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Financial Aspects of the Online Gaming Service Industry

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Problem description

This thesis will extend the work on the Online Gaming Service (OGS) industry performed by the author, presented in [29]. The former study managed to identify how a free OGS can be justified financially, as well as classify the main cost accounts associated with the operation of an OGS. The growth of each cost account as a function of users were also analyzed and presented in detail. However, the study did not explore the various revenue models and pricing strategies in the industry. In order to improve the general overview of the financial aspects of OGSs, the goal of this thesis is thus to answer the following research questions:

- What are the dominant revenue models in currently operating and successful OGSs?

- What are the characteristics of the identified models?

- What logic lies behind the choice of a specific revenue model?

- When are the different models profitable, and when are they not?

In addition to the research questions above, any potential results which influence the conclusions drawn in [29] will be highlighted, in order to strengthen the general cost model presented in the former study. Out of curiosity, the author would also like to address well-known network theory principles such as network externalities and long tail possibilities, and identify their influence, if any, on OGS business models.

Assignment given: 17.01.2011
Supervisor: Harald Øverby

Abstract

The goal of this thesis is to identify and analyze the dominant revenue models in the OGS industry, as well as the logic behind the choice of a specific model. Identification of the prevalent models and their characteristics would in conjunction with results from previous research in the field provide a complete overview of the financial aspects of OGS operation.

The goals of this thesis was reached through an analysis of the business model of Microsoft's Xbox LIVE (XBL) service, one of the leading console platform OGSs, in conjunction with a similar case study of Blizzard Entertainment's Battle.net service presented in former work by the author [29]. Both case studies include all aspects of the business model, according to the business model ontology defined by Alexander Osterwalder in his PhD dissertation [40].

The five identified dominant revenue models are the subscription, advertisement, micro transaction, digital distribution and additional sales model. From the provided estimates, the subscription, micro transaction and digital retail model are the most profitable among the five as standalone models. However, the study has shown that most successful OGSs utilize several revenue models in conjunction in order to reduce the negative effects associated with each one individually. In addition, the use of several models improves price differentiation possibilities, which in many cases may lead to increased revenue. While the pricing strategies among the services are many, the specific implementations of the dominant models among the studied services imply that the willingness to pay among OGS users are low for features and content not personally valued by each individual user.

The general cost structure of OGSs presented in [29] has also been updated with additional results uncovered through this research. For an OGS relying on micro transactions and digital distribution for revenue, this study has shown that the bandwidth and support costs increase substantially compared to a service without digital distribution, even outgrowing the hosting costs for the service itself. Thus, favorable partnerships and other means to reduce bandwidth costs may be seen as equally important cost saving initiatives as those outlined in [29].

Preface

This thesis is written as the final contribution for my master's degree in Communication Technology with specialization in Tele-economics at the Norwegian University of Science and Technology (NTNU). It continues the research done on the financial aspects of OGSs as part of my 5th year specialization project presented in [29]. This thesis covers work done from January to June 2011.

I would like to start by thanking my supervisor Harald Øverby for valuable comments and ideas during this research project. The final product would not have been the same without his guidance.

I would also like to thank my girlfriend Birgitte Refsland for providing valuable feedback on the final script of this thesis and for supporting me during this entire process. You are the best! In addition, I would like to thank everyone at the office for a great semester with loads of fun. We finally made it guys!

I dedicate this work to my family, who has supported me during my entire education in every way possible. I am forever grateful.

Trondheim, June 2nd, 2011

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Acronyms

OGS   Online Gaming Service

DLC   Downloadable Content

LAN   Local Area Network

XBL   Xbox LIVE

ISP   Internet Service Provider

FAQ   Frequently Asked Questions

CVC   Control Video Corporation

PS2   PlayStation 2

PS3   PlayStation 3

PSN   PlayStation Network

UI   User Interface

XBLM   XBL Marketplace

XBLA   XBL Arcade

SDK   Software Development Kit

API   Application Programming Interface

E3   The Electronic Entertainment Exposition

CES   Consumer Electronics Show

GDC   Game Developers Convention

0. ACRONYMS

CBC   Customer Buying Cycle

WoW   World of WarCraft

MMORPG Massive Multiplayer Online Role-Playing Game

MMOG   Massive Multiplayer Online Game

XBLVM   XBL Video Marketplace

EMD   Emerging Media Dynamics

KB   Kilo Byte

MB   Mega Byte

GB   Giga Byte

RAM   Random Access Memory

OS   Operating System

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Introduction

The gaming industry has been a multi-billion dollar industry for years and is in fact valued above the film industry, if both hardware and software sales are counted together [8]. Accordingly, the industry has been the subject of many authors. Several works cover the industry as a whole, as well as specific topics such as game design and history, see [38][54]. Former NTNU studies have also covered economical aspects of the gaming industry, such as overall game business models and pricing models [7][21]. However, there is less work to be found on OGSs, that is - services that enable players to compete with each other over the Internet. Most published work covering the online aspect of gaming focuses on online games such as Massive Multiplayer Online Games (MMOGs) or the technical aspect of online gaming, see [22][5].

Today, OGSs is an integral part of the online gaming phenomenon, and is by itself a multi-billion dollar industry within the overall gaming industry, as we shall see later in this thesis. OGSs has shaped the gaming industry across all platforms during the last decade, and plays an important part in the tremendous growth the industry as a whole has experienced in recent times. The study of OGSs, how they operate and their corresponding business models are thus interesting economical research. Former work by the author covered history of the concept on the PC-platform, a PC-platform service case study, as well as identification of the most important cost accounts and cost saving aspects of OGS operation [29]. This thesis will continue the research on OGSs, focusing on the prevalent revenue models in the OGS industry in order to conclude an overview of the financial aspects of OGS operation. In other words, the main goal of this thesis is to identify the dominant revenue models in the OGS industry, as well as to uncover specific characteristics of the models and/or the OGSs that support the

use of one model above another. This will be done by using the results from the former study in conjunction with a case study on the business model of one of the largest currently operating OGSs across all platforms; Microsoft's XBL for the Xbox console platform.

1.1 Contribution

This thesis contributes with a comprehensive description and definition of an OGS. Furthermore, the history of OGSs on consoles is covered in detail. Additionally, this thesis contributes to the OGS industry research by providing an in-depth case study of XBL's business model using Osterwalder's business model ontology. The service is one of the largest and most profitable currently operating OGSs across all platforms and it is the only service operating on a console platform which charges subscription fees for online multiplayer. The case study provides valuable industry information by uncovering successful OGS business strategies and features.

The results from the case study on XBL is used to update the general cost model presented in [29], providing more credibility to the results and conclusions drawn from the Battle.net case study. In addition, the business models are compared in order to highlight any differences in strategic choices.

The case study and results from [29] provide the necessary foundation for the analysis of the dominant revenue models in the OGS industry, the main focus of this thesis. The research performed has uncovered five major revenue models in use in currently operating and successful OGSs. Each model and its implementation in the OGS industry is discussed in great detail, highlighting the most important considerations to be made before implementing the model, depending on the service in question. The importance of network effects in OGSs is also discussed in the context of choosing revenue models and pricing strategies.

Overall, the most important contribution of this thesis is a comprehensive general overview of the financial aspects and considerations of an OGS's business model.

1.2 Scope and limitations

The main purpose of this study was to identify the dominant revenue models in the OGS industry, as well as the logic behind the choice of a specific model. In

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addition, one of the goals was to compare the results from this study with former work, in order to strengthen the general results and conclusions about an OGS's cost structure. Thus, while the entire business model of XBL is presented, only the financial aspects are discussed exhaustively in order to limit the scope of this thesis. The problem description also includes references to network effects, long tail possibilities and pricing strategies. While these subjects are covered to some extent, only aspects directly affecting the main goals have been included, as entire studies could have been conducted on each of these subjects alone. Furthermore, the demand-generating aspect of OGSs has been omitted completely, as have studies of other platforms besides the console platform. Even so, the results presented in this thesis are believed to be applicable in a general setting.

