality of Skyrim's landscapes. It comes in four different options, and it can be further configured depending on how much graphical processing power the user's computer has. (Skyrim Flora Overhaul) A large part of Skyrim's gameplay is exploring locations in the wilderness. Therefore, improvements in the quality and variety of vegetation and trees may increase immersiveness substantially.

Skyrim HD - 2K textures replaces over 600 textures in the game with higher quality versions of them that keep the original style, but have a four times higher resolution on average. The textures improve all landscapes, numerous textures in architecture, dungeons, clutter, the sky and water. Different versions of the mod are available to suit the capabilities of different PC 's in terms of graphics processing power. The author claims that the man-hours put in making the mod go into four digits. (Skyrim HD - 2K Textures)

Static Mesh Improvement Mod - SMIM increases the polygon count and graphical quality of over 900 objects, which include architectural elements, clutter, furniture and landscape objects. The author lists the programs used in creating the objects for the mod. They include software like 3DSMax and Photoshop, which are widely used by professional graphic designers and artists. (Static Mesh Improvement Mod - SMIM)

Immersion mods

Frostfall - Hypothermia Camping Survival introduces another element of survival to the harsh world of Skyrim. With it, players will have to account for the cold climate of the world, needing to equip warm clothing, collect firewood, be wary of cold rains, and craft tents for camping in the wilderness. The author notes that immersion should never come into the way of fun, and claims the mod keeps tedium at a minimal level. (Frostfall).

Realistic needs and diseases: This mod adds basic human needs to the game which the player needs to fulfill or face penalties. They include thirst, hunger, and the need to rest. The more deprived the player is in any need, the more severe the penalties, which range from mild inconveniences to debilitating weakness in nearly anything the player does. The mod provides the possibility to customize the rates that different needs accumulate, or to disable unwanted needs altogether. (Realistic Needs and Diseases) In recent years, the survival game genre has become increasingly popular (Houghton, 2014), and survival elements fit well in open-world games like Skyrim.

Enhanced lights and FX aims to create a more dramatic and realistic mood to the lighting in Skyrim. It has options to make interiors, dungeons and the night darker, foggy weathers stronger, rains heavier and sunrises and sunsets more intense. It also adds numerous graphical effects such as smoke and volumetric lights. (Enhanced Lights and FX)

NPC and monster mods

Skyrim Immersive Creatures adds dozens of new creature types to the world, along with over 3800 creature variants, adding great diversity to the gameplay while maintaining lore-friendliness. The rates that the new enemies are encountered can be fully customized in-game, or if the player doesn't like certain enemies, they can be disabled. The mod also adds special monster encounters, such as bosses or specific enemies that appear only during the night or in special locations. (Skyrim Immersive Creatures)

UFO - Ultimate Follower Overhaul: In original Skyrim, the player can have a follower who helps in fights and can carry items, and the player is limited to only having one follower at a time. UFO significantly increases the interactions possible with followers and increases the follower limit to 15. The mod offers many improvements: among others it increases dialogue options with followers, allows teaching them new magic spells, improves their AI, allows displaying their statistics, and allows them to ride horses. (UFO - Ultimate Follower Overhaul)

Additional items

Winter is coming - Cloaks: This modification adds a completely new category of wearable items to the game, cloaks. They come in a wide variety of styles and materials, and the player is able to craft them from raw materials. The modification also works with Frostfall, making the use of cloaks not only a choice of style, but also gives them the function of protecting your character from cold. The author of the mod tells that they were heavily inspired by the

popular TV series, Game of Thrones. (Winter is Coming - Cloaks) This coincides with Sotamaa's (2010) observation that modders are often motivated to include elements from popular culture in their creations.

Immersive armors is a mod that adds 55 new sets of armor, almost 400 new shields and other wearable items like earrings and scarves to the game. It keeps the natural feel of the game and seamlessly integrates the new content in the world. (Immersive Armors) Immersive armors is the third most endorsed mod in Skyrim Nexus, indicating that there is a great demand for additional options to customize the look of one's character.

Gameplay effects and changes

Alternate Start - Live Another Life allows the player to skip the game's intro sequence, and choose an alternate beginning and backstory for their character. There are a lot of different choices available, and the player can choose to awaken in the forest as a hunter, as a shipwreck survivor drowning near the coast, or as a member of the thieves' guild. (Alternate Start - Live Another Life) This mod probably caters best to experienced players who have seen the game's intro numerous games, and who wish to have a different experience since the beginning.

Deadly Dragons triples the amount of dragon types in the game, and most importantly of all, increases the challenge of defeating dragons by a large factor. The author condenses the purpose of the mod colorfully:

> Deadly Dragons is a mod with a singular purpose; make dragons the feared & powerful creatures they supposedly are. If a single giant or small group of local bandits can take down an ancient dragon, why the hell does Skyrim need us to save it

It is implied that the original game's dragons weren't challenging enough, taking away from immersiveness. Deadly Dragons comes with the option to customize the challenge level of dragons and the types of new dragons that appear. The mod page also contains a helpful guide describing how to survive the encounters with deadlier dragons. (Deadly Dragons)

Additional areas

Falskaar introduces a new large area to explore, complete with people, quests and dungeons. The author claims that it adds over 20 hours of content, and it includes a main quest and several side quests to complete. The mod also features new voiced dialogue by professional and semi-professional voice actors and a new soundtrack. (Falskaar) Mods like these can provide a completely fresh experience for players that have gone through the original game, and are a testament to the possibilities provided by mods.

Helgen reborn: Helgen is a town that is destroyed in the beginning of the game. Helgen reborn introduces a quest line where the player can rebuild the town and make it into a vibrant community. It additionally introduces new adventures, new people with voiced dialogues and new dungeons to explore.

The player can also affect the fate of the town by deciding which faction it joins in the civil war that Skyrim is going through. The author remarks that great effort has been put into making the mod, spanning over one and a half years. (Helgen Reborn)

Gameplay overhauls

T3nd0s Skyrim Redone consists of eight modules, which change most aspects of the game if all of them are used. Its primary aim is to improve the depth of character development by giving more options to the player and balancing skills that were overpowered. It changes the skills and spells available to the player, the items found in the world, stealth mechanics, crafting and many more things. Combat is made deadlier and more tactical, as the player now tires quickly and heavy blows will cause bleeding that can kill fast. Another layer of skill is introduced to combat in the form of timed blocks. When the player uses their shield or weapon to block an incoming attack at just the right time, the enemy will stagger, allowing for a counter attack. Enemies have a new artificial intelligence, and will be more aggressive in combat. The player can now encounter very powerful enemies from the beginning, and the enemies are made much stronger when the player reaches a very high level, improving late game content. (T3nd0s Skyrim Redone)

Requiem - The Roleplaying Overhaul is the result of several thousand hours of continuous development by a small team of modders. It changes most of the aspects of the game like combat, magic, player skills and items. The most important aspect of Requiem is that it makes the game world's challenges and rewards static, whereas the challenge level of the world in unmodded Skyrim scales with the player's power. The mod makes the game generally a lot more dangerous, especially for players that don't prepare for dangers ahead. Requiem was inspired by older, classical computer role playing games, and it should cater well to hardcore players. (Requiem - The Roleplaying Overhaul)

Total conversions

Enderal: Enderal changes the game completely, having its own world with new varying landscapes, deep lore, believable characters with voice acting and a dark and immersive story. The skill system and game mechanics are completely overhauled. Enderal can be considered as its own game, and only the game engine and graphical assets of Skyrim are used. The expected playtime of the total conversion is 30 to 100 hours, which is comparable to similar commercial games. The development of the mod lasted almost five years. (Enderal).

Skywind is a total conversion mod project aimed to recreate Bethesda's older game Morrowind in Skyrim's game engine, utilizing its superior capabilities and graphics. While it aims to recreate the world of Morrowind completely along with its quests and characters, it will also bring features from Skyrim, such as crafting one's own items, and the skill system will be revamped to fit in the world of Morrowind. The project, like many other total conversion mods, is not ready yet and is not available for download. (Skywind FAQ)

5.2.3 Skyrim mod utilities

There are several utilities available intended to make the use of modifications easier and more manageable. The utilities are made by modders and the community. The most popular ones are mod managers, which allow easy installation and uninstallation of mods, enabling or disabling installed mods, downloading more mods and updating installed mods. The alternative would be to manage the mod files manually, which is very cumbersome especially in the case of large mods and if multiple mods are installed at the same time. Some mods do offer stand-alone installers, but they seem to be in the minority. Other utilities exist for modifying specific types of game files, for automatically optimizing the load order of installed mods which affects the functionality and stability of the game, and for detecting and fixing conflicts between modifications, among others.

Nexus Mod Manager is an open source mod manager that has a direct integration with the Nexus Mods website, and supports 23 different games. The manager offers an easy to use interface, and users can download mods directly through the manager. The software is completely open source, and it has been downloaded over 20 million times. (Nexus Mod Manager - OPEN BETA)

Wrye Bash is a piece of software that allows mod management support like the Nexus Mod Manager, among other functionalities. Among these is a tool that enables the use of many mods that change similar things at the same time that would otherwise be conflicting. It also allows the user to make many tweaks to the game's mechanics without needing to use specific mods for them. (Wrye Bash General Readme)

Skyrim Script Extender is a utility that extends the scripting capabilities and functionality of the game, and is used by many mods (Skyrim Script Extender). Without it, many mods that now exist would simply be impossible because of the limitations of Skyrim's game engine.

5.2.4 Skyrim mods discussion

The variety of modifications available for Skyrim is very large. From looking at the top list of mods, it is evident that an enormous amount of work was put on making the mods, and the quality of the mods show that their creators are experienced and talented at what they do. They also seem dedicated to their work, as many of the mods reviewed were still receiving updates. Some authors have released new and improved versions of their mods since the release of the game to this day, which spans over six years. Some mods started from small fixes to specific issues, but evolved into large overhauls changing large parts of the game, often due to popularity and community support.

The most popular mods seemed to be ones that fixed errors or improved the usability of the game, rather than those that added content or changed gameplay mechanics. This could inditicate that for many players, the content and gameplay of Skyrim is seen as adequate, but its usability needed

improvements. This notion may be flawed since there is a limited amount of UI and bug fixing mods, compared to the huge amount of content adding mods, most of which won't reach the top popularity lists. On the other hand, it could be argued that the relatively few mods available for UI and bug fixing are of such high quality that no alternatives are needed.

A large theme in modding is freedom of choice. Starting from how and what kind of mods are used and installed, to the behavior and elements chosen for specific mods that can often be deeply customized. Even after installation, numerous mods provide customization options that are accessible directly inside the game.

It is evident that collaboration is also a big theme in modding, as identified in the literature review. Notable mods often have compatibility patches to make them work with other larger mods, and some mods depend directly on other mods. Many mod makers make it implicit that their mods have been influenced by other mods, and credit is often given to the original authors. Mod makers are also open to suggestions and feedback, as can be found from the numerous posts made by the community.

Many aspects of the inspected mods show evidence of professionalism. Many mod descriptions included user instructions, version histories, readmes, compatibility patches, use of professional level tools, overall documentation, and troubleshooting tips. These are the aspect one would generally expect from high quality commercial products. Of course, only the most popular mods were inspected, so these observation are not reflective to all modifications available. Finally, mod makers tend to make their mods as intuitive as possible, even aiming for them to be usable by players who don't read instructions.

Lore friendliness was an important characteristic in most of the reviewed mods. While mods often claimed to be lore friendly in the first place, many offered completely lore friendly versions for ”lore purists”. Another often occurring property in mods was immersiveness.

Mod makers seem to be eager to make their mods known and used. They sometimes praise their works, tell about their other notable works as a ”selling point”, sometimes humorously. Some authors use their aliases in the mod's name directly, making their modding persona known.

Although there are several total conversion mod projects for Skyrim, most of them remain in early development stages despite years of work. Such a project is a huge undertaking, and the limited number of finished total conversions coincides with Scacchi's (2010) observations.

5.3 Survey characteristics

The survey was made on Google Forms. The survey was designed to be lightweight and quick to answer to, but at the same time to capture a lot of information. The questions were formulated based on the literature review, inspected Skyrim mods, and my own experiences as a mod user. The process of

forming the questions was iterative and was done with the help of the thesis' second supervisor. The survey was pilot tested with five individuals that had played Skyrim with mods, and was revised slightly based on the feedback. After this, the survey design was circulated through several academics for feedback, and was revised again. When the design process was considered finished on 3. June, 2017, a post was written on Reddit's Skyrim Mods subreddit. The post included my background description, what the collected information would be used for, an estimate of the time it takes to complete the survey (5-10 minutes), and a promise to answer any questions arising about the survey.