Much of the estimates and information presented in this thesis comes from somewhat unreliable sources, the reason why any estimates should only be used as indicators of the approximate order of magnitude, not as exact numbers backed up by empirical data. However, every data point used in included estimates has been cross-referenced, and they are believed to be as accurate as possible without relying on inside information. The inherent difficulty of accurately describing the OGS industry lies in the many business secrets. Everything from cost structure, partnership deals and individual business strategies are never disclosed to the public, due to the fierce competition in the industry. The author has not been able to acquire any direct inside information from the gaming industry, the reason why all calculations must be considered speculative.

The business model analysis in this thesis is also done on operating basis, meaning that any aspect related to the initial development, deployment, company overhead etc, have been purposefully omitted to simplify the presentation.

1.3   Outline

This thesis is outlined as follows:

Chapter 2 provides the necessary background information about OGSs, the console industry and former work. Section 2.1 covers the basics of an OGS, the definition as well as a list of the most important features. Section 2.2 continues with a summary of the most important cost related results from the former study, the different cost accounts associated with OGS operation as well as a general cost model. Section 2.3 covers the history of OGSs on consoles in general, while

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Section 2.4 provides an extensive description of XBL; the service later used in the case study. Section 2.5 completes the chapter with a description of the video game console industry; the game development cycle as well as the economics of the console industry. If the reader is somewhat familiar with the concept of OGSs, Section 2.1 may be skipped without further consequences. The same is true for Section 2.3. The reader is encouraged to view the remaining sections however, as they will be frequently referenced throughout this thesis.

Chapter 3 provides an in-depth description of Osterwalder's business model ontology. The chapter is divided into four sections, each covering one of the main pillars of the ontology. While the ontology is comprehensive, the summary will only include elements present and utilized in the case study in Chapter 4. If the reader is not familiar with Osterwalder's work, viewing this chapter is strongly recommended.

Chapter 4 presents the case study of Microsoft XBL's business model using Osterwalder's ontology. The outline of the chapter follows that of Chapter 3, and will cover each aspect of XBL's business model in great detail.

Chapter 5 presents the analysis of the identified prevalent revenue models in the OGS industry. Section 5.1 covers a simple revenue model analysis framework later used to present the various models. Section 5.2 covers the presence of network effects in the OGS industry, which influences a service's choice of revenue model(s) and pricing strategies. Section 5.3 concludes with the actual analyses of the identified revenue models.

Chapter 6 provides a discussion of the results obtained through the case study and presented in Chapter 5. Section 6.1 presents the updated general cost model as a result of the comparison in Appendix C. Section 6.2 then discusses the general use of the identified revenue models and highlights the considerations to be made before implementing them.

Chapter 7 summarizes the most important results in this thesis and concludes.

Chapter 8 discusses possible areas of future work, which may complement or even improve the results presented in this thesis.

This thesis includes three appendices, which cover the presence of long tail possibilities, the difficulty of pricing OGSs efficiently and a comparison of Battle.net's and XBL's business models respectively.

1. INTRODUCTION

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Background

The main goal of this thesis is to identify the dominant revenue models in the OGS industry and the logic behind the choice of a specific model. The work presented in the report *Business Model Aspects of the Online Gaming Service Industry* [29] will be used as the foundation for the work and results presented in this study. The reader is encouraged to view the case study and discussion chapters of the report in order to gain the most out of this thesis. For simplicity however, this chapter will start out by summarizing the former study. The first section will cover the basics of an OGS - the definition and a list of the most important features. Section 2.2 continues with the most important results from the previous study, namely the cost structure of an OGS. The different cost accounts are described in detail. The former study focused solely on the PC platform. This thesis will therefore take another approach and provide a case study from the console market in order to highlight any differences or similarities. Section 2.3 provides the necessary general historical background information about online services on consoles, before Section 2.4 covers the history of the service later used in the case study. Finally, Section 2.5 covers the video game console industry and its characteristics, as it will be frequently referenced throughout this thesis.

2.1   OGS basics

Online Gaming Service is not a uniformly acknowledged term for the kind of services referred to in this thesis, but it is a term commonly used within the industry. Although it seems self explanatory at first glance, no adequate definition of the term can be found in any curerently published work. A clear definition is

important in order to fully understand what kind of services are reffered to by the acronym OGS in this thesis. It is easy to correlate *online gaming* to *online multiplayer*, but a requirement of online multiplayer, although perhaps the one feature that most of the services have in common, will narrow the scope of the term. In this thesis, an OGS refers to any service satisfying the definition below.

An OGS is a service with an online component that aims to enhance, support, distribute or market (in any combination) a game title or other game content, gaming console including accessories or other gaming devices, on any gaming platform available.

This somewhat broad definition basically includes any online service operating in the gaming market. Even so, this thesis will mostly focus on modern services with a multiplayer component, allowing players worldwide to play games with each other. A requirement of online multiplayer support however would exclude a number of early services providing games on-demand as well as Downloadable Content (DLC), which can just as much be classified as OGSs as the modern multiplayer services.

To better understand the capabilities of popular OGSs, the following section will provide a list with descriptions of the most common features. The list is divided into two sections, one for legacy features and one for modern features. Legacy features refers to all features added to any service before year 2000. For a more exhaustive description of OGS features, see [29].

2.1.1 Legacy OGS features

Simple matchmaking

Matchmaking is perhaps the most important feature of an OGS. It allows players to connect over the Internet in order to play multiplayer matches against each other. The term *simple matchmaking* refers to the earliest versions of the feature. The OGS provides every player with a list of currently hosted games looking for more players. If no hosted game matches the players preferences, he/she has the option to create a new game. If the service also provides game filters, the process of finding a game matching the player's preferences is reduced, as similar games are grouped together. Early games and services only supported Local Area Network (LAN), meaning that users would have to manually connect to each other in order to play multiplayer. With simple matchmaking, the effort of

playing multiplayer is greatly reduced. In addition, the online component makes it possible to face off against potentially anyone in the world.

Hosting servers

The company operating an OGS may or may not provide hosting servers for the online matches. Hosting games locally on a user's system may result in poor performance depending on the user's computational power and available bandwidth. Hosting servers relieve any user of this problem, guaranteeing (as long as the servers are functioning properly) that performance is never an issue. Hosting servers also prevent cheating, as no players are able to alter any game files. In addition, hosting servers can include an authentication system, ensuring that no one uses pirated game copies. The flip-side of providing hosting servers is its large costs, which will be explained further in Section 2.2.1.

Chat

Textual chat channels both in-game and in the game/service lobby is provided by almost every OGS. Lobby chat are provided for players to agree upon game rules before starting a game, or to simply small-talk with friends and other players currently online. In-game chat is most commonly used for strategy. Voice chat was not common in legacy services, but the feature was added in the late nineties. Voice chat provides a huge advantage over textual chat in time sensitive games. Voice chat is also preferred on all console OGSs, due to the difficulty of typing with a console controller.

Friends list

Most OGSs provide the possibility to add friends. This simplifies the process of finding people one enjoys playing with online. The list often provides status and other benign information about each player in addition to simplify the process of adding someone to a game. Most services only allow adding a friend on an account name basis, but a few services also let people add each other by real name (through e.g. a social network). The latter feature requires stricter security mechanisms in place, in order to protect personal information. Figure 2.1 shows Battle.net's friends list and cross-game (service wide) text-chat.

Figure 2.1: Friends list - The Battle.net friends list and textual chat, seen from the StarCraft 2 lobby

Ranking and tournaments

Most services include some form of ranking of the individual account. The ranking itself can be done in a number of different ways, but most often a player gains in rank when winning and vice versa. A ranking system is often referred to as a "ladder", where the player moves up and down a ranking ladder as they win or lose games. Some services also host tournaments where the highest ranked players compete for special prizes, most often in the form of some game-related content.

DLC

DLC is perhaps the oldest feature of any OGS. Downloading games and game related content were introduced all the way back in the early eighties, see Section 2.3 for details. An OGS is also a great distribution channel for game developers to push out patches and hotfixes for their games. Some modern services have specialized in DLC, providing a digital distribution store for game titles and game related content.