The target demographic were people who visit the Skyrim Mods subreddit, a community that hosts discussion and various helpful resources about modding Skyrim. At the time of conducting the survey, there were around 70.000 subscribed users in the community. The amount of people who visit the site, but who are not subscribers, is unknown. The sample demographic is likely to be much more interested in gaming and modding than average gamers. As Skyrim was released more than five years ago, many of the survey respondents are likely to be very enthusiastic about it to still be actively looking for information related to it. No sampling technique was used, as potential respondents will have seen the questionnaire only if they visited the forum and answer the questionnaire only if they decided to. This probably caused some selection bias, leading to an overrepresentation of those mod users who visit the forum more actively, or who are more likely to answer to questionnaires. For these reasons, the results are not well generalizable. On the other hand, as the target population is considered to be very knowledgeable in the topic of mods, they can provide in-depth qualitative insights.

The survey consisted of 38 questions, and included multiple choice questions about the types of mods used and the reasons to use mods, numerical questions for the approximate amounts of mods used and time played, likert-scale opinion measures about mods and their potential to improve games, and open-ended questions related to the problems of mods and willingness to pay for mods, yes/no questions related to community participation, and demographic questions. To increase validity and avoid misconceptions, several questions had additional descriptions. The survey form can be found in appendix 1.

The survey was divided into six sections, or pages as they were shown in the internet survey: an introductory section after the title ”Skyrim mod user survey”, Mod use experiences and opinions, Community participation, Reasons to use mods, General information, and another untitled page that asked about general information. Some of the sections included questions that weren't directly related to the section title. This was intentional, and it was done to improve the ”flow” of answering questions. Some more personal questions were asked at the end of the survey because of common recommendations on survey making, though topic-wise they may have fitted better in other sections.

The introductory section inquired about approximations of the number of Skyrim mods tried and actively used, the types of mods used with 15 categories

and descriptions for each mod category, whether or not the respondent had used mod management utilities, whether they had made mods themselves, and how difficult they thought it was to mod Skyrim on a 5 level Likert-scale. The purpose of this section was to find out how wide reaching and varied the mod use of the sample was, and which parts of the game were the most often modified. The question that differentiates between those who had made mods themselves and those that hadn't, was included to better facilitate comparison with previous research that has mostly focused on mod makers.

The Mod use experiences and opinions section included 11 Likert-scale statements. Seven of them related directly to Skyrim, inquiring whether using mods make the game more enjoyable and interesting for longer, whether browsing new mods is fun, if lore-friendliness in mods is important and whether the respondent was satisfied with the amount and quality of available mods, and whether mod use had a large impact on the overall feel of Skyrim. The other four questions were related to mods in general, and asked if mods can make games better, if the respondent preferred to play modifiable games, if mod support and availability increase the value of games, and if they typically finish games before installing mods for them. These questions were included in order to find out to what extent mods can improve various aspects of games, what kind of experiences the respondents had about using mods, and if mod support was thought to make games preferable or offer them more value. It was assumed that the responses would reveal the positive impact of mods and they would be in line with Nardi & Kallinikos (2010) claims and Poor's (2014) results.

The Community participation section consisted of five questions that asked if the respondent had thanked or rated mods, provided feedback for them, actively participated in discussion, sought information about modding from community resources, and suggested a mod to another person. The questions were designed to inquire different levels of community participation by the amount of effort needed for various actions, from simply thanking or rating a mod, to providing feedback, to actively participating in discussion. This section was included in order to learn about how community driven the modding scene in Skyrim seems to be, and to allow comparing community orientation between mod users in present study and the mods makers from previous research. Poor's (2014) survey was used as reference when designing the questions.

The next section included a question about the reasons to use mods, an open-ended question asking about the biggest problems of mods and modding, an open-ended question that asked if the respondent would be willing to pay for mods or not, and a follow-up question asking why, or why not. The first question was a checkbox list with 11 options, including reasons such as ”to add more content to the game”, ”to fix bugs or other problems in the game”, and ”to make the game more challenging”. The purpose of this question was to find the motivations for using mods, and to find which parts of the game's functionalities mods are used to improve. Most of the questions are related to the factors that affect intrinsic motivation to play games identified by Ryan &

Deci (2000), and the elements required for enjoyment in games from the GameFlow model (Sweetser & Wyeth, 2005). The question about problems in modding will help in finding the factors that limit the usage of mods, and will hopefully be useful for game developers if large design related problems are identified. Conversely, the elimination of these problems could facilitate an increase in the usage of mods. The question about willingness to pay for mods and the reasoning behind the stance was included in the survey mostly because of personal interest and a lack of research on the topic. The question itself is very controversial, considering the open-source and free background of mods, and the previously failed attempt at paid mods. The topic of monetizing mods might also interest game developers to pursue modifiability in their design choices. The respondents' attitudes towards the monetization of mods can also be reflected against the literature about the open-source like mechanics of mod development.

The final section, General information, included questions related to gaming habits, computer proficiency level, amount of time spent playing Skyrim, demographic questions, and an open question for feedback for the survey. The information provided from this section will help comparing the sample with the larger overall population that plays games.

5.4 Analysis methods

The quantitative results were analyzed with descriptive statistics utilizing IBM SPSS Statistics. The answers for the open-ended questions were thematically analyzed. The analysis methods that were used are described below.

Descriptive statistics are used to describe basic features of data in research. Descriptive statistics form the backbone of nearly all quantitative data analysis, and it enables comparison between the units of analysis. An often used method in descriptive statistics is univariate analysis which commonly examines the distribution, central tendency and dispersion of a single variable. (Trochim, 2006a)

The distribution tells how many occurrences of a value or a range of a value there are for a single variable in the data set. The distribution can be grouped into categories, for example by gender or age groups if the unit of analysis is a person. One of the most common ways to describe distribution is by frequency distribution graphs or tables. They are useful in summarizing how many of the cases in the sample have certain values or ranges. (Trochim, 2006a)

Central tendency estimates the value that settles around the center of data points, and it is usually described by the mean, median and mode. The mean is simply the average of all values. The median is the middle point of all values when they are arranged side by side with ascending magnitude. The mode is the most often occurring single value in the data set. In a true normal distribution, the mean, median and mode are all the same value. (Trochim, 2006a)

Dispersion describes how the values are spread out from the central tendency. Commonly used measures of dispersion are the range and standard deviation. Range is calculated by subtracting the lowest value from the highest value. It is vulnerable for outliers, because they can throw off the range by a large amount. The standard deviation is a more accurate measure of dispersion, and it describes the relation of a set of values to the sample's average value. Standard deviation is the square root of the variance, which in turn is the sum of each value in a set squared, then divided by the number of values minus one. If the distribution of a data set follows a normal distribution or is bell shaped, certain estimates can be made with the help of the standard deviation's value, for example approximating how large a percentage of the scores fall within a given amount of standard deviations from the mean. (Trochim, 2006a)

Thematic analysis is a method where recurring central topics, themes, that are relevant to the research question are identified and formed from textual data. Braun & Clarke (2006) view thematic analysis as an accessible form of qualitative analysis since it requires less theoretical knowledge from the researcher than for example grounded theory or discourse analysis. What constitutes a theme is reliant on the researcher's own judgment, and rigid rules for determining them don't work. Although the quantifiable prevalence of recurring topics in the data is of importance, it's more important that the identified theme can help answering the research question. Braun & Clarke (2006) Citations from the original research material are often used to provide illustrative examples of the data and to justify the formation of the specific themes that ended up in the research (Saaranen-Kauppinen & Puusniekka, 2006).

The open-ended questions were analyzed thematically to find out important themes mainly to answer RQ2. Manual coding was used, with the help of Microsoft Excel. The following process was used, casually following the guidelines provided by Braun & Clarke (2006):

1. All of the answers for each of the open questions were first read once carefully, noting similarities between the contents of the answers.
2. Several categories were made, based on recurring similar ideas or elements in the answers.
3. The answers were read again and their content was grouped into categories. In case of longer answers that related to more than one category or had more than one key point, the answer was split and grouped into different relevant categories.
4. The number of categories was reduced to a more manageable amount by combining similar categories together. Categories that had only few responses were combined into an ”Others” category.
5. The most often occurring content of each category were summarized into a table.

An example of a theme identified from responses to the question ”What are the biggest problems of modding?” is ”Drama and problems with the community”, which describes various problems that mod users face when interacting with the modding community, such as pettiness, overreactions to sensible criticism, unfounded accusations, and blaming.

6 RESULTS

In this chapter the results of the survey are described and analyzed. First, the demographics of the sample, modification use data, opinions and motivations are presented with descriptive statistics. The open-ended questions that were related to problems of modding and willingness to pay for mods are then thematically analyzed.

A total of 362 responses were collected during one week, after which the rate of incoming new responses declined sharply and the survey was subsequently closed. Five responses were omitted from statistical analysis because they included impossible numerical answers. The amount of responses was considered as adequate for the purposes of the study.

6.1 Demographics

Table 2 describes the demographic information of the sample. The majority of the respondents were male with 82,4% representation, reflecting the male-heavy samples of previous mod related research. 14,6% of the respondents were female, and 3,1% of the respondents identified as ”Other”. The average respondent was a young adult. Most of the respondents were between 16 and 20 years old (38%), followed by almost as many aged between 21 and 25 (36%). The age group 26-30 witnessed a very sharp decline, constituting only 13% of the sample. Only about one in nine of the respondents were over 30 years old. Just six out of the 357 respondents reported to be under 15 years old.

TABLE 2 Sample demographics

Variable	Option	Frequency	Percentage
Gender	Female	52	14,6
	Male	294	82,4
	Other	11	3,1
Age	Under 15	6	1,7
	16-20	136	38,1
	21-25	127	35,6
	26-30	45	12,6
	31-35	17	4,8
	36-41	8	2,2
	Over 41	18	5,0

The general computer proficiency level of the respondents was high. More than a quarter (27%) considered themselves as experts with computers, and almost half of the respondents (47%) positioned their proficiency level between intermediate and expert. Only about one in four had a computer proficiency level of intermediate or lower. None of the 357 respondents had a proficiency level of beginner.

Mod use habits and play time

All of the numerical questions were worded as ”approximately how many… etc.”, so all the numbers here are approximates and can vary greatly from what might be the real numbers. While Steam indicates the total amount of gameplay time and mod manager software tell the number of mods used, not every respondent were tracking these numbers. A few users indicated that they had little idea about their play times or number of mods used, so they tried their best to give an approximate answer.

Table 3 shows the amounts of mods used and time played. The amount of mods tried had a great range, with the minimum being 10 and maximum 3000. The amount of actively used mods ranged from 0 to 1000, with an average of 199,77 and a median of 150. These numbers are very high, though most of the mods are likely to be small scale modifications or additions to specific things.

The respondents had very high amounts of play time in Skyrim with an average of over a thousand hours, most of which had been played with mods installed at over 830 hours. According to the data from Steamspy, the average person who owns Skyrim has played it for about 120 hours and the median play time is about 50 hours (Galyonkin, 2017). The respondents played for an average of 25,7 hours per week, which is also a lot more than what average people that play video games do.

TABLE 3 Mod use and gameplay numericals

	Minimum	Maximum	Mean	Median
Skyrim mods tried	10	3000	507,32	350
Skyrim mods actively used	0	1000	199,77	150
Games played in a week on average (hrs)	0	120	25,66	20
Skyrim played in total (hrs)	10	10000	1032,63	730
Skyrim played with mods (hrs)	10	7476	832,36	542

From figure 1 we can see that there was a sharp decline in the amount of mods actively used beyond 250. This is probably due to the Skyrim engine limiting the number of simultaneously used mods to 255. However, experienced mod users can circumvent this limitation by merging multiple mods into one, explaining the numbers beyond this value in the results. Another explanation could be pure chance, since respondent could also interpret ”actively used mods” as mods that are often used, instead of mods currently in the game's load order. A dummy variable ”HC-mod user” was created, and respondents that actively used over 255 mods were assigned 1 (73 respondents, 20% of the sample) and others 0. HC-modders were more likely to have made mods themselves (Chi-square = 12,144, p = 0,000, phi = 0,184), were more likely to think that their mod use had a large impact on the overall feel of Skyrim (Chi-square = 11,454, df = 4, p = 0,022, phi = 0,179), have provided feedback etc. for a mod (Chi-square = 20,335, p = 0,000, phi = 0,239), actively participate in discussion (Chi-square = 18,231, p = 0,000, phi = 0,226), were more motivated to improve graphics with mods (Chi-square = 6,012, p = 0,014, phi = 0,130), were more motivated to make the game more challenging (Chi-square = 11,511, p = 0,001, phi = 0,18), and to change game mechanics (Chi-square = 5,324, p = 0,021, phi = 0,122).