Customer Support

Due to the positive network effects in the OGS market, keeping the customer base satisfied is crucial in order to ensure future growth and keeping the churn rate low (the rate at which customers leave the company for a competitor). This is further described in Section 5.2. Most services thus provide rather extensive customer support, even though many of the services are freeware. Customer support constitutes a large fraction of an OGSs total cost, as will be described in Section 2.2.1.

2.1.2 Modern OGS features

True matchmaking

True matchmaking is an evolution of the old concept of game listings. In true matchmaking, the player simply sets his or her preferences for a game, and then the matchmaking feature automatically searches and connects to an existing game that fits the player's description. If no such game exists, it creates a new one and searches for other players to join it. The algorithm used may have several layers of complexity, but common parameters taken into account are location, latency and some metric used to describe the players' individual skill.

Party and clan support

Party support allows players to team up and join games together even when a true matchmaking algorithm is used. A clan is often provided a private chat channel and removes the need to create a party every time a group of friends is online. In a clan, the party functionality is always maintained and it thus functions as a "persistent party" through multiple sessions.

Character and avatar system

The player's account is often associated with an online character. This character is usually displayed as a portrait, with the account name and statistics (such as rank etc). Modern OGSs have improved the concept of a character and have added an entire avatar (3D-model) to represent the player. The avatar may be customized and have its appearance reflect the player. Some services also include unlockables through achievements, or even premium content available as DLC that can be used to further customize the avatar of character (see below).

Achievements and rewards

Modern services support an in-game achievement system. An achievement is made by the individual game developer for their games and upon completing them; a player receives rewards in the form of achievement points and/or unlockables. An achievement could be any challenge imaginable for a specific game, e.g. *complete level X within five minutes*. Most modern services require games to include a certain number of achievements or achievement points before they are eligible to be released. XBL require all standard titles to include achievements which add up to a total of 1000 achievement points. Achievement scores are often showed together with the avatar described above. Raising this score may in itself be a reason for many players to purchase game titles, as a high score raises the reputation of a player. Achievements are also a great way for game developers to extend the lifetime of their titles by encouraging replay.

Social network integration

A few services offer the possibility of integrating a social network account with the OGS account. This simplifies the process of finding friends on the OGS and can also provide other features such as posting game related information to the social network. Although an attractive feature, social network integration is disregarded by many due to the potential security and privacy issues.

2.2 The cost structure of an OGS

[29] presented a set of general results about the cost structure of an OGS. The results are deduced from the case study done on Blizzard Entertainment's Battle.net service. While the results are usable in a general setting, having drawn conclusions from the study of a single service has its obvious drawbacks. Nevertheless, the results are used as a foundation for this thesis and this section will therefore summarize the most important findings. Section 6.1 will provide a comparison of the findings from the former study with the findings of this study, in order to strengthen the general results.

2.2.1 Cost accounts

[29] outlines six main cost accounts associated with the operation of an OGS, namely managed hosting center (hosting servers), storage, bandwidth, marketing,

customer support and ongoing development. Figure 2.2 shows the relative portion of each account for Battle.net. As the figure shows, providing hosting servers is expensive and accounts for almost half of the overall costs. Figure 2.2 does by no means describe an industry average however, but it does show an approximation for a similar service. The individual accounts may be manipulated in a number of ways. There is e.g. no requirement for an OGS to provide hosting servers, which would almost remove the cost account entirely (some servers would still have to be rented or acquired in order to host the service itself). With no hosting servers, the bandwidth costs would also be reduced. Nonetheless, Figure 2.2 is illustrative as it shows an approximate order of magnitude for each cost account. Each account will be described in detail below. However, for details on the estimates used to create the figure, see [29].
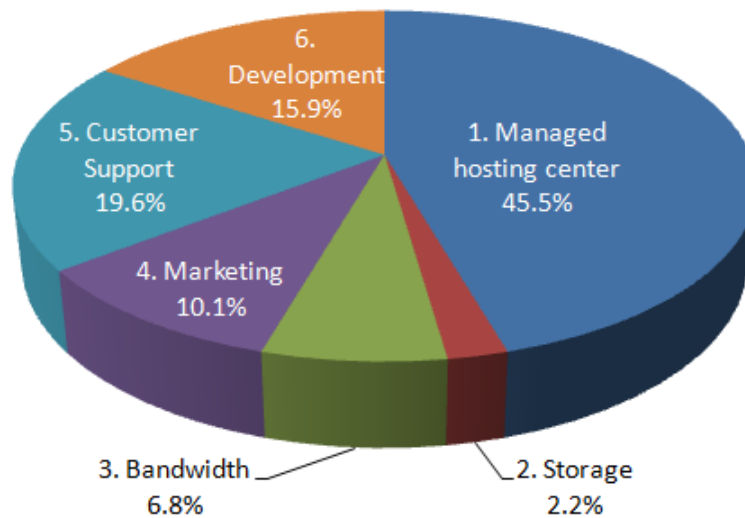
Figure 2.2: Battle.net's main cost accounts - A pie chart showing the relative proportion of Battle.net's expenses

Managed hosting center

Hosting servers is by far the largest expense associated with the operation of an OGS. It is also a cost account that can be manipulated in a number of ways, depending on company policy and the overall goal for the service's quality. Battle.net is a premium service, which implies a great deal for the hosting server

strategy. A premium service must always be available, which means that it must be able to satisfy peak load at all times, in every region it operates in. Depending on the geographic locations of the user base, and the gap between average and peak load, this may result in loads of capacity largely remaining unused for most of the day and night. For a high-end service with strict latency requirements, providing enough capacity for each region may be the only option. For less latency sensitive services however, a better strategy would be to utilize time zone differences and share capacity between regions. Each region would only reserve enough capacity to satisfy average load and then borrow capacity from a neighboring region during peak load. Another possibility following the same line of thought would be to satisfy average load and utilize cloud capacity during peak load. This would ensure that the average cost per user would decline as the user base grows. Most services likely follow a similar strategy, perhaps all three in conjunction, in order to minimize hosting costs.

Yet another strategy is possible if latency is of no concern at all. Due to large-scale contract savings, the most cost efficient way of hosting the service would most likely be to centralize the hosting servers completely. A draw-back with such a solution is in the case of an accident. No matter how many backup servers are set up, down-time for the responsible Internet Service Provider (ISP) would mean down-time for the entire service as well. With a decentralized service, there is (almost) always a possibility to reroute users in a geographical region if the local ISP is down.
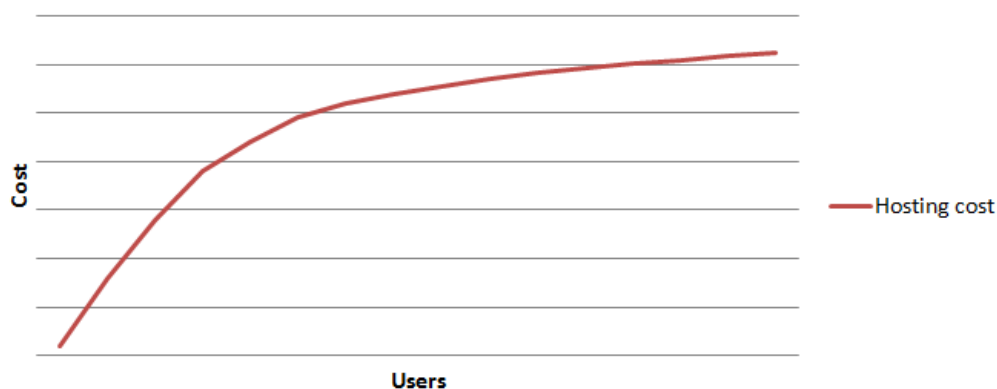
Figure 2.3: Hosting cost - Proposed cost curve for the hosting servers

What makes it difficult to quantify how the hosting expenses grow as a function of users, is the undeterminable nature of the average gamer. There is no

easy way to correlate how an additional user affects the service's overall peak load without inside information. This is because each gamer plays at different times of day. Some play a lot; others less and some might never play during peak times at all. Thus, assuming OGSs use either of the strategies outlined above, it is somewhat safe to assume that after some critical user base has been reached, the overall peak load increases with less than one for each additional user. The total cost curve for hosting servers will therefore most likely resemble Figure 2.3. At first, the costs increases almost linearly with the user base, but after some number of users have been acquired, depending on the strategy; the cost per additional user will drop.

Storage and bandwidth

The storage and bandwidth costs account for a fair share of the overall costs. In order for players to interact with the hosting server, the OGS must partner with ISPs in order to reserve bandwidth both up and down. The necessary amount of bandwidth reserved obviously depends on the quality of the service. With strict latency requirements, more bandwidth needs to be available in order to account for all possible user peaks. Reserving bandwidth is expensive, because it means fewer possible normal subscribers for the ISP. Most ISPs rely on the volatile or "bursty" nature of Internet traffic in order to squeeze in as many subscribers on the same physical link as possible. Agreements for reserved bandwidth greatly reduces the number of subscribers on that very same line, hence the high prices for the buyer. In addition, any digital content distributed by the service will add to the bandwidth costs.

Storage covers the actual physical storage of user accounts and digital content available for download. Depending on the service, a user account may range in size from a few Kilo Bytes (KBs) to tenths and even hundreds of Mega Bytes (MBs). The amount of content available for download is also highly dependent on the service in question, which naturally dictates the amount of storage the service must have available.

Each user needs an account, which will be approximately as big as the next, and each user will generate approximately the same amount of traffic when online, both through downloading content and gaming. Both storage and bandwidth thus consists of average values per user and therefore scales close to linearly with the user base.

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Marketing

Marketing is a difficult cost account to analyze. There is an endless pool of variables affecting the amount of marketing required in order for a service to continue its growth and success. An important factor is the life stage of the service. A new service needs to acquire customers quickly, in order to position itself in the market. Therefore, the marketing costs will most likely increase with the user base until critical mass has been reached. The actual relation is hard to identify. Other factors such as niche, platform, technology and brand familiarity influences the amount of marketing required. When critical mass is reached however, the service is somewhat self-supporting when it comes to marketing. The user base and the corresponding network effects will outweigh the need for additional marketing. In other words, marketing has diminishing returns, where an increase in the marketing budget after critical user mass has been acquired, have little or no effect. The marketing costs will thus most likely converge to some relative constant, only fluctuating as a response to either external events or new internal releases.

Customer support

Customer support is a curious expense in the OGS industry. The need for customer support is evident. As many services are free of charge, keeping the users satisfied is critical in order to keep the churn rate low. As an online service, trivial account management issues must be handled, but in addition, a customer may have technical problems in various forms. As for bandwidth and storage, customer support expenses are also intuitively calculated from an average cost per user and thus scales linearly. This is not the case in the OGS industry however. The customer support costs in most cases grow faster than the user base. This in some sense counterintuitive fact can be explained in a number of ways. A common conception among industry experts is that the larger the user base, the higher probability of penetrating a market less computer savvy [27]. This means that each additional user is expected to contact customer support more frequently, which supports exponential growth in support costs. Another explanation lies in the interpersonal nature of OGSs. As the user base grows, the number of people someone might offend in a public chat channel also increases, which can be seen as a negative reaction to Metcalfe's law (see Section 5.2). In any case, the growth of support costs seems to exceed the growth of the user base for an OGS.

Customer support is expensive. One of the keys to a cost effective service is to make sure that the need for customer support is minimized. Simple, intuitive and clean interfaces on top of a robust backbone provide such a foundation. A best practice is also to provide an extensive and informative online support portal, allowing users to fix benign problems themselves.

Development

As for marketing, the development costs are highly dependent on the service and its strategy. Premium high-end services naturally require a larger development team than smaller services. The development team is important for many reasons. The initial development of the service accounts for itself, but in order to remain an attractive service, continuous development of new features is vital, as is bug-fixes. A service with no hosting servers, simple matchmaking and no extensive achievement or avatar system, may consist of only a few people. Larger services such as Battle.net and XBL however, have development teams of tenths and even hundreds of people. Typically, the development of the service will initially start out with only a few members. The team then grows to meet the expectation of new features and to cope with the increasing complexity. As for marketing however, the development expenses suffers from diminishing returns, meaning that at some point additional developers will not increase the value output. This might change with the introduction of a new feature, but the expenses will again flatten out after a few additions to the team have been acquired.

2.2.2 Total cost development

With the general development of each individual cost account, it is possible to construct a total cost curve for an OGS providing hosting servers. The curve can be seen in Figure 2.4. Notice how hosting costs dominate the overall costs, the reason why a good localization strategy is important in order to reduce the total costs. Initially, the average total cost per user is high, due to poor utilization of the hosting servers. When the strategies outlined above are made possible however, the average hosting cost per user drops, which in turn reduces the average total cost per user. Interestingly, at some point the exponential property of the customer support costs again increases the average total cost per user. This means that increasing the network size indefinitely is not optimal in terms of cost savings, with the strategies outlined above. Thus, finding efficient solutions

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to minimize customer support costs is just as important as a good localization strategy for hosting servers in terms of cost savings for such an OGS.
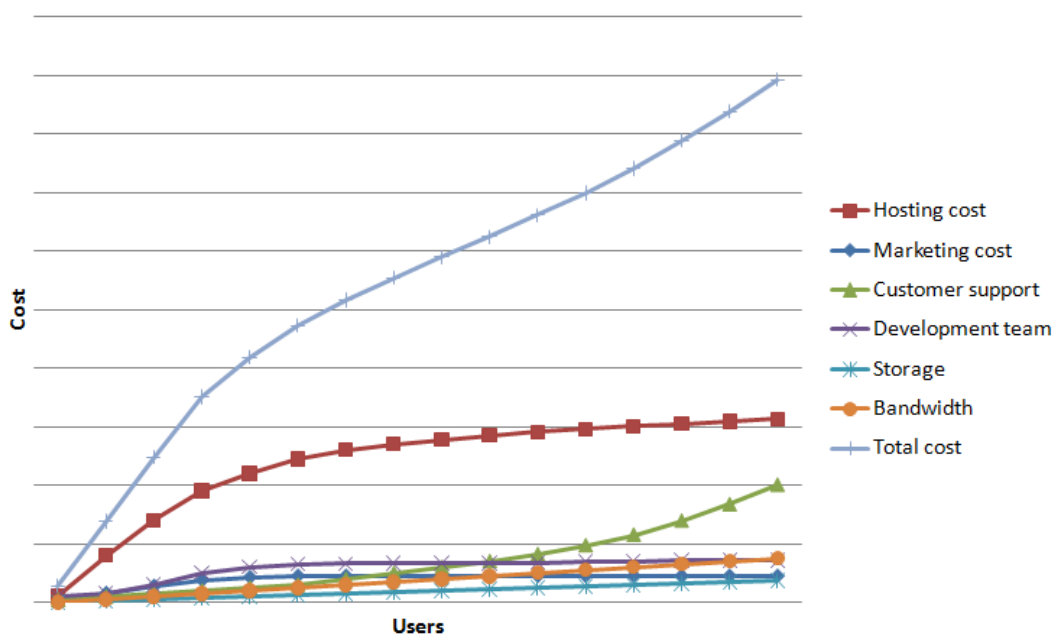
Figure 2.4: Total cost - All of the six cost accounts plus the total cost curve plotted as a function of users

2.3 History of OGSs on consoles

The success of online gaming and OGSs on consoles has a rather brief history, although the concept of online connection for consoles was first introduced almost thirty years ago. Today, these services are critical for the success of all the different game consoles, but this dependency has only been recognized for about the past five-to-seven years. The first real success came with Microsoft's XBL for their Xbox system. XBL was deployed as late as 2003, even though console manufacturers had foreseen the importance of online connectivity even before the rise of the Internet. This section will describe the general history of OGSs on consoles, before the subsequent section will give an in-depth history description of the XBL service, as this service is used in the case study in Chapter 4.