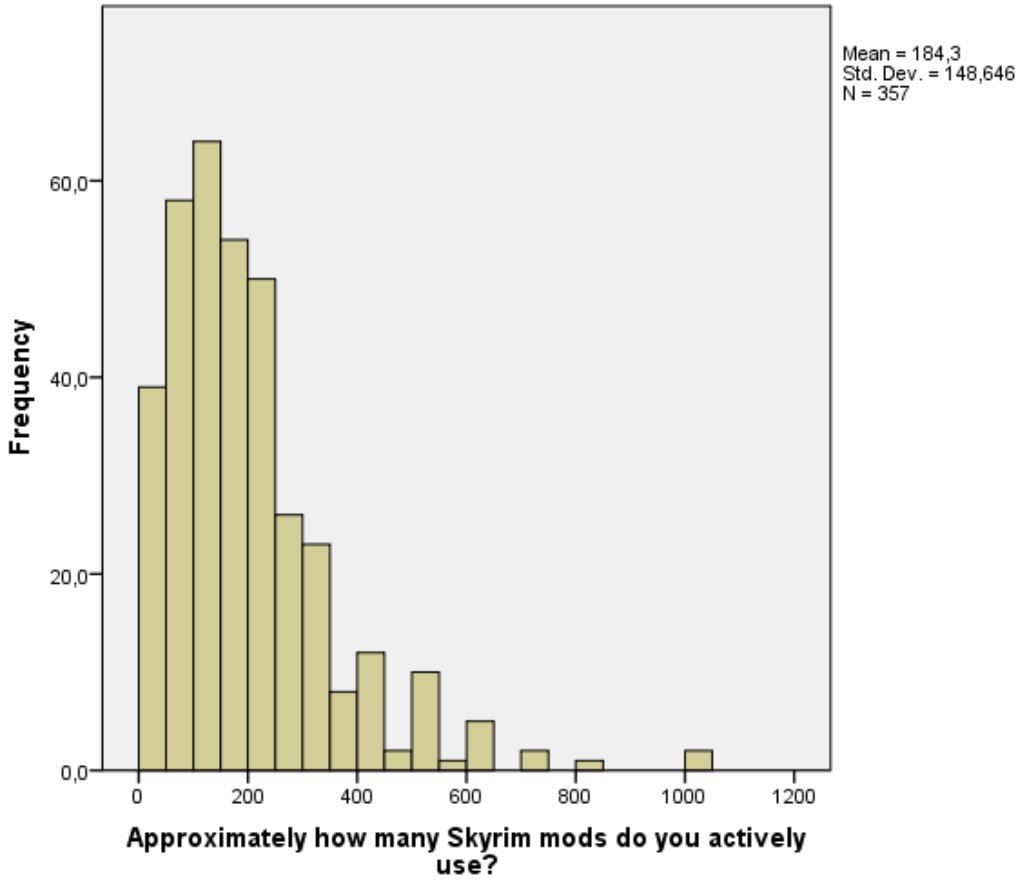

FIGURE 1 Amount of actively used mods

Figure 2 illustrates that most of the mod categories were used by a significant portion of the respondents. The most popular ones with almost universal use percentages were User interface mods, Fixes & patches, Item mods, Game mechanics mods and Graphics mods. Only the categories of Total conversions, Cheat mods and Humor or parody mods didn't see widespread use. The low number of total conversions was probably due to the lack of availability of those kinds of mods. Cheat and humor mods might not interest the hardcore gamer demographic as much as the more serious types of mods. The sample was very extensive in their mod use with regards to mod variety, which underlines their apparent enthusiasm towards mods.

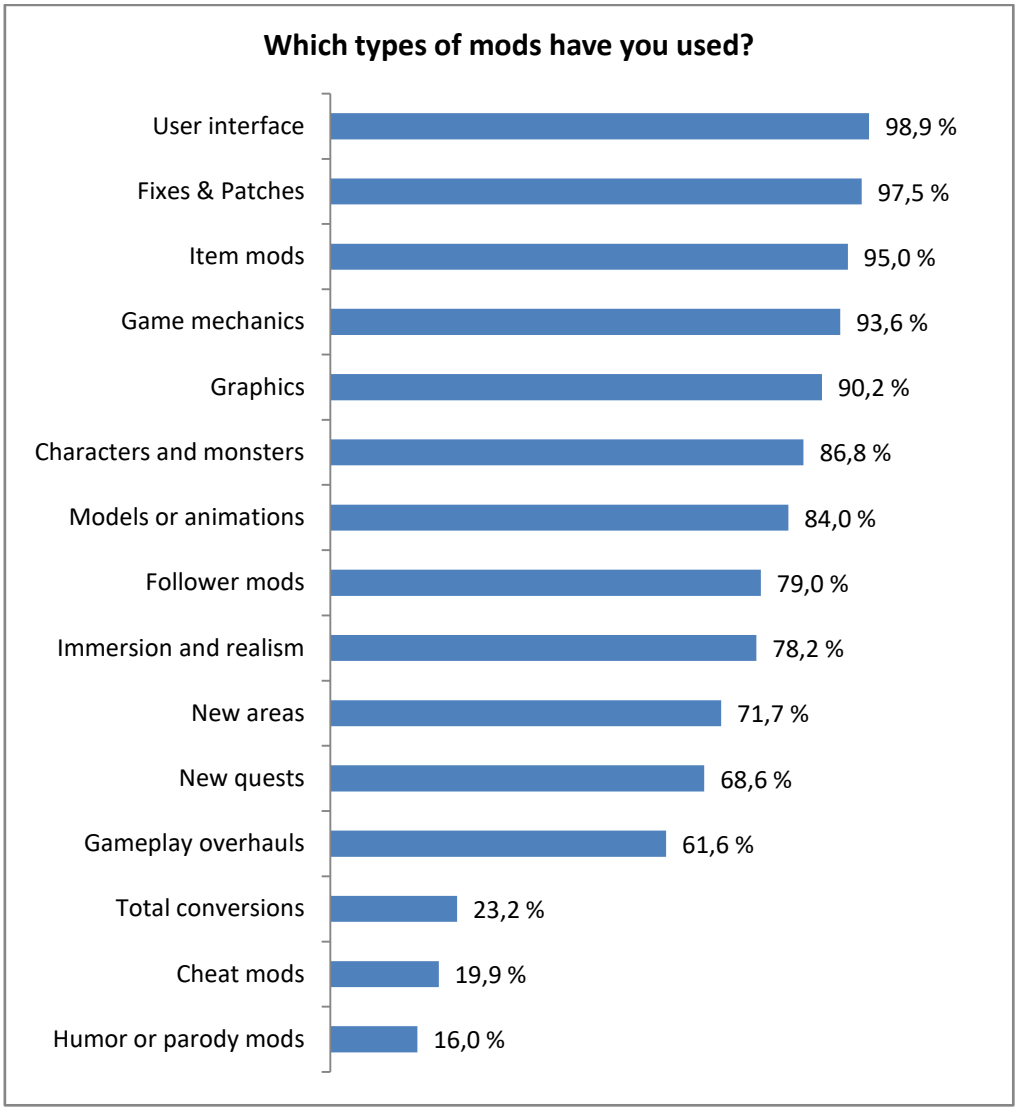

FIGURE 2 Mod types used

6.2 Mod use motivations and opinions

Overall, the respondents had very positive opinions about using mods in Skyrim as can be seen from Table 4. The option ”Strongly agree” was highly represented in all the measures, most extremely with ”Using mods keeps me interested in playing Skyrim for a longer time” and ”Using mods makes Skyrim more enjoyable” with 89% and 87% of the sample respectively. Negative and neutral results were almost nonexistent with these two measures. The respondents enjoyed browsing and trying new mods for Skyrim, with 87% giving a positive answer, and only about 10% having a neutral or negative stance. The respondents were slighty more satisfied with the quantity of mods than the quality of mods available for Skyrim. Almost 90% agreed or strongly agreed that their mod use had a large impact on the overall feel of Skyrim.

TABLE 4 Skyrim mod use opinions

	Strongly disagree	Disagree	Neutral	Agree	Strongly Agree
Using mods makes Skyrim more enjoyable	0,0%	0,0%	0,6%	12,0%	87,4%
Using mods keeps me interested in playing Skyrim for a longer time	0,0%	0,3%	1,4%	9,5%	88,8%
I enjoy browsing and trying new mods for Skyrim	0,8%	3,4%	8,4%	28,6%	58,8%
I am satisfied with the amount of mods available for Skyrim	1,1%	4,2%	12,0%	34,2%	48,5%
I am satisfied with the quality of mods available for Skyrim	0,3%	3,4%	17,1%	38,9%	40,3%
My mod use has a large impact on the overall feel of Skyrim	0,6%	2,0%	8,1%	23,5%	65,8%

Table 5 shows the general mod opinions, which had more varied results than Skyrim related opinions. Almost 90% of the respondents strongly agreed that mods can make games better, and almost all of the rest agreed with 9% of the answers. 59% strongly agreed that mod support and availability increase the monetary value of games, and 27% agreed, and only 3% disagreed or strongly disagreed. Around 60% of the respondents generally preferred to play moddable games rather than unmoddable games, and about one in four (26%) had a neutral opinion. Lore-friendliness was an important aspect in mods for about 60% of the respondents. One in four gave a neutral answer, and about one in ten didn't think of lore-friendliness as important. ”I typically finish games at least once before installing mods for them” had the most varied answers, with 44 % of the sample agreeing or strongly agreeing, a quarter having a neutral stance, and about a third disagreeing or strongly disagreeing.

TABLE 5 General mod use opinions

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
I think that mods can make games better	0,0%	0,3%	1,1%	9,2%	89,4%
I think mod support and availability increase the value of games in monetary terms	1,4%	1,4%	11,5%	26,9%	58,8%
I generally prefer to play games that allow the use of mods over those that don't	4,2%	9,8%	26,1%	25,5%	34,5%
To me, lore-friendliness is an important characteristic in mods	2,2%	7,3%	25,2%	38,4%	26,9%
I typically finish games at least once before installing mods for them	10,4%	21,0%	24,4%	22,4%	21,8%

Almost all (97%) of the respondents used mod management utilities. More than half found the use of mods in Skyrim to be easy or very easy. About a third had a neutral opinion, and one in ten found modding Skyrim to be difficult. These results highlight the high technical skill level of the sample. Most of the respondents used so many modifications simultaneously that it would be almost impossible or very cumbersome to accomplish without the use of mod management utilities.

The reasons to use mods are shown in Figure 3. Most of the respondents used mods because of a very wide variety of reasons. The most popular reason was to improve existing content with 99,4% positive responses. Other very popular reasons were to fix bugs and problems, add content, make the game world more interesting, keep the game interesting for longer, and to improve the game's UI and graphics. Game mechanics changes, adding new game mechanics and increasing the challenge level were a bit less popular reasons, with about four fifths of the respondents including them. These affect the gameplay the most, and may be considered as more advanced types of modifications, which may explain their lesser popularity. These results closely reflect the most often used mod types by the respondents, respective for what the mods try to accomplish based on their descriptions. A custom option for different reasons was offered in the survey, and it yielded 34 results. 11 of them referred to adding sexual content, six to enhance role-playing elements and customization. Three respondents voiced their disappointment to the unmodded game, and said they used mods to remedy the problems. Most of the other answers were specifications to the preset responses, such as to improve realism, add new sounds and music, introduce certain types of followers, or to add themes from other games. The relatively low number of custom answers might indicate that the provided options were sufficiently exhaustive.