2.3.1 The pioneers

As early as in 1983, Control Video Corporation (CVC) released GameLine, a 1200 baud modem for the Atari 2600 console with a corresponding online service. As the first real OGS for consoles, GameLine allowed users, for a yearly subscription fee of $49.95, to download any of the games stored on CVC's centralized server. A user could download one game at a time and play it up to eight times, or until the 2600 was turned off - for an additional fee. As a result of not getting any of the large publishers as Activision, Mattel or even Atari themselves on board, in conjunction with the great video game crash of 1983-84, GameLine never became a success and was taken down shortly after its initial release [50].

During the same period as the release of GameLine, Mattel launched Play-Cable for its Intellivision system. The service was similar to GameLine in that it provided a download service for the console in exchange for a monthly subscription fee. Local cable companies would rent out a PlayCable modem that was attached to the console and allowed the user to download games. The failure of PlayCable did not lay in the service itself or in the failure to acquire partners, but the in lack of hardware foresight. The unit was limited to 4K of Random Access Memory (RAM) which most games outgrew within a year after the initial launch. The service therefore met its end already in 1983. This would be the last console in the Western market to incorporate an online component for more than a decade [28].

Sega Corporation was the next manufacturer to pick up the trail. In 1994 they released the service Sega Channel for their Genesis console system. Sega had partnered with both Time Warner and Telecommunications Inc. to provide a rental service to its customers over their networks. This way, Sega would cut out middlemen as Blockbuster Video for increased profits and at the same time increase the availability for customers. For a monthly fee of $12.95, the users would gain access to download several of the games available to the Genesis system for nearly no cost at all ($0.25 each). The main difference between Sega Channel and the earlier services described was the technology used to distribute the games. Since the technology of the time could not provide satisfactory download speeds over the phone line, Sega chose to run its service over cable. At the time, 90% of American households had cable access. Sega Channel was well received by critics, but the skepticism of local cable companies led to its downfall. By the end of the first year in service, only 150,000 households subscribed to the service, far short of Sega's expectations [50].

2. BACKGROUND

Simultaneously, the first dedicated OGSs for the PC platform appeared, and most of them were great successes. Services such as Kali, TEN and MPlayer had millions of monthly users. If the same success could be emulated by the console manufacturers for their systems, it would mean big business. For a thorough description of the history of online gaming on the PC platform, see [29]. The first real success was still years away for the console platform however. Several projects continued the ill-fated history of the concept after the plug had been pulled on Sega Channel, among others the Voice/Data Communicator for the Atari Jaguar system. While the voice chat itself functioned well over the included dial-up modem, the console was a huge failure which in turn meant the end of the service. The same fate was also led by XBAND, developed by Catapult Entertainment. XBAND was actually the first console service to allow online multiplayer (at least in the Western market). Its modem could be connected to both the Sega Genesis and the Super Nintendo Entertainment System (SNES). However, cross-system online play was not possible, recognized as a huge drawback by users. In addition, there were only a handful of titles on each console that supported the network. Subsequently, XBAND never took off despite its revolutionizing features.

Sega Corporation continued to push new products for their consoles. In 1996, they introduced the NetLink modem for the Saturn console system. The modem supported speeds up to 28.8 kbps and also included a web browser and email access. NetLink provided the multiplayer functionality introduced by XBAND and it was the first console accessory that allowed customers to use their own ISP, a huge advantage for users that already had an Internet connection. With the built-in browser by Planetweb, NetLink was for many the first real encounter with the Internet. Recognizing this, Sega even released a mouse and keyboard compatible with the Saturn in order to enhance the Internet experience. However, the lack of a good collection of games that supported the service, in conjunction with poor sales figures for the Saturn console, prevented NetLink from ever becoming a success. By 1997, Sega had already begun planning their next platform and stopped updating NetLink.

While Sega had largely dominated the 16-bit era together with Nintendo, their market share had declined substantially over the past couple of console generations. The newest addition in the Nintendo family, the Nintendo 64, was released in 1996, soon followed by the PlayStation console by Sony Entertainment, a newcomer in the industry. Almost overnight, Sony had replaced Sega as one of the leading console manufacturers with the success of the PlayStation. Both Nintendo and Sony were reluctant to join the arms race towards a successful

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online service however. Recognizing this as a factor that could tip the scale in Sega's favor, they continued to push the online frontier for console gaming. In 1998, Sega released the Dreamcast console, the world's first gaming console with a built-in modem. The Dreamcast with its corresponding SegaNet service (launched in September 2000) is regarded as the pioneer in online console gaming, even though nothing, apart from the built-in modem, was revolutionizing with neither the console nor the service. Nevertheless, Sega finally managed to get game developers and publishers on board, allowing for a great variety of games supporting the online component. Popular launch titles such as Soul Calibur and Sonic Adventure led to a record sale of more than half a million units during the first two weeks in the U.S. alone [51], which provided an adequate user base for the corresponding online service to become a success. SegaNet provided online multiplayer through dial-up between users, as well as DLC for several titles. The reception of the Dreamcast system in Japan however, was not as flawless as the one in the U.S. And while the sales figures were way above those of the previous Saturn and Genesis systems, the Dreamcast was not able to position itself beside the Nintendo 64 and the PlayStation adequately. Even before Sega managed to launch SegaNet in 2000, Sony released its follow-up console to the PlayStation, the PlayStation 2 (PS2). The PS2 effectively put an end to the good sales figures for the Dreamcast, and Sega chose to discontinue the console in the U.S. already in March 2001. From that point on, Sega left the console manufacturing business and specialized in software development, which also meant the end for the SegaNet service.

2.3.2 The online services gain momentum

The PS2 was an instant success and is to date the best-selling video game console of all time with more than 140 million units sold as of writing, see Figure 2.5. However, Sony did not follow in Sega's footsteps and delivered the PS2 without built-in network capabilities and did not plan for any online service for the system. The same held true for Nintendo's sixth-generation console, the Nintendo GameCube.

Soon after in 2001, Microsoft made its entry into the video game console market with its Xbox console. When officially released, skeptics predicted that the console would flop and market leaders Nintendo and Sony did not even consider Microsoft a threat. Many have debated on why Microsoft chose to enter the video game console market at that exact point in time. No official statements
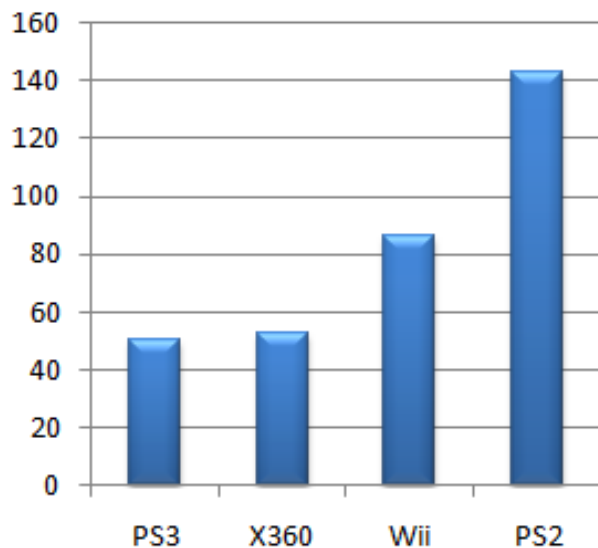
Figure 2.5: Console sales - The unit sales (in millions) of PS2 vs. the 7th generation consoles. Data from [49]

have fully explained the reason, but a common consensus among experts is that Microsoft waited until they could provide a powerful online service alongside the console, a service backed up by a broadband connection. Microsoft, as Sega, recognized the importance of an online component to console gaming, looking at how OGSs had completely changed PC-gaming during the second half of the nineties. While Nintendo and Sony were reluctant to push any innovative online services to their consoles, Microsoft was not, and hoped to succeed where the Dreamcast had failed. The Xbox had built-in network capabilities and included a standard Ethernet port (10/100) for a broadband connection. The broadband-only connection was initially criticized due to low broadband penetration in the U.S., but Microsoft's release strategy would prove successful, as the penetration would improve substantially shortly after the console's release.

XBL finally went online in late 2002, a year after the initial release of the console. Microsoft had acquired partnerships with all of the large game publishers (EA, Activision, Konami, Capcom, Epic etc), and promised over 50 titles supporting XBL by the end of 2003 [32]. XBL was well received by both critics and customers and the service quickly surpassed the original sales expectations. Within two months of the introduction, Microsoft had already shipped more than 250,000 XBL starter kits. With the release of XBL, Xbox surpassed Nintendo's

GameCube in popularity, and Microsoft had acquired a fair share of the console market.

Sony released a network adapter to its PS2 console around the time of XBL's launch. However, an online gaming experience was never in Sony's overall plan for the PS2, and therefore they never developed a service to work with the PS2 console. Any networked play had to be developed and maintained by each game developer independently. Even with this huge drawback, the online play on PS2 in terms of users was a success. However, this was mainly due to the extreme sales figures for the PS2 console.

The apparent success and the rapid growth for Microsoft's Xbox relied a great deal on Microsoft's overall plan for the Xbox to deliver a great online experience. OGSs for consoles would eventually shape the entire industry. Microsoft got a head start with its XBL service, and for their seventh-generation consoles, both Sony and Nintendo followed in Microsoft's path. Nintendo launched their Nintendo Wi-Fi Connection (WFC) in November 2005 (initially for the handheld console Nintendo DS) and Sony their PlayStation Network (PSN) in November 2006. XBL and PSN borrowed a great deal of features from their PC platform counterparts and are to date among the largest and most complex OGSs across all platforms. While Nintendo's latest console, the Nintendo Wii (released in November 2006), arguably appeals to a broader demographic than its competitors, both the PS3 (released in November 2006) and Xbox 360 (released in November 2005) compete for roughly the same customers. Hardware specs, accessories and exclusive game titles were once the main sources of differentiation (from a customer's point of view) between the different console families. This has somewhat changed with the seventh and current generation. On one side you have Nintendo, whose competitive advantage lies in an innovative controller technology. On the other side however, Sony and Microsoft's differentiation has turned out to evolve around their corresponding OGSs, and not specs and accessories that historically have been the norm. (Gamers still value exclusive titles).

When marketing the PS3 before its launch, Sony put a lot of weight on the console's extreme capabilities and numerous features, in a way continuing the "hardware race" of the past. This is also reflected in the consoles slogan: "it only does EVERYTHING". PSN was launched simultaneously with the console - a year after the release of the Xbox 360. XBL had already been running for years, but the service received a major overhaul before the 360's release. XBL now included all standard OGS features such as online multiplayer with advanced matchmaking, voice and text chat, DLC, possibility to stream music etc, as well

as some new groundbreaking features described in more detail in the next section. PSN emulated XBL, providing the same popular features as Microsoft's service. The main difference between the two lies in the revenue model. PSN is free-of-charge for basic features (including online multiplayer). XBL however, requires a subscription even to play multiplayer. Nevertheless, the momentum XBL gained after its inception continued, and with it the success of the Xbox 360. The Xbox 360 has to date sold more than 50 million units, more than twice the amount of its predecessor. The Xbox 360 has also sold marginally better than the PS3. This is quite the accomplishment, considering the PS2 has sold around 140 million copies, the most-selling video game console of all time. While the PS3 was superior in every way from a hardware point of view, Microsoft's time-to-market strategy and the success of their OGS would eventually tip the scales in favor of the Xbox 360.

2.4   Xbox LIVE

XBL was the first OGS for a console to be well received by critics, consumers and partners alike, laying the foundation for a highly successful service. As mentioned, Microsoft's overall plan for the Xbox entertainment system from the very start was to provide a unique online experience, something the incumbents in the video game console market had thus far failed to do. Previous console generations did not have the luxury of having users with broadband Internet connections, something that put severe restrictions on the content and quality that could be provided through the corresponding OGS. Although, as mentioned in the previous section, the Xbox was initially criticized for its broadband-only connection port, Microsoft's ability to time the market proved perfect, and the service became an immediate success.

2.4.1   1.0; The initial service

The list of features for the initial XBL service was far slimmer than what it is at present. Even so, Microsoft had borrowed the best from the PC-platform counterparts, and provided a robust service from the very beginning. The matchmaking on the earliest online multiplayer titles for XBL was both *simple* and *true*, according to the definitions provided in Section 2.1.1 and 2.1.2 respectively. The true matchmaking, in early XBL terms, was called Opti-Match. The feature allowed players to automatically find other players of similar skill, playing the same

game and with similar latency. This was true for MechAssault by Day 1 Studios, perhaps the most successful XBL title during the first year of operation. MechAssault provided filters and game listings of games hosted by other players, as well as an Opti-Match feature for an automatic game search. All online XBL matches were and are hosted physically by the players themselves, adding to the reason why Microsoft shipped the Xbox with a broadband-only connection port. Unlike earlier services for consoles, XBL matchmaking managed to match users with low enough latency for it to become negligible (in almost all cases). The Opti-Match feature even screened out users with too high latency to host a match.

From the very beginning, XBL also supported a friends list, where a friend was recognized through a unique identity, independent of the game title. Voice-chat through a headset was also natively supported; a headset was even included in the XBL starter kit. Most of the early titles on XBL did not include online multiplayer, but only DLC. The DLC provided however, were often high-valued, as the broadband connection allowed developers to push out new game content such as multiplayer map packs, new singleplayer missions etc. Even so, the early success of XBL is primarily credited to popular online multiplayer titles such as MechAssault.

The first versions of XBL had to be installed on the Xbox console through an install CD. After the installation and account setup, the service was accessible from within a game. Users could easily access their friends list, view available downloads and perform XBL account management through a single button-click from the game lobby of any XBL-supporting title. The very first version of the service could only be acquired through an XBL starter kit which included, as mentioned, an install CD, a head-set and 12 months worth of subscription time for a total of $49.99. The pricing beyond the first 12 months of subscription were set at $5.99 a month.

Although much acclaimed, the initial version of the service was criticized for not having any way of accessing it while outside a supported game. In other words, if a user wanted to access XBL account management or view their friends list, he or she would actually have to start up a game. This all changed with an update introduced in August 2003. Microsoft added a feature called XBL Now, which basically was an XBL menu on the Xbox dashboard - adding the same functionality as a user would have in-game, see Figure 2.6. Users could now add friends, reply to requests, watch the status of their currently online friends and downloads; and even set up a voice-chat session from the Xbox dashboard.

Figure 2.6: XBL dashboard - The first XBL dashboard accessible outside a game [33]

Two other large features added with the same update were XBL Web and XBL Alerts. XBL Web is a dedicated web-service designed to allow XBL users manage their XBL accounts, as well as view statistics and accomplishments of played games, both personally and for any friends associated with the specific account. Microsoft also provided a corresponding Application Programming Interface (API) to third-party developers; allowing them to build and design custom XBL Web experiences around their specific games [9]. XBL Alerts allows users to associate e-mail addresses and other forms of contact information in order to receive notifications from XBL when not using the service directly on the console.

2.4.2   2.0; Moving into the seventh generation

The next major update for XBL was released in November 2005, together with the Xbox 360. The whole service received a major overhaul, spanning all the way from the dashboard User Interface (UI) to the pricing strategy. New features included a Gamercard, Gamerscore, reputation bar, LIVE Arcade, Marketplace, TrueSkill - an improved matchmaking feature, video chat and advanced family and security settings. In addition, the Xbox 360 was pre-loaded with the XBL software required, and former XBL customers could download the update on the old Xbox, hence the need for install CD's completely disappeared.

The Gamercard in XBL is the overall unit used for identification of a player. In addition to the Gamertag (the name of the account), the Gamercard also includes the players Gamerscore, reputation bar, account picture, gamer zone and if accessed, also a list of recent games played. The Gamerscore is an accumulated score of all achievements earned across all games the player has played (see Section 2.1.2 for the definition of an achievement). The reputation bar, shown as a possible total of 5 stars, shows the average reputation a player has received by other players. Finally, the Gamercard indicates what Gamezone the player is currently in. A player can choose between four different zones: recreation, family, pro and underground respectively. The Gamercard works as a player's unique ID on XBL, and it is visible for everyone connected to the service.