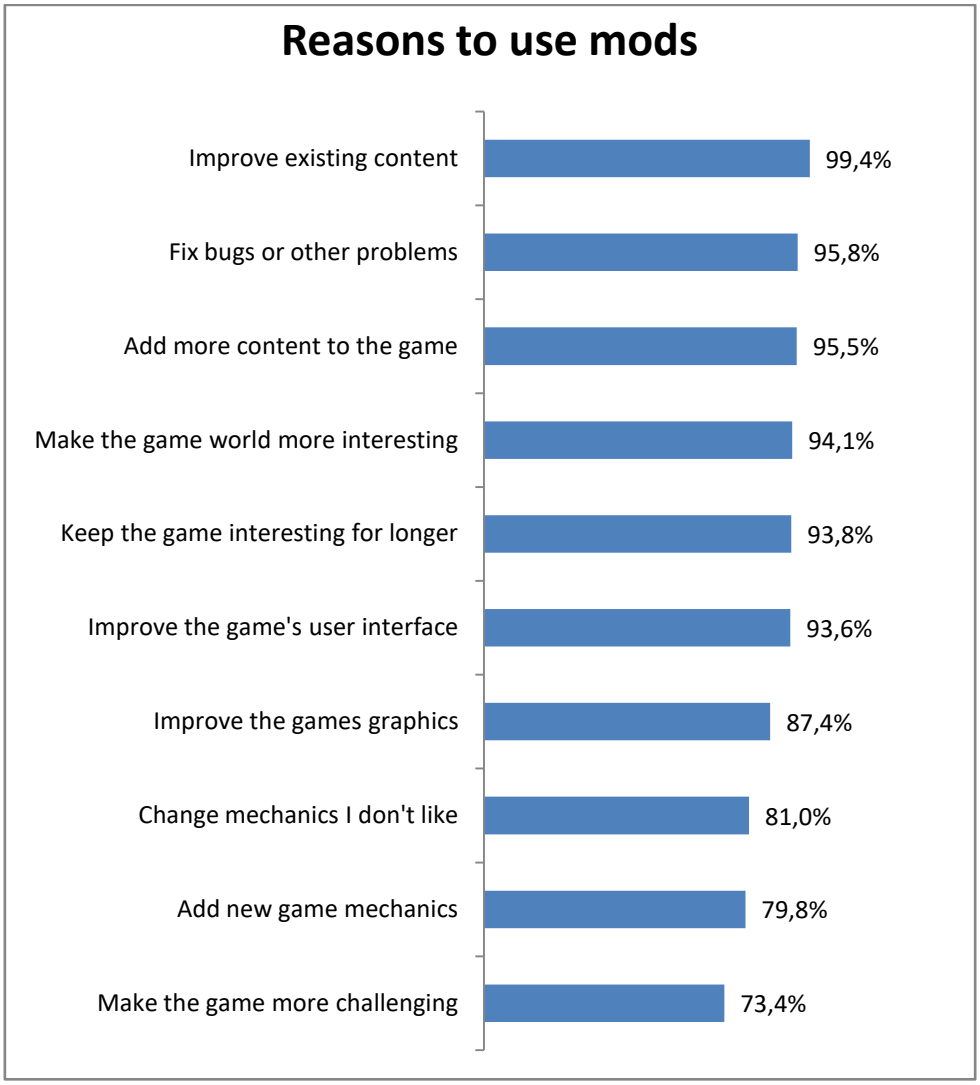

FIGURE 3 Reasons to use mods

6.2.1 Community participation

Table 6 shows the percentage of positive answers given by those who have made mods, those who haven't, and both groups. About a third (34,7%) of the respondents have made mods themselves. While the question didn't ask whether the respondent considers themselves as a modder or not, or whether they have published mods and in what quantity, it certainly distinguishes between those that are not modders. The community participation measures differed between those that had made mods and those that hadn't. While most respondents in both groups have thanked mod makers, searched information from community sources and have suggested a mod to another person, a larger portion of those that have made mods have provided feedback (71,8% vs. 41,2%, R = 0,291, p = 0,000) and actively participate in modding community discussion (47,6% vs. 22,7%, R = 0,255, p = 0,000) than those that haven't. The results indicate a high community orientation in the sample.

TABLE 6 Community participation measures (% of positive answers)

	Group that had made mods	Group that had not made mods	Both groups
Thanked, commented, rated or endorsed mods	95,2%	86,3%	89,4%
Provided feedback, suggestions, or bug reports	71,8%	41,2%	48,2%
Active participation in modding community discussion	47,6%	22,8%	68,6%
Seeks information about modding from wikis etc.	91,1%	84,6%	86,8%
Suggested a mod to another person	83,9%	74,3%	77,6%

6.2.2 Gamer profile

25% of the respondents considered themselves as casual gamers, and 75% as hardcore gamers, again reflecting the sample's enthusiastic orientation towards gaming.

One question inquired about the favorite aspect of playing Skyrim. This question was included to find out if distinctions could be made about respondents based on which player typology they belonged to. 8% answered ”Combat and challenging encounters”, 79% answered ”Exploration and discovering the world”, and 12% answered ”Gaining character power”. These results would seemingly indicate that the majority of the respondents belong to the ”explorer” typology, but the nature of the game and the wording of the question might hamper the question's ability to find out the real results. Because the answers were so uniform, meaningful comparison between the groups couldn't be made.

An additional question was included; ”Have mods been able to improve this aspect of Skyrim”, which received 98% positive answers. Only those who had answered ”exploration” previously, gave any negative answers, numbering three. A further three answers were missing. These results would indicate that modding can make the favored gameplay aspect in Skyrim better, regardless of what it is, indicating the versatility of mods.

Table 7 illustrates the categorized answers to the question ”What do you primarily seek from playing games?” The question included a description: ”for example relaxation, challenge, enjoying a good story, killing time, or other things”, which probably increased the amount of answers to those categories.

Despite the majority of the respondents describing themselves as hardcore gamers, most of the answers related to story, relaxation and enjoyment, rather than challenge or accomplishment.

TABLE 7 Reasons for playing games

Story	110
Relaxation	95
Challenge	76
Fun, enjoyment, entertainment	65
Escapism	60
Pastime	34
Immersion	27
Adventure, exploration, freedom	13
Accomplishment	10
Socializing	8
Other	43

6.3 Thematic analysis of open questions

Table 8 shows the questions that were asked along with their response rates. The rates were high, indicating the sample's willingness to share information and their knowledge of the topic. The lengths of the responses were generally a few sentences. Some answers were noticeably longer though, and they often provided information beyond what was asked.

TABLE 8 Response rates for open questions (valid answers)

Question	Answers	Percentage
What are the biggest problems of mods and modding?	277	76,5%
Would you be willing to pay for mods? Why, or why not?	275	76%
What do you primarily seek from playing videogames?	302	83,4%
Is there anything you would like to add about mods and modding that wasn't captured by this survey?	70	19,3%
Do you have any feedback for this survey?	67	18,5%

6.3.1 Problems of mods and modding

Table 9 shows the different categories of problems that were identified from the responses, and a summary of the issues that characterized each category. The most often mentioned problems related to drama and problems with the community, on par with conflicts and compatibility issues, followed by crashing and instability, expertise and time requirement, problems with modding software, lack of quality control, ownership issues, and game engine limitations.

TABLE 9 Perceived problems of mods and modding

Theme	Summary	Responses
Drama and problems with the community, mod users and mod authors	Complaints about the behavior of mod users and mod makers. Pettiness, entitlement, laziness.	71
Conflicts and compatibility issues	Many mods are incompatible with each other, resulting in conflicts and errors that need to be addressed	71
Crashing and instability	Skyrim often becomes unstable especially when multiple mods are installed, resulting in frequent crashing	45
Expertise and time requirement, difficulty for beginners	A lot of effort, time and experience is needed to mod Skyrim, fix problems, and manage installed mods. There is a high bar to begin using mods.	46
Problems with modding software and tools	Missing or lacking functions with tools used in modding, complaints about the Creation Kit	26
Lack of quality control	There is no quality control or standardization, leading to unpredictable behavior of mods, low quality mods and lack of descriptions about what mods do	21
Permissions, copyright and mod ownership	Uncertainties about the ownership of mods, legal issues and continuing work on abandoned mods	16
Game engine limitations	Limitations or difficulties imposed on modding by the Skyrim's game engine	14
Other	Performance impact of mods, visibility of mods, deciding which mods to use, modder compensation/motivation, lack of support towards modding from game developers, need for and difficulty of troubleshooting, lack of certain types of mods, overabundance of choice, too many adult mods, inconsistent style of mods	83 (less than 10 responses per topic)

Most of the answers were directly related to using mods in Skyrim, while a few answers related to mods in general. Some answers, particularly related to

modding software and tools, were related to problems that mod makers face rather than mod users.

The majority of the problems were technical in nature, having to do with the game not working correctly with mods installed. The largest problems among them were conflicts, incompatibilities, crashing and instability that require lots of experience and technological know-how to fix. Accordingly, technical expertise and time requirement was seen as a large problem. Perhaps surprisingly, community issues and drama were regarded as one of the largest problems. This may be partly explained by the high community participation rate of the sample.

The usual complaint against mod users was that they don't read enough documentation of mods before blaming their problems on the mods and complaining to their authors. Users were also often seen as entitled and too demanding of mod makers. The mod authors were sometimes seen as petty, for example taking feedback personally instead of constructively, or even deleting their mods from modding sites because of criticism. A few respondents implied that some mod authors have quit modding because of conflicts with the community. Other mentioned problems were hostility, unfriendliness towards beginners, elitism, egoism, abandoned or deleted mods, and personality conflicts. Around ten respondents simply answered ”drama”.

Many respondents thought that finding out which mods were compatible with other mods was a tedious task. Some thought it was challenging to choose the mods that are compatible with each other from many good options. While getting everything to work correctly was seen as a difficult task, conquering the problems were seen as rewarding:

> I think making sure all the mods play nice together. It can take some fiddling, but that's part of the charm, I think. Getting your whole mod order working together is satisfying.

Many respondents pointed out that as the number of simultaneously used mods increases, the difficulty of managing dependencies, resolving conflicts, detecting incompatibilities and installing patches also increases. Some noted that achieving a stable load order was their biggest problem. Mods in Skyrim must be loaded into the game in the correct order to work, and the user needs to know which things are affected by the mods they use to be able to achieve this. The task may be so daunting that it can lead to the abandonment of modding for a while:

> I have a hard time with load order, sifting through pages and pages checking for compatibility and the likes. Normally i give up and just play til something crashes. Then try with a fresh install a few months later.

Crashing and instability are deeply related to compatibility problems, since they are often caused by incompatibilities between mods. Many respondents thought that CTD's (crashing to desktop) during gameplay was the biggest

problem. Some noted that finding the causes of crashing and resolving them was difficult, especially if hundreds of mods were used. One respondent placed large blame for this on the lack of a proper crash log in the game. Getting the game to run stable was generally seen as time consuming and difficult. There are many ways to break the game if care is not taken, as evident by one response: ”easy to go overboard and mess things up completely and ctd”. However, a steadfast approach to modding can alleviate these problems to some degree:

> …in terms of just trying to install mods and playing with them; providing a good amount of mods that won't make the game crash or make my saves corrupted. It really just comes down to organizing and finding which mods and compatible with which.

A large problem in modding is the amount of knowledge and time it takes to succeed in it. The following response from a seemingly knowledgeable modder summarizes that modding Skyrim can be a very challenging task:

> It takes an absurd amount of time to set up even a moderately sized load order that is stable and runs properly. All but the most basic load orders require installation of external programs (which you need to learn how to use), patches and fixes to correct problems within the game and its engine and mods such as SKSE, which are pre-requisites for many popular mods. Besides that, compatibility patches are required to make certain mods work alongside one another, problems may arise from updating mods during a playthrough and Papyrus' limitations become an issue when using multiple script-heavy mods.

It was often mentioned that a great amount of patience is needed to mod, and a few respondents outright told that they had lost interest because of not getting it right. One respondent noted that a problem was using more time to mod than to actually play the game. A few respondents said that the ”proper” method of modding or good modding practices require learning the use of different pieces of software, reading a lot of instructions and information from various sources and generally spending a lot of time preparing and tweaking the game. Among all this requirement for effort, many respondents mentioned that modding is rewarding and has the potential to make everything better in a game, with one shortly concluding ”it's a difficult road to travel, but it's very rewarding”.

Because of these requirements, there was perceived to be a high bar to begin modding in the first place. Specifically, the problems were related to a steep learning curve and the likeliness to accidentally make the game unstable. Some respondents suggested introducing easy to install mod packs for beginners, but implementing them is hampered by the difficulty to get permissions from all mod authors for such packs. A respondent noted that there are resources for beginning mod users to utilize, and their proliferation might increase modding in general:

> As a total novice to modding before skyrim, it is very easy to make mistakes that can fully and permenantly ruin a gaming experience, UNLESS linked to the most comprehensive and up to date guides (like S.T.E.P or GOPHER from YouTube). As long as the barrier to entry is lowered by sufficient publication of this material, there should be a significant uptick in long term mod users.

A somewhat large problem was the lack of quality control and standardization in mods, which lead to problems like low quality or buggy mods and the lack of descriptions of what the mods actually change in the game. Among the mentioned specific problems that mods of sub-par quality can cause were poor scripting and save-game bloat, which make the game's performance worse and more prone to crashing in the long term. Other concerns were mods that have their own installers instead of being compatible with the commonly used mod managers, unclear installation procedures and missing lists of dependencies.

Some of the respondents mentioned legal obscurities about who actually owns the mods and copyrights for them, and thought there would need to be a legal standard set for the issue. A few had problems with closed permissions that prevent modifying existing mods. Some authors would be willing to continue the work of an author that stopped development, but it isn't often possible due to lack of permissions. The sentiment seemed to be that mods shouldn't have copyrights and should be modifiable by anyone.