XBL Marketplace (XBLM) is a digital distribution store available from XBL. XBLM offers everything from game demos, entire game titles, movies and loads of other DLC in various forms (wallpapers, game content etc). The Marketplace operates with a virtual currency called Microsoft Points. As of writing, 800 Microsoft Points correspond to about $10, the typical price for an Arcade game (mini-game).

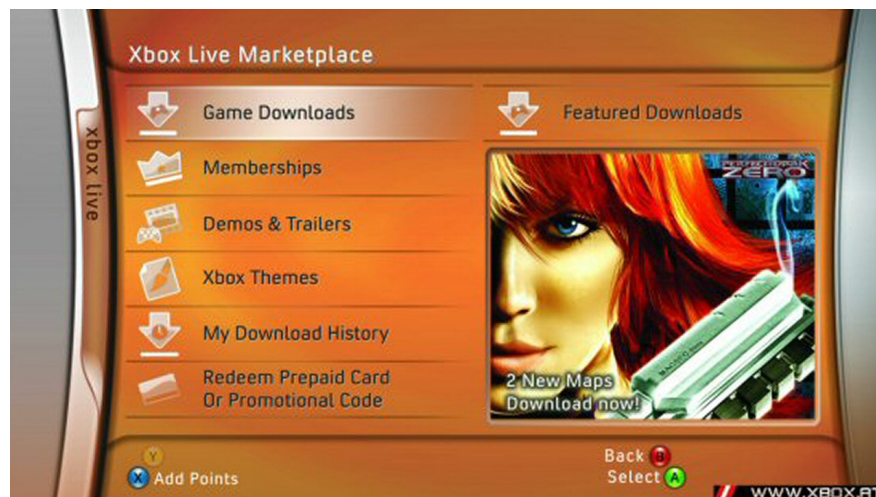**Figure 2.7: Early XBLM tab** - The XBLM tab in the early 2.0 tabular dashboard UI [53]

XBL Arcade (XBLA) was in fact launched a year prior to the 360 update, as an add-on to the Xbox console. It had to be ordered and installed in the same way as the original XBL service. Once installed, XBLA provided the user with the option of buying small arcade games with a credit card. With the 360 update,

XBLA was added under XBL Marketplace, and a vast variety of titles hit the service soon after. An arcade game is typically a small platform game, similar to the console games from the eighties - often in 2D. Such games are typically developed by small companies or even individuals (indie developers), whom are unable to compete in the retail market due to lack of capital. XBLA and XBLM is a unique distribution channel for such developers, exposing their games to millions of potential customers for basically no cost at all. Popular XBLA titles such as Braid and Limbo have even entered the top-selling Xbox 360 games list.

Another major feature update was TrueSkill, an improved true matchmaking feature. It replaced the old Opti-Match system and added several new layers of complexity into the matchmaking. The feature is regarded as one of the most advanced matchmaking features available. The system uses a player's game outcomes to update a Gaussian belief distribution which symbolizes the player's skill, and is used to match the player against other players. For more information on TrueSkill, see [36]. In addition to a player's skill, the matchmaking system also takes into account the location of the player, language, Gamerscore, latency and various other matchmaking demographics.

In November 2008, the service yet again received a major update. The dashboard of the Xbox was once again changed and improved and it has not been altered since. The former horizontal tab layout was replaced with a four-way scrolling menu. Compare Figure 2.7 and Figure 2.8. In addition, players could create a personal avatar, representing their likings and personality. The avatar is seen together with a player's Gamercard. The avatar has lots of customizability, and in addition, several Xbox titles include unlockables through achievements, such as clothing, armor or other forms of outfits from the specific game. Once unlocked, the player can equip his or her avatar with the reward. Another major feature added in the same update was the ability to stream 720p movies and TV-shows from Netflix. Other entertainment features has also been added later, including Sky-Player (on-demand television), radio-stations, an MSN entertainment portal (celebrity news etc) and Microsoft's own music and video store, Zune. XBL, in conjunction with the hardware and software capabilities of the Xbox 360, can provide almost all imaginable forms of digital entertainment.

A new subscription model was added with version 2.0, allowing Xbox owners to connect to XBL without paying a subscription fee. The free service was named XBL Silver (today; XBL Free) and the premium service XBL Gold. Today, XBL Free allow users access to XBLM, Zune, some of the TV on-demand services as well as providing a Gamercard and the possibility of maintaining a friends list.

Figure 2.8: XBL dashboard - The current XBL and Xbox dashboard, showing the avatar and Gamercard [55]

At its core, the only major features separating the two models are online gaming (and corresponding features such as party chat etc) and the premium streaming features (including Netflix). As of writing, XBL Gold is priced at $9.99 for one month, $24.99 for three months and $59.99 for twelve months of subscription. In November 2010, Microsoft also added a third subscription model; the Family Pack. The third model provides improved family settings as well as up to four individual Gold subscriptions for only $99.99 a year.

XBL has had a steady growth rate since its inception. Today, it is one of the largest and most complex OGSs available. The service currently has more than 30 million members, making it even bigger than Blizzard's Battle.net [48]. The popularity of the service has been strongly driven by its introduction of competitive online multiplayer on the console platform, and its success has reshaped the entire console industry.

2.5 The video game console industry - a two-sided market

This section intends to briefly educate the reader in the characteristics and economics of the video game console industry, as the OGS in the case study operates in the console market. It includes a description of the traditional video game

value chain, a cost breakdown for a console title as well as an introduction to two-sided markets and its implications on the console industry.

2.5.1 The traditional video game value chain

The value chain of a traditional video game is comprised of five distinct actors; the publisher, developer, distributor, sales channel and end user respectively, see Figure 2.9. As in the film, music and book industries, a publisher takes on the role of providing the artist (in this case the development company) with advance finance. In addition, the publisher handles marketing and distribution of the final product. In receiving financial aid from a publisher, the development company is required to develop the game specified in the contract with the publisher. Often the development company receives financial aid in increments, after certain deadlines or milestones have been reached. When the game is completed, the publisher ships it to a manufacturing company which produces the physical discs and boxing. After production, the publisher sells the physical discs off to wholesalers, which distributes the products further to the retail stores where the end user can finally buy it.
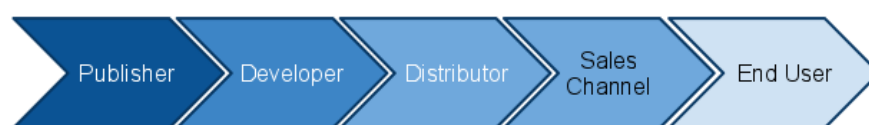
Figure 2.9: Video game value chain - The traditional video game value chain

The traditional video game value chain can be manipulated in a number of ways. The game console industry is recognized as an oligopoly, controlled by Nintendo, Microsoft and Sony. To compete with increasing licensing costs on the three platforms, as well as the increasing development and marketing cost for console games, the dominant corporate strategy among publishers is to integrate vertically up and down the production cycle [25]. Publishers acquire entire development companies in order to remove royalty payments and receive a larger portion of the sales revenue. Developing in-house also provides more control over production and deadlines. Acquiring distribution channels could also potentially be profitable in order to ensure a timely delivery to retailers, as well as receiving benefits from economies of scale on production. In recent years, the larger publishers have also been scaling up through acquisitions of smaller publishers. By acquiring other publishing companies, the larger publisher ensures a wider

selection of games. Providing a wide variety of games increases the chance of a big hit. The profitability of publishers is highly dependent on hits as we shall see in the cost breakdown for a console game below. Today, there are between 10 and 20 core game publishers [26]. The increasing vertical integration may in time result in a situation not unlike the film industry, where only a few publishers dominate the industry. If so, the value chain will be greatly simplified, in some cases only including the publisher, sales channel and end user.

2.5.2 Developing modern console titles

The development of modern console titles is a costly endeavor. A console game takes on average 18 months to produce compared to 15 months and 3 months for PC and mini games respectively [25]. The team-size for console games is 20 people on average, but the size may vary greatly depending on the scope of the project. The same holds true for the overall development cost, which on average is around $10 million [16] for the current console generation, up from $3-5 million for the preceding generation [25]. Blockbusters however, can reach astronomical development costs. Polyphony Digital's Gran Turismo 5 cost publisher Sony approximately $60 million over its five-year development cycle [42].