Many respondents were unsatisfied with the Creation Kit, the software development kit released by Bethesda that is used for modding Skyrim. Some said it was dated and learning to use it was difficult because of the lack of adequate documentation. Other complaints in the topic of software problems included the lack of professional modding tools, lack of standardization and official documentation for modding tools, buggy tools, and the lack of an easy patching system. A lot of respondents mentioned game engine limitations as a problem, of which they specified plugin limit, memory limit, the engine's old age and mod information that is written in save game files.

A few respondents were overwhelmed by the abundance of choice. For them, it was difficult to choose which mods to use, or when to stop adding news mods and to stay within moderation. For others, the problem was to find good mods among the vast amounts available, feeling that it is easy to miss them when searching through the mod sites. One respondent felt that great mods can fail because they don't get the publicity they deserve.

The lack of support towards modding from game developers, whether through restricting modding altogether, or by not providing adequate tools or information for modding, was mentioned by several respondents. One respondent worried whether developers could become too reliant on community made mods and that their games could be released in a less polished state.

Some noted that mods impact the game's performance adversely. Several mentioned that modder's not receiving compensation is a problem, and that it could be difficult to motivate mod authors to stay active. A few also mentioned that mod authors aren't appreciated enough, and their work is taken for

granted. Some less often mentioned problems were the overabundance of adult mods, mods that were claimed to be lore-friendly but weren't perceived as such, a lack of high quality quest and humor mods, and the difficulty of learning how to mod due to a lack of comprehensive guides for beginners. Three respondents saw no problems at all with mods and modding.

The expertise of the respondents was evident in many answers, as they described technical problems at a deep level. It was often noted that almost all of the technical problems become more prevalent with increasing amounts of installed mods. Even though Skyrim is regarded as modder-friendly and may be the most modded game of all time, there still exists numerous problems and starting to use mods seems to be a very unwelcoming task to beginners.

6.3.2 Willingness to pay for mods

More than two thirds (69,5%) of the respondents answered that they would not be willing to pay for mods. Table 10 describes the common themes found from the answers and summary descriptions of the themes. The most notable reasons for unwillingess to pay for mods related to the lack of, or better uses for money, a notion that donations are a better alternative, doubts about adequate quality and compatibility, a feeling that charging for mods goes against the very nature of mods, fears that introducing money to modding could result in unethical practices, and that the large amount of mods commonly used by gamers would become impractical if mods would cost anything.

TABLE 10 Willingness to pay for mods - negative answer

Theme	Summary	Responses
Money	Lack of money, better uses to spend it on, or the content is not perceived to be worth the money	36
Negative attitude towards paying, but positive towards donating	Respondents would not be willing to pay for mods, but would be willing to voluntarily donate money to mod authors under the right circumstances	31
Lack of quality standards	For a commercial product, there should be strict quality standards. Most mods don't meet these requirements and enforcing them would be difficult.	25
Open source and pro-sharing ethos	Mods have always been free, charging for them would go against the spirit of modding that encourages sharing, group efforts and community building	23
Mods should not be made for money	Mods are passion projects and should be made because of other reasons than profit	21
Compatibility difficulties	Many mods in Skyrim are dependent on other mods, which makes paid mods difficult to implement, and possibly limits their potential	14

Ethics and bad impact on game quality	Worries about unethical behavior both from mod makers and game developers, unfair profits, legal uncertainties and a fear that paid mods would affect the quality of games adversely.	13
Impracticability with a large amount of mods	A lot of modders use so many mods that if they would cost anything, it would become impractical and unaffordable.	10
Others	Possible frauds, mod piracy and theft, previous attempt at paid mods failed so the prospects are bad, a view that money generally makes things worse, dislike for microtransactions	64 (less than 10 responses per category)

The largest issue with paid mods expectedly related to money itself. Many respondents thought their financial situation wasn't good enough to pay for mods. Others saw better alternative uses for their money, such as new games or general life expenses. One respondent noted that it would be impossible to find a price point for mods that would be appropriate for modders' efforts and still be affordable for heavy mod users. Some thought that mods weren't simply worth paying for. They either thought mods don't change or add enough things in the game, or they didn't consider their mod use important enough to pay for them.

While most of the respondents in the survey weren't willing to pay for mods, a significant amount pointed out that they would be willing to donate for mods if certain conditions were met. The reasons for supporting donations were that most of the money goes directly to the mod maker, it's completely based on voluntariness and is therefore suitable to the open nature of mods, and it would support modders financially and encourage them to continue their work, potentially improving the quality of mods.

Many respondents noted that there are often large quality problems with mods since there is no rigid quality control mechanism. Mods may not work as intended, support from the author may be limited or nonexistent, conflicts with other mods may arise, badly made mods can cause instabilities, and the overall quality of mods may be unsatisfying. To overcome these problems, many fundamental changes to how mods are made, controlled, and distributed would have to be made, which was generally not seen as plausible. The lack of quality control in mods is seen as a smaller issue when they are free, as is the status quo:

> Even if a mod is great I would never consider paying for it simply because I do not have the assurance that what I am getting is ready, will ever be ready, or will be updated. The reason I am able to keep modding is because if I find one mod does not work, I can usually test others and see which ones are safe to use. If I had to pay for all this, I would never mod my game.

A multitude of respondents viewed modding as a kind of passion project or a hobby which should not be made for money. It was feared that if mod authors made mods in hopes of profit rather than genuine passion for it, their creativity

would be hurt, and the community would be changed for the worse. One respondent concisely put the common sentiment in one sentence ”Mods are driven by love for the game, not love for the ca$h”. The strong open-source ethos evident in the modding scene was reflected in the responses:

> Personal belief that creating mods should be a hobby that you are passionate about, to share mods and have fun is why i'm creating and using mods, I am also for 'open source', I think that is the best part of these communities, when several people come together and work on ideas, this is not possible when money is involved.

In conclusion, the respondents had many well founded arguments against paying for mods. Some of them stemmed from previous bad experiences, others related to lack of money. Ideological and ethical reasons were also elaborated. There exists numerous unresolved technical issues and peculiarities of mods that make monetizing attempts difficult, and the respondents were aware of these things. Many doubted that the issues could be circumvented.

Table 11 describes the common themes found in the answers of respondents who were willing to pay for mods, who constituted 30,5% of the sample. We can see that paid mods are seen as a good way to compensate mod makers, but they need to be of high quality and extensive in content while still being cheap to purchase. The themes were fewer in number than in negative responses, and less distinct overall.

TABLE 11 Willingness to pay for mods - positive answer

Theme	Summary	Responses
Good way to compensate mod makers	Money is a good way to support mod makers and reward them for their work, they deserve to be compensated and money is a good incentive	28
If the mod is cheap and of high quality	The mods should only cost a small amount, quality standards must be guaranteed	26
If the mod is very large in size and of high quality	The mod must be large, similar to a DLC, an expansion pack or a total conversion, and it must be of high quality	17
Others	Problems exist that would first need to be solved, paid mods could lead to better content, some mods deserve to be paid, willingness to pay through donations	26 (less than 10 answers per category)

Many thought that modders deserve to get paid for their work and that paid mods would cater to that, but there seemed to be too many problems to make it work. For example, piracy, incompatibilities and unapproved asset sharing were brought up. A lot of customer support policies would also need to be implemented. A respondent sums up many of these concerns:

> Modders put a lot of hard work in, and it's fair that they get compensated. HOWEVER, there needs to be a well thought-out framework first to handle issues of asset sharing, compatibility, updates to the base game, etc. It's not reasonable to expect payment without those basic consumer protections in place.

A large amount of the respondents conveyed that they would only be willing to pay for mods if they were large in size and of high quality. There seemed to be a particular demand for total conversion types of mods, probably due to Skyrim currently having only one finished total conversion available. Some respondents wanted paid mods to be akin to DLC's, and expected similar high standards from them. As large mods require lots of resources to make, it was often noted that paid mods could makes these kinds of mods possible. Taking into account the previous free status of mods, it's not surprising that expectations for paid mods are high, as quoted by a respondent: ”If I were convinced to pay for something that has been available and free for years, it would probably be something that is truly epic”. Accordingly, most currently available mods are not seen as candidates for being paid mods:

> I would, but only for very high quality mods, it would need to hold a much higher standard than most mods do, it'd have to blend nicely into the vanilla game without feeling out of place. I would not pay any amount of money for the vast majority of mods currently released.

The price of paid mods was often brought up, and many required it to be reasonable or even ”cheap”, ranging from a few cents to a few dollars per mod. Some said they were very reluctant to pay for mods in a forced manner, though they were willing to pay for them voluntarily. For example, donations and Patreon were mentioned as good ways to financially support mod authors.

In conclusion, the caveat for paying for mods was almost always that the mod must be cheap enough, be of very high quality, and have a large amount of content. It was also often noted that most of the money should go directly to the mod authors instead of the game's or the mod's distributors, which was not the case in the previous paid mods attempt. When all these requirements are considered, along with the relatively low amount of respondents who were willing to pay for mods, a successful implementation of paid mods in the future seems like a difficult undertaking.

6.3.3 Other insights

The open-ended question ”Is there anything you would like to add about mods that wasn't captured by this survey?” was included to gather any interesting thoughts about modding that the respondents might have had. Three categories of common answers were identified:

- The power and potential of mods
- Modding as a fun activity itself, kind of like a game
- Gratitude towards modders and the community

Some viewed mods as an essential part of games, and it was claimed that many games would have quickly lost their player base without them. A few respondents said outright that they wouldn't be interested in playing Skyrim without the existence of mods. The general opinion was that mods make games last interesting for longer while also making them better: ”Mods extend a game's life by a significant degree. Mods can't make a horrible game great, but they can make a good game phenomenal.” A common notion was that mods can make games ”complete” for each individual, in a creative way that is usually not possible otherwise:

> Just the sheer number of possibilities allows for each person to create their own game. Mods allow you to make the game you want. This is something that is irreplaceable. No matter how good the game you can never replicate the customization mods do.

Several respondents saw modding as a fun, game-like activity in itself, and some pondered if they had spent more time modding the game than playing it. A respondent colorfully describes the difficulties and the resulting satisfaction of getting it to work: ”Modding can be addictive. It is like BDSM: it hurts but it feels so good.” One respondent, like many others, took joy from the novelty and variety of mods:

> I think one of my favorite things about modding is just looking for new mods and getting it all to work correctly. It's exciting browsing for new mods, I feel like a kid at the candy shop, haha.

Some respondents voiced their thanks, respect and appreciation towards mod authors, adding that their work is underrated and underappreciated. The Skyrim modding community was also lauded, but it was also noted that the community and modders should be more open to criticism. Other interesting thoughts included the wish for modding to remain as ”liberal” as possible by allowing for 3rd part resources to be used, a hope that game developers would focus on creating resources for the modding community instead of charging for mods, and opinions that modding should remain free and the best way to support mod authors is through donations.

7 DISCUSSION

In this chapter, the results and their relation to the research questions are discussed and compared with previous research and theories. An illustrative model about mod use and its contexts is presented. The research questions were: RQ1: What are the motivations of mod users? RQ2: What factors increase and what factors decrease the use of mods? Other objectives were to find out the mod using habits, various experiences and opinions related to mod use, and the willingness to pay for mods.

7.1 Answers to RQ1: mod use motivations

An apparent prerequisite for using mods is to have a great interest towards the game in question, which creates the basis for motivation to use mods. In the surveyed sample, this prerequisite was inherently fulfilled. In fact, the answers to the reasons to use mods were so overwhelmingly positive that it was difficult to interpret which reasons were more important than others.

The simple answer to RQ1 ”What are the motivations of mod users?” is: to make games better. Strong support was found for all the motivations that were related to improving various aspects of the game. The ability to customize a game has a clear link to increasing enjoyment, which is the primary reason to play games. Mod users were willing to use any, or all means available to change aspects they didn't like, and improve the aspects they did like.

Mods were primarily used to improve existing content of the game with virtually all respondents including it as a reason to use mods, which is appropriate when taking into consideration the basic premise of what a modification is supposed to do. Given the possibilities of modifying Skyrim, it's not surprising that so many reasons were so popular. Improving the usability of the game was among the most popular motivations to use mods. Improving the user interface, fixing bugs and other problems are ways to make the game more enjoyable by improving the player's control and eliminating things that impair

the flow of gameplay. Mods were commonly used to improve the graphics and visuals of the game, which in turn can improve the player's feeling of being immersed in the game world. It was common to change unwanted game mechanics and to add new game mechanics, which signifies the potential of mods; they can make games better by removing elements that make the game worse, by improving elements that were already good, and by introducing completely new elements to the game. Many used mods to increase the challenge of the game. While games often have customization options for this, mods can adjust the challenge level more comprehensively and in more ”fair” ways. The motivation to modify different parts of games may originate from problems that the mod user has identified in them. This observation was evident especially in some answers to the open questions, where different parts of unmodified Skyrim were criticized.

Mods can provide a means to deeply customize games to one's preferences. Skilled mod users know that they can make the game more enjoyable by tinkering with specific parts of the game. They also know what they like, and their knowledge and skill with mods allows them to find and choose the specific mods that will make the game unique and personalized just for their own preferences. The possibility to customize specific mods further in-game makes the possibilities even more immense.

In many ways, mod users can be compared to mod makers. In order to deeply and effectively modify a game, even if using premade mods, the mod user must become a kind of developer themselves. They have to make decisions regarding many aspects of the game, all the while keeping in mind the balance of the game play, and technical aspects such as compatibility and available computational resources.

Modifying a game can be seen as meta-gaming. Many enjoyed the process of finding, installing and trying different mods. The results from the open questions supported this notion as well. There is a balance between the used effort and time to mod and the resulting improvement in the enjoyability of the game. Getting good results may encourage a mod user to spend more effort in modifying the game, resulting in a positive feedback loop. Conversely, if a player spends a lot of time using mods and doesn't find the result satisfactory compared to the effort used, they may lose all motivation to use mods. It could be possible that players who belong to different typologies have different inclinations towards using mods. Interestingly, most respondents of present study chose ”exploration” as their favorite part of Skyrim. The ”explorer” player type is characterized by being interested to the game world, its rules and mechanics, and generally to all the information related to the game. It could be a coincidence, or it could have more to do with the nature of the game than with player typologies, though.

Strong evidence was found that the extensive mod use of the sample had a large, positive impact on gameplay. This also helps in explaining the motivation behind using mods, as mod users can feel tangible, positive results from their use. Respondents were generally very satisfied with the amount and quality of

mods available for Skyrim, which may positively influence the reasons to use mods in the research context. This observation underlines the fact that Skyrim may be an extreme example, and the mod use motivations could be more limited with games that don't allow so much customization.

Acceptance of mod use

The survey was not developed with any technology adoption model in mind, but reflecting the results towards one may be useful. The unified theory of acceptance and use of technology 2 (UTAUT2) by Venkatesh, Thong & Xu (2012) suits this purpose, as it is designed for consumer contexts. UTAUT2 has seven core constructs that that influence the behavioral intention to use a technology and/or actual use of the technology. The constructs are performance expectancy, effort expectancy, social influence, facilitating conditions, hedonic motivation, price value and habit. Additionally, three individual difference variables which are age, gender and experience, moderate some relationships between the constructs.

Performance expectancy is defined as ”the degree to which using a technology will provide benefits to consumers in performing certain activities” (Venkatesh et al. 2012, 159.). In the context of mods, this could mean the degree of how much more enjoyable mods can make a game. It could be assumed that individual differences related to knowledge of mods and the game in question will moderate performance expectancy to a large degree. Effort expectancy is defined as ”the degree of ease associated with consumers' use of technology” (Venkatesh et al. 2012, 159.). Most of it forms from the game's design and its suitability for modding. It is an especially important factor with games that were not meant for modding, and which involve the use of unofficial tools and configuration. Hedonic motivation is probably one of the key predictors of motivation to use mods, as enjoyment is the primary motivator to play games. The whole purpose to use mods is arguably to heighten the amount of enjoyment from playing games. Facilitating conditions in the mod context comprise of the resources available for modification, such as tools, guides, mod management utilities, and the users knowledge of the availability of resources and ability in accessing and using them. Social influence could be an important factor in the case of multiplayer games, but not so much with single-player games. Playing games is not often done in social situations that have strict expectations from individuals, and for many it is a way to escape from social pressures. Thus, social influence may be a relatively insignificant factor of mod use acceptance. Price value is very important, since according to results from present study, most people wouldn't even consider using mods if they had to pay for them. Those who would consider paying have high requirements for content quality, which also highlights the importance of price value. There is evidence that individuals who use mods for one game, often use them for other games too. More than half of the survey respondents preferred to play games that allow modification, an inclination that facilitates the continuation of mod use habit. This might indicate that habit plays a large part in the acceptance of mods.

Experience in the context of mods could be an important moderator for some constructs. As it will confer general knowledge and skills required for using mods, it could increase performance and effort expectancy. Especially in situations where the facilitating conditions are bad, experience will likely lessen the negative effect of facilitating conditions towards behavioral intention to use mods. Gender may be a major predictor of mod use acceptance, since the majority of mod users in general seem to be male. Though, in present study, age and gender had no meaningful significant relationships with other variables. Considering the sample's enthusiasm towards mods, this may indicate that as experience with mods increases, differences between genders become narrower. Young age most likely affects the acceptance of mods positively, but it is unknown through which constructs the effect happens. They may not need as good facilitating conditions as older users, since they may be more likely to spend more time when facing problems in such a menial activity as playing games. Hardcore gamers as well as mod users seem to be mostly young adults.

The evaluation of acceptance of mods is somewhat complicated since the technology to be used is still mostly the original game, and modifications are only a part of it. It would be difficult to completely separate the mod and what factors influence their use from the game and the factors that influence the acceptance towards playing a game.

7.2 Answers to RQ2: factors that affect mod use

The largest factor that limits mod use seems to be the high amount of effort, knowledge and interest required to make the modified game work properly. These requirements are mainly caused by the technical problems that mods often bring about. Even though most of the respondents found modding Skyrim to be easy, many pointed out the difficulty and high amount of effort needed to mod Skyrim as a problem. The seeming contradiction may be almost entirely explained by the high level of mod use experience of the respondents, as they probably distanced their own expertise when evaluating the problems. What is easy for a skilled enthusiast, might be very difficult for the average gamer. As using mods requires knowledge and technological expertise, it is more likely to attract those that are more tech-savvy, and conversely might scare away players that would be interested in using mods, but who lack the skills needed for it. If the effort required could be lowered, perhaps many more players would use mods.

While problems with the community may cause individuals to leave them, it is doubtful that anyone would stop using mods altogether because of that. If a prolific mod maker starts to detest modding due to problems with the community, it may affect the amount of mods made and thus lower the amount of mods created and used. Motivating the mod authors was seen as a somewhat large problem, given their lack of compensation.

The identified problems are probably not universal to all games because of differing levels of support available from community resources, the developers, and different design choices, but there are bound to be many similarities between Skyrim and other games.

Knowledge about mods seems to spread mostly through word of mouth and gamers' own interest to modding, wherever it may have sparked. In most cases, people will have to search for mods from unofficial sources on the internet. As it is not a commercial phenomenon, at least not yet, there is very little marketing or other endorsement done for mods. Gaming media does report about popular mods and mod related news though, since modding has grown to become a notable part of gaming culture. Most games don't readily support the use of mods. In the case of high budget ”AAA” games, mods are actually quite rare.

Price is a significant factor in mod use. Since mods are free, the factor seems almost invisible, but mod use would immediately plummet if they weren't. Especially among heavy users who use hundreds of mods simultaneously, mod use at the present scale would simply be unaffordable. These same users are probably very influential in the spreading of mods. If their use would be severely limited, it would also mean that the spreading of mods to new users would be severely hampered. When there would be less mod use in general, mod makers could also lose interest to create mods, which could result in a negative downward spiral. Ultimately, it could lead to the destruction of modding communities.

Interestingly, users commonly wished that mod makers would be compensated more because they feel it would be fair, but they generally weren't willing to pay for mods. It is difficult to devise sources of compensation outside of users, so this will probably remain a problem for a long time to come. The implementation of paid mods would likely resemble microtransactions, and gamers are often hesitant to adopt them. Because of this and the general hostility of the modding community towards closed systems, it is difficult to see widespread implementations and adoption of paid mods in the near future. Also, it seems that the hardcore gamer demographic is often opposed to DLC's and microtransactions, the same group that could be the most interested in using mods.

Modding communities as decentralized diffusion systems

In order to better understand which factors affect mod use, it is useful to identify how mods and their use spread. According to Rogers (2003, 5.), ”*Diffusion* is the process in which an innovation is communicated through certain channels over time among the members of a social system”. Game mods can be regarded as innovations, and modding scenes built around specific games can be seen as mostly decentralized diffusion systems (Rogers, 2003, 394-396.) where the centralized aspects of the system manifest as the attributes of the game design dictated by the game's developer, and possible legal restrictions. In some cases, an established and popular modding site could become akin to a centralized system, but they rarely work in a ”top-down” way

that a centralized diffusion system would work. Instead, they tend to emphasize the power of the individual and peer communication. Table 12 compares the diffusion mechanisms of mods identified in this thesis to typical characteristics of decentralized diffusion systems according to Rogers (2003, 396.).

TABLE 12 Modding communities as decentralized diffusion systems (Adapted from Rogers, 2003, 396.)

Characteristics of diffusion systems	Decentralized diffusion systems	Modding communities
Degree of centralization in decision making and power	Wide sharing of power and control among the members of the diffusion system; client control by local systems; much diffusion is spontaneus and unplanned	Player interactions form multiple communities, which often wield some power. However the possibility for innovation can be severely limited by game companies' choices, though game companies don't dictate which mods diffuse
Direction of diffusion	Peer diffusion of innovations through horizontal networks	Mod related information is communicated through online communities, forums, message boards, social multimedia platforms, through word of mouth, and to a lesser extent, online news media
Sources of innovations	Innovations come from experimentation by nonexperts, who often are users	Individuals who make mods are generally players and fans of the game that experiment with the game's inner workings, and introduce new elements that are important to them
Who decides which innovations to diffuse?	Local units decide which innovations should diffuse on the basis of their informal evaluations of the innovations	Free sharing, rating & popularity systems in online mod communities enable subjective evaluation and collective decision making about which modifications are worthy of diffusion
Importance of clients' needs in driving the diffusion process	A problem-centered approach; technology and pull, created locally perceived needs and problems	Players find unwanted or lackluster features in games, detect room for improvement in various game attributes (e.g. user interface, challenge level, visuals), demand technological advances and successful game mechanics seen in other games
Amount of re-invention	A high degree of local adaptations as they diffuse among adopters	Users mix and match combinations from a large pool of modifications, and further customize specific modifications with built-in or tailored tools

Innovations diffused by decentralized systems are more likely to fit the needs of the users, and they participate in making important decisions regarding which

of their needs deserve the most attention, and which innovations best fulfill these needs (Rogers, 2003, 398.). This is apparent in mod scenes, where low quality mods get naturally discarded because of rating systems. This keeps mods that are likely to suit most users at the forefront. Mod sites often draw attention to specific new mods, but they too are based on popularity among the community. Rogers (2003, 399.) suggests that decentralized diffusion systems are the most effective in conditions where a high level of techical expertise isn't required and the needs and conditions of users are homogenous. However, in the case of mods, technical expertise is required and gamers often have heterogenic needs.

Relative advantage is one of the strongest predictors of the rate of adoption of an innovations, and it is defined as "a ratio of the expected benefits and the costs of adoption of an innovation". Its subdimensions include among others economic profitability, low initial cost, saving of time and effort, and immediacy of reward. (Rogers 2003, 233.) The obvious benefit of mods as an innovation is their freeness. However, rather than saving time and effort, the use of modifications requires an investment of them. The immediacy of reward, especially if problems are encountered in any part of the use process, can also be very low with mods. Mods could be compared to downloadable contents or expansion packs released by game developers at a price. They have similar contents and fulfill similar needs, but work in a more centralized diffusion system. Both have enjoyed at least moderate success, but it would be interesting to establish which kind of system would be more efficient in diffusing mods.

When reflecting upon the diffusion of innovations theory, it becomes apparent that there are many inherent properties of mods that actually hamper their diffusion. Despite being free, their positive impact on game enjoyment might not be enough compared to the amount of effort needed. Also, the decentralized nature of the diffusion system in mods means that there is very little commercial push towards consumers to use mods, for example by means of advertising or funding of technologies. These observations could partly explain why mods still remain unused by most gamers, and are regarded as a somewhat niche form of enthusiast gaming. User self-reliance is encouraged in decentralized diffusion systems (Rogers, 2003, 398.), and without it, mod use would be very difficult, as is apparent from the survey results.

Example of an intensive mod use case with contexts

Figure 4 illustrates a hypothetical intensive mod use case along with its enablers and results. It brings together many observations from the literature review and the empirical study. The figure describes the factors that affect mod users' inclination and capability to use mods, the game and the factors that affect the availability of mods and possibilities to modify the game, the mod authors and their capabilities to develop and publish mods, the mods that are used, and the resulting modified game along with its potential positive changes to the game experience. Skyrim, its modding community, enthusiastic mod users, and its mods closely represent the hypothetical example depicted in the figure.

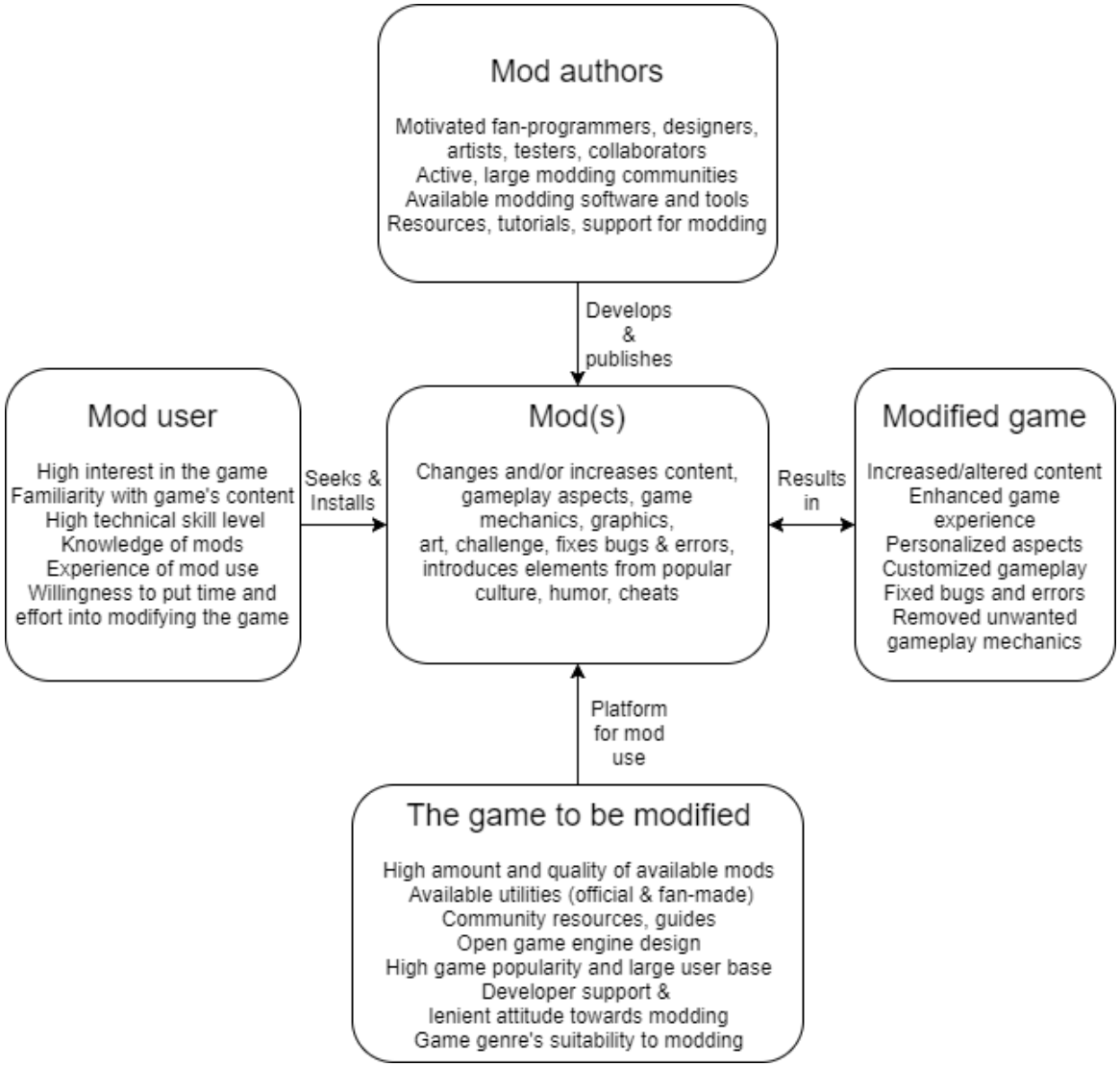

FIGURE 4 Intensive mod use case with enablers and result

The game to be modified forms the basis around which the whole modding environment can form. The most suitable games for modding are ones that were deliberately designed with support towards modding in mind. Open game engine designs and modularity also help a great deal. A large player base is generally required in the formation of a large modding scene, as creators of mods are resourceful players who wish for something more or different. Open-world RPGs and FPS games seem to be the most suitable genres for modding, at least based on their often sizeable and thriving modding communities. The platform that the game is played on significantly affects the possibilities of modding. As of now, PC is the optimal platform for modding and mod use.

Mod authors consist of individuals who have a deep interest in the game and its mechanics, and who possess certain technological skills. These skills include programming, 3d-modeling, play testing, collaboration, and generally any skills that are needed in game development. Mod authors are often part of

one or more modding communities, where collaboration is done, ideas are shared and feedback is provided. Some of them also create software and tools that make modding possible, as well as provide resources such as guides and tutorials to aid how modding is done. These pioneers are required in the formation of thriving mod scenes.

For a mod user to be able to maximize the potential of mods, they need to have a high interest in the game. Ideally, they will have already experienced most of the content that the game has to offer, so that they have been able to form an understanding of which parts of the game could be improved with mods. Previous experience of mod use with other games is also beneficial, since modding often involves common mechanisms related to finding mods, installing them and tinkering with them. Some level of technical skills are needed for mod use, and the larger the amount and the impact of mods to be used, the more knowledgeable the user must be of game specific designs and general software use. Perhaps most importantly, the user must be ready to use a fair amount of time and should be resilient when facing problems, which are almost guaranteed to be encountered. Generally, experienced hardcore players would be good candidates to become intensive mod users.

The quantity, quality and impact of mods published by mod authors dictate the possibilities for users to modify the game. Optimally, there are numerous modifications available for various purposes, such as improving the user interface, usability, graphics, or even game mechanics. For games that are burdened with numerous bugs and errors, there often exists community patches to fix these issues. Additionally, mods may introduce content from popular culture, as well as cheats and humorous elements. The modified game will be noticeably improved compared to the original game, if the prerequisites described earlier have been met. If the mod user is skillful, the game experience can be tailor-made for just their desires. As games have to be designed to satisfy the needs of large audiences, certain compromises have to be made. This will undoubtedly result in design choices that may not appeal to all users, and mods can in many cases help correcting them on a user-by-user basis.

It can be argued that for a game to establish a wide modding culture, many previously mentioned interlinked parts are required to be present. The baseline is the popularity of the game and its suitability for modding. This attracts many players, some of who notice problems or opportunities for improving the game, and they start making modifications for it. This leads to the creation of modding communities, which produce mods and resources about how to make and use them. Then, a large mod user base can form. In many cases, the available mods and their potential positive impact on a game can attract new players to the game.

7.3 Comparison with previous research

The lack of primary data in regards of mod user motivations makes the results of present study difficult to compare to. Qualitative findings however were similar. Nardi & Kallinikos (2010) viewed that using mods is a creative means to customize games to fit a player's personality, interests and play style, a view that present study confirms. Sotamaa (2010) concluded that there is no such thing as an average mod maker, meaning their motivations and practices are very heterogenic. In contrast to this finding, mod users seem to be much more similar with each other. Of course, using mods compared to making them is a much simpler task, so the variance cannot be as large. Respondents of present survey often preferred to play games that can be modded rather than games that cannot, and enjoyed modified games more. These observations both coincide with Poor's (2014) results.

The strong open-source and pro-sharing ethos identified in previous studies (Kow & Nardi, 2010; Scacchi, 2011) was evident in present study. Any attempts of power wielding entities to reduce the openness of modding was generally viewed very negatively. The negative opinions towards monetizing mods also reflected this.

While only 14,6% of the respondents of present study were female, this number is much larger than the percentages of females in Poor's (2014) study at 4,5% and Sotamaa's (2010) with no females out of 29 interviewees. The proportion of females in present study is much more in line with the samples in Targett's et al. (2012) surveys, with 8,57% in 2007 and 14,04% in 2011. The differences may be due to Targett et al. also focusing on mod users, whereas Poor and Sotamaa focused on mod makers. In addition, the game genres were different in each study, each with presumably different player bases.

The general computer proficiency level of mod users in present study was high, and similar to those from the study of Targett et al. (2012), where a bit over half considered themselves as experts and almost all of the rest as intermediate. Targett et al. (2012) similarly distinguished between those who had made mods, and the results are very similar, with mod makers having significantly higher computer proficiency levels than mod users. These findings confirm that mod users and especially mod makers are highly proficient technically.

The results of the community participation measures of those respondents who had made mods were high and very similar to those of Poor's (2014) study. However, the results in both cases may be subject to pro-community response bias. The helpfulness of modding community members was noted by Sotamaa (2010) and Targett et al. (2012). Present study respondents were also helpful towards others, and often participated indirectly in mod development by providing feedback and suggestions.

While the literature has identified many occurrences of clashes between modding communities and game developers, conflicts inside modding

communities themselves haven't seem to been previously studied. The many community problems identified in present study constitutes a stark contrast with their helpful and friendly atmospheres identified in the literature. But, because the communities are large and varied, problems are bound to occur. Ultimately, positive views on the Skyrim modding community outweighed the negative ones.

There are some differences between other kinds of user generated content and mods. Using mods can be very difficult, contrary to Shao's (2009) notion that user generated media are easy and convenient to use. With other user generated media such as video, music or blogs, the consumption is often only one or few clicks away. But with mods, multiple steps are required, and along any of the steps multiple problems may occur. Among the largest complaints of mod use was the requirement of setting them up to a working condition, which may take hours upon hours. Also, mods are commonly used intensively for long periods of time, contrary to many other types of user generated content which are used for quick consumption.

Many similarities also exist. User generated content in general is most often used for entertainment (Shao, 2009), much like game modifications. Users have a lot of control over what kind of contents they use and how they use them. In mods, this is reflected by the many open systems involved in seeking and installing modifications with many options for customization. UGM platforms allow for the customization of the interface which gives users the ability to express their tastes, interests and values (Shao, 2009). An interesting comparison can be made here, as the modified game actually is the platform where user generated contents are used, and it allows for customization according to the users tastes that reaches far beyond the interface. The creation of mods, like user generated content in general, is most often intrinsically motivated (Stoeckl, Rohrmeier & Hess, 2007; Daugherty, Eastin & Bright, 2008; Shao, 2009).

7.4 Evaluation of validity and generalizability

The trustworthiness of research is directly related to the validity of the measures used. Reliability refers to the degree of difference in results when the same measurements are used in different time frames in the same context. If reliability is high, the differences will be minimal in re-test situations. Internal validity refers to how well a measure actually measures what it is supposed to measure. If internal validity is low, a measure might measure a concept that is indirectly related to the intended concept, rather than measuring the intended concept. Content validity evaluates how well a measurement conforms to theory, is operationalized, and captures the concept related to the studied phenomenon broadly enough. (Metsämuuronen, 2006, 115-116.) In addition to mathematical tests and proofs of validity, argumentation is also important in increasing validity (Metsämuuronen, 2006, 122.).

A measure's primary function is to observe a phenomenon as objectively as possible. In order to maximize validity, measures that have been used and validated in previous research should be used. If they are not available, the measures must be created. Creating a good measure is a long process, and should involve consulting other people, constantly revising the measure, pilot testing it, and correcting any issues that might arise. (Metsämuuronen, 2006, 57-58.) Most of the measures used in present study had to be created from scratch, which reduces their validity. However, the measures were meticulously designed, and the previously mentioned guidelines were followed.

For example, the construct related to motivation to use mods are not complete, because there probably exists other motivations that weren't touched in present study, and thus they lack content validity. Most of the measures are also not based on any previous theory, which further decreases their concept validity. Some of the questions asked approximate instead of exact information, which reduces reliability.

Unfortunately many measures on the survey had not been used previously, and there were not enough resources to rigorously validate them. Most of them mainly relied on face validity, where the validity relies on personal judgment of the measure's validity (Singleton & Straits, 2009, 138.). Thus, a large part of the measures rely on my first-hand knowledge of mods, their use, and related concepts. For some constructs, such as computer proficiency level, measures that have been validated in previous research were used. In order to keep the survey's size manageable and still gather information on many aspects of mod use, multiple items for the same scales were not used, which reduced the validity of the findings. The survey was pilot tested, which increases its validity. The target demographic also potentially increases validity, since they probably mostly understood the questions correctly, given their knowledge on the subject. Overall, the validity of the quantitative parts of the research is quite low, but deemed adequate because of the exploratory and descriptive nature of the study.

External validity refers to the degree of how generalizable the results of the research are, and to which particular groups. Important factors that affect external validity are related to the research design, where any threats to validity should be minimized, and a sample that likewise aims to minimize threats to validity should be chosen. A small sample usually results in low generalizability. (Metsämuuronen, 2006, 55-57.)

The sample's evident enthusiasm towards games and mod use constitutes a severe obstacle to generalizing the results into wider demographics. Another impediment was focusing only on players of one game from one genre. Because of these reasons, the findings will only be generalizable to other similar enthusiastic gaming demographics. The comparatively large sample size increases generalizability to similar populations. A notable potential source of non-response bias to the results may come from the way of gathering the information. The research design left outside those mod users who do not seek information from community sources.

8 CONCLUSION

This thesis inspected various aspects of user generated content in games. The primary objectives were to explore mod users' motivations to use mods, and the factors that increase and decrease overall mod use. Other inspected issues related to modding communities, the potential of modifications to improve games, the monetization of mods, and mod user's disposition towards monetization. A wide systematic literature review was conducted. While mods have been studied quite extensively academically, the context of mod users has been left almost untouched. An in-depth look was taken on the modifications available for the popular game Skyrim, which revealed that the variety of modifications is very large and they can change the game profoundly. A self-administered internet survey was conducted on a Skyrim modding community. The survey explored gaming habits, mod use habits, various opinions related to mods and their potential, as well as experiences about the problems of mods and other thoughts about mods and modding.

The findings indicated that the primary motivation to use mods is to make games better and more suited to the mod user's preferences. This is achieved through modifying and improving various aspects of the game, including usability, visuals, gameplay mechanics and challenge level. The ability to customize a game is positively related to enjoyment, which is a primary motivation to play games according to the self-determination theory. Using mods can be a deep way to customize a game according to the player's preferences, and games that offer a large variety of different modifications can be remarkably improved and extended by skilled mod users. Users have to be interested in the game sufficiently, since using mods is often not a simple task.

Many factors that affect mod use were identified. The popularity of a game affects how sizable modding communities can form around it, and how many modifications are produced for use. The developers and publishers of games have many ways of affecting how their games can be modified, from software design choices to interactions with the modding community. As copyright holders, they also have the power to end potentially unwanted large scale modding projects.

The technical problems identified with using mods are perhaps the largest factor that reduces mod use on a personal level. Succeeding in extensively modifying a game requires a lot of knowledge, time and effort, which probably reduces overall mod use. Perhaps most gamers deem that using mods is not worth the time and effort compared to the benefits they bring.

The overall sentiment in regards to monetizing mods was negative. Multiple technical, ethical and financial problems were identified, and there generally was not enough trust that these issues could be won. Perhaps the largest issue was that asking payment for mods was seen as going against the nature of modding, which emphasizes sharing, openness and collaboration.

This thesis provided a comprehensive overview on mods, their potential to improve games, and the motivations to use them. The mechanics present in the creation of mods were inspected and the elements required for the formation of thriving modding communities were elaborated. Game mods are an important and growing part of gaming culture. Its many benefits to consumers and game companies alike make it an interesting phenomenon. Knowing about the motivations behind mod use can help in developing better games in the future, for example by looking at what is popular in each genre and implementing elements from there to game development. Knowing the problems that limit modification use helps in finding solutions to these problems in the future.

Any actions towards reducing the barriers to enter game modding and mod use would be beneficial to consumers and probably to game companies as well. A hybrid form of currently popular implementations of mods could be attempted. It could include quality control measures seen in professional game development. If mod manager software and modding tools would be developed commercially, their quality and utility could be better than what they are presently. The largest room for improvement currently lies in the usability of mods. Important problems to tackle are the cumbersomeness of overall mod use and their proneness to incompatibilities and instability. Game developers are advised to tread carefully when attempting to monetize mods at this time, because of negative opinions from the most enthusiastic users, previously encountered problems, and the history of what mods essentially are.

There is plenty of room for more research on mods. Mod users and the use of modifications should be studied more at a general level, and in the contexts of different games. In order to find out more factors that limit the usage of mods, a study should target the wide gamer demographic that doesn't use mods. Their knowledge, opinions and experiences of mods should be investigated. Potential ways to introduce mods for the general and casual gaming population should be looked into. Possible ways to do this would be to lower the technical requirements of mod use. It would be important to learn how players first learn about mod and what their first deeper contacts with the phenomenon are. It is probably during this introduction stage where users decide wheter or not mods are worth their time, and inspecting it could help in identifying the largest factors that inhibit the adoption of mods. A study could

be made to accommodate for example UTAUT2 by Venkatesh et al. (2012), to find out which factors are the most important in the acceptance of mods.

To rigidly establish the potential of mods for improving games, an experiment should be conducted where two groups of players would be instructed to play a game, the other group playing a game and the other playing the same game but with modifications installed. Enjoyment of the game and other metrics would be measured with validated measures, and compared between the groups.

The mechanisms of mod creation should be looked into more deeply. To what degree do mod authors take in and fulfill requests from users? The literature seems to suggest that most mods come from mod makers' own interest in specific things, but it would be interesting to know what other factors affect in choosing what kind of content they develop. The vast amounts of open dialogue in various modding forums could be analyzed to identify some of the mechanisms.

Related to the monetization of mods, it should be studied how many mod makers would even wish to make mods that are sold for money, or if they would prefer other compensation methods such as donations or subscription based funding like Patreon. At any rate, additional compensation methods for mod creators should be looked into. The risk of mod creators losing their motivation is real, especially if their endeavors get more cumbersome as games grow larger in scale and technological complexity.

Design science could be applied to mod research. Methods could be created that facilitate the development of games that are suitable for modding. This would include technological aspects, but also business model related aspects that need further clarification. Also, the distribution systems of mods could be studied at a deeper level. Possible research subjects could be whether or not a centralized system for free mods would be plausible, or how present decentralized systems could be improved.

The commercial benefits of mods can be substantial to game companies and they should keep an open mindset towards supporting modification of their games. A lot can be learned from fan-creators, and game companies could benefit from communicating and interacting with the modding communities of their games. As the computer skills of the general population improve and open source-like collaboration grows more popular, user generated content in games may become a remarkably large part of the overall gaming culture. Opening games for modification in a larger scale could result in a noticeable increase of user-led innovation, which will undoubtedly be a significant source of future technological advancement.

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APPENDIX 1

Skyrim mod user survey

Hi! I study information systems science in University of Jyväskylä in Finland, and I'm writing my master's thesis about mods and modding. This survey is part of it and it aims to explore the experiences and opinions of Skyrim players who use mods. Answering the survey is anonymous, and will take about five to ten minutes. Thank you for participating in the survey!

*Required

Approximately how many Skyrim mods have you tried? *

Your answer

Approximately how many Skyrim mods do you actively use? *

Your answer

What types of mods have you used for Skyrim?
Please pick all options that apply.

- [ ] Fixes & patches (Such as unofficial Skyrim patch, Safety Load)
- [ ] User interface (Such as SkyUI, A Quality World Map)
- [ ] Graphics (Such as Skyrim HD - 2k textures, SMIM, Skyrim Flora Overhaul)
- [ ] Immersion and realism (Such as Frostfall, Realistic Needs and Diseases)
- [ ] Characters and monsters (Such as Interesting NPCs, Immersive creatures)
- [ ] Model or animation customizations (Such as CBBE, ApachiiSkyHair, Immersive animations)
- [ ] Item mods (Such as Immersive armors, Immersive weapons)
- [ ] Gameplay overhauls (Such as T3nd0's Skyrim Redone, Requiem - The Roleplaying Overhaul)
- [ ] Game mechanics mods that affect combat, crafting, perks, spells and other mechanics. (Such as Alternate Start, Apocalypse - magic of Skyrim, Deadly Dragons)
- [ ] New areas (Such as Falskaar, Helgen reborn)
- [ ] New quests (Such as Undeath, Moon and Star)
- [ ] Follower mods (Such as Ultimate Follower Overhaul, Amazing Follower Tweaks, Sofia)
- [ ] Total conversions (Such as Enderal)
- [ ] Cheat mods (such as Lockpick Pro, Levelers Tower)
- [ ] Humor or parody mods (Such as Macho Dragons, Posh Mudcrabs)

Do you use mod management utilities? *
For example, Nexus mod manager, Wrye Bash, or Mod Organizer.

- ○ Yes
- ○ No

Have you made mods yourself? *

- ○ Yes
- ○ No

How difficult is it to use mods in Skyrim? *

	1	2	3	4	5	
Very easy	○	○	○	○	○	Very difficult

Mod use experiences and opinions

Using mods makes Skyrim more enjoyable *

	1	2	3	4	5	
Strongly disagree	○	○	○	○	○	Strongly agree

Using mods keeps me interested in playing Skyrim for a longer time *

	1	2	3	4	5	
Strongly disagree	○	○	○	○	○	Strongly agree

To me, lore-friendliness is an important charasteristic in mods *

Lore-friendliness is the degree of which new content believably fits into the world and the lore of Skyrim.

	1	2	3	4	5	
Strongly disagree	○	○	○	○	○	Strongly agree

I enjoy browsing and trying new mods for Skyrim *

	1	2	3	4	5	
Strongly disagree	○	○	○	○	○	Strongly agree

I am satisfied with the amount of mods available for Skyrim *

	1	2	3	4	5	
Strongly disagree	○	○	○	○	○	Strongly agree

I am satisfied with the quality of mods available for Skyrim *

	1	2	3	4	5	
Strongly disagree	○	○	○	○	○	Strongly agree

My mod use has a large impact on the overall feel of Skyrim *

	1	2	3	4	5	
Strongly disagree	○	○	○	○	○	Strongly agree

I think that mods can make games better *

	1	2	3	4	5	
Strongly disagree	○	○	○	○	○	Strongly agree

I generally prefer to play games that allow the use of mods over games that don't *

	1	2	3	4	5	
Strongly disagree	○	○	○	○	○	Strongly agree

I think mod support and mod availability increase the value of games in monetary terms *

Do modifiable games give more for your money's worth?

	1	2	3	4	5	
Strongly disagree	○	○	○	○	○	Strongly agree

I typically finish games at least once before installing mods for them *

	1	2	3	4	5	
Strongly disagree	○	○	○	○	○	Strongly agree

Community participation

Have you thanked mod makers, commented on their mods, rated, or endorsed mods? *

- ◯ Yes
- ◯ No

Have you provided feedback, suggestions or bug reports for a mod? *

- ◯ Yes
- ◯ No

Do you actively participate in discussion in a modding community? *

- ◯ Yes
- ◯ No

Do you seek information about modding from wikis or other community created resources? *

- ◯ Yes
- ◯ No

Have you suggested a mod to another person? *

- ◯ Yes
- ◯ No

What are the reasons that you use mods for?

Please pick all option that apply. You can add your own reasons to "Other" if they aren't found on the list.

- [ ] to add more content to the game
- [ ] to improve existing content in the game
- [ ] to improve the graphics of the game
- [ ] to fix bugs or other problems in the game
- [ ] to improve the game's user interface
- [ ] to make the game world more interesting
- [ ] to make the game more challenging
- [ ] to keep the game interesting for longer
- [ ] to change game mechanics I don't like (for example enemy and loot scaling with character level)
- [ ] to add new mechanics to the game (such as survival elements)
- [ ] Other: _____

What are the biggest problems of mods and modding?

Your answer

Would you be willing to pay for mods?

- ○ Yes
- ○ No

Why, or why not?

Your answer

General information

What is your general computer proficiency level? *

	1	2	3	4	5	
Beginner	○	○	○	○	○	Expert

Approximately how many hours do you play games in a week on average? *

Your answer

Do you consider yourself more as a casual gamer or a hardcore gamer? *

Casual gamers typically engage in short play sessions with games that are not very competitive in nature. Hardcore gamers tend to play often and for long periods of time, are interested in game mechanics and seek gaming related information from various sources.

- ○ Casual
- ○ Hardcore

What do you primarily seek from playing videogames?

Do you seek for example relaxation, challenge, enjoying a good story, killing time, or other things?

Your answer

How many hours of Skyrim have you approximately played in total? *

Your answer

How many hours of Skyrim have you approximately played with mods installed? *

Your answer

Which of the following aspects of Skyrim do you like the most?

- ○ Combat and challenging encounters
- ○ Gaining character power
- ○ Exploration and discovering the world

Have mods been able to improve this aspect of Skyrim?

- ○ Yes
- ○ No

Is there anything you would like to add about mods and modding that wasn't captured by this survey?

Your answer

What is your age? *

- ○ Under 15
- ○ 16-20
- ○ 21-25
- ○ 26-30
- ○ 31-35
- ○ 36-40
- ○ Over 41

What is your gender? *

- ○ Male
- ○ Female
- ○ Other

Do you have any feedback for this survey?

Your answer

Thank you for completing the survey!