Producing a console game includes a number of core stages such as pre-development, production, publishing, distribution and retail. Figure 2.10 lists typical activities associated with each stage in the development of a console game. As the figure clearly shows, there are many costs associated with the production of a console game. In the pre-development stage, licensing deals with any of the major console manufacturers must be negotiated if one wishes to release a game on one of their platforms. Licensing deals must also be negotiated with copyright holders if the game wishes to build on an already existing franchise (such as Harry Potter or James Bond). Since each of the console manufacturers requires royalties on all game transactions on their respective platforms, multiplatform games are expensive to publish. However, the increased costs must be weighed against the potential profits from reaching a larger market. In addition to licenses, the publisher/developer must pay for Software Development Kits (SDKs) for the respective platforms, as they all rest on proprietary standards.

There are three types of development companies; first, second and third party developers. First party developers are fully owned by a publishing company. Second party developers are independent companies, but rely on/are contracted to develop games from concepts owned/created by the publisher. Finally, third party

Design specs & prototype

e.g. Nintendo, Sony, Microsoft

Negotiate licence deal with platform manufacturer.

e.g. Electronic Arts, THQ, DoCoMo Venture Capitalists

Secure publishing deal or finance

e.g. FIFA, MGM Studios

Negotiate licence deal

Pre-development

Engine development or purchase

e.g. Havok, MathEngine, Renderware

Content development & programming

Production

Test & QA Game

Publishing

Localize Game

e.g. Koch, Centresoft

Manufacture Game

Distribution

Market Game

Figure 2.10: Video game production stages - The core production stages in game development [25]

developers are independent companies working on their own projects. Second and third party developers are paid for the sales of their games trough royalties by the publisher. The royalty varies greatly within the industry, but are often somewhere between 10-20% of the publisher's net sales revenue after deductions [16]. First party developers are often not compensated through royalties, but through fixed bonuses depending on the sales of the game.
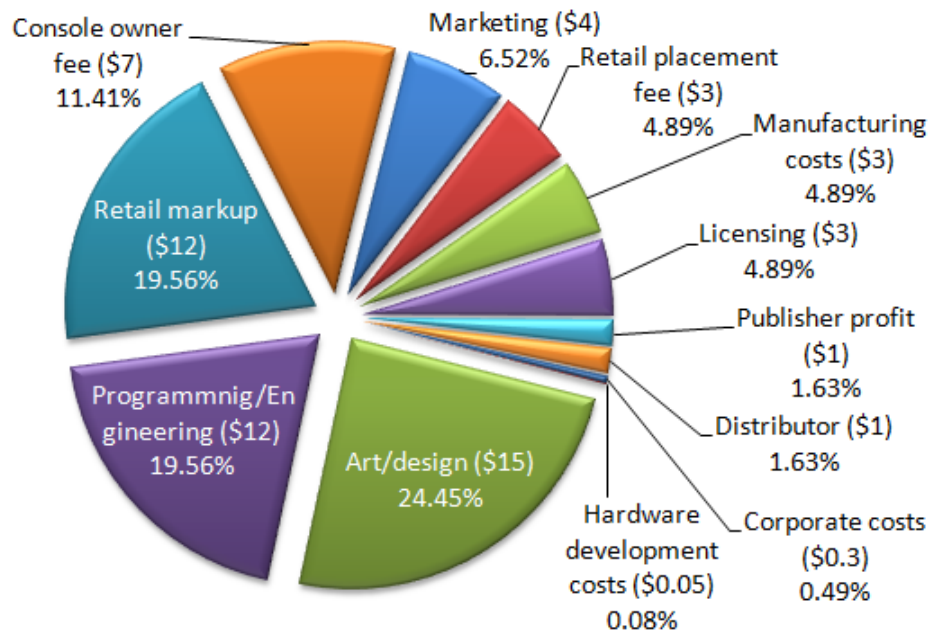
Figure 2.11: Video game costs - A cost breakdown of a typical $60 console game

In addition to the abovementioned costs comes development, marketing, retail markup, production and distribution, all taking its share of the approximate $60 retail price. Forbes has published a breakdown of the costs associated with a $60 console title of the current generation [43]; the results are summarized in Figure 2.11. Deducting retail markup and the retail placement fee (ensuring better marketing from the retailer, a spot in its advertising etc), the publisher is left with approximately 75% of the retail price. However, when each of the actors in the video game value chain has been paid off, the publisher is normally just left with about a dollar in profit. Notice that this chart does not include royalty payments to the developer, i.e. it assumes a first party developer. The percentages and costs shown in this chart may vary greatly. For instance, if the game does not

rely on an existing franchise, the licensing costs will disappear. The larger publishers also control their own distribution channels, removing the need to hire an external distribution company such as Ingram Entertainment. Distributing the game digitally removes the manufacturing costs and etc. However, assuming a smaller publishing company with the need to license the use of a franchise, the single dollar is all the publisher is left with in profits. On top of that; early on in a console generation's lifetime, the costs of development are higher due to the lack of existing graphics engines and other licensed development kits. During the transitions, publishers must therefore often sell hundreds of thousands of game copies before they turn profitable [43]. The minor profit margin outlined above is the reason why game publishing companies in general are integrating vertically as described in the previous subsection. It is also the reason why it is increasingly important to release hits, as the costs of each game is significant. However, when a console generation or family is mature, the release of hits may turn into money-making machines. The latest addition to the highly popular Call of Duty family, Black Ops, most likely earned publisher Activision Blizzard back its development and marketing costs during the very first day of sales with over 5 million copies sold and $360 million in revenue [31].

2.5.3 The game console industry - a platform industry

In the video game console industry, the value chain in Figure 2.9 includes another significant actor; the video game console manufacturer. The manufacturer is located to the left of the publisher, see Figure 2.12. Following conventional value chain analysis, the product is added value as it moves to the "right" (the direction of the arrows). To the left is the cost; to the right is the revenue, if the value chain describes the operation of a single company. The value chain depicted in Figure 2.9 covers the production cycle of a video game. Additional costs are added as you move to the right and each stage takes its share of the revenue. The underlying reasoning is still the same however, with the publisher/developer and retailer being the two most prominent sources of value added in the video game production cycle.

Analyzing the value chain in Figure 2.12 with the console manufacturer in mind, the reasoning is somewhat different. A console manufacturer has two distinct groups of users, developers and gamers. Therefore, cost and revenue are located both left and right in the value chain. In other words, a console manufacturer operates in a two-sided market.
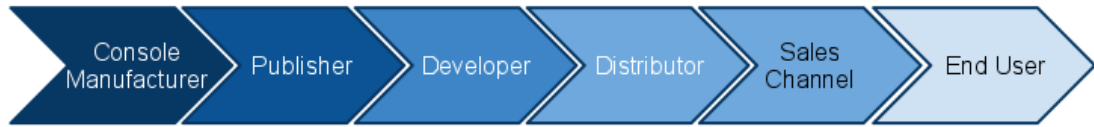
Figure 2.12: Video game console value chain - The video game console value chain

According to [17], a two-sided market or two-sided network is recognized by two distinct groups of users linked together by an intermediary offering some product or service. Such a product or service is often referred to as a platform. The two groups are attracted to each other through network effects. That is, the value of the platform for one user group largely depends on the number of users in the other (See Section 5.2 for a descripton of the presence of network effects in OGSs). The overall value of the platform grows if it manages to match the demand from both sides.

In order to gain initial momentum, the platform often has to adopt a certain critical mass in one of the user groups. This is in most cases done through subsidizing one of the sides. Once critical mass has been reached, the network effects will make the value of the platform increase with size. In general, users will pay more for access to a bigger network. In other words, two-sided markets often enjoy increasing returns to scale. The increasing returns property often encourages fierce competition. Such markets are therefore in most cases dominated by a handful of platforms. Typical examples of two-sided markets are indeed console manufacturers (linking gamers and developers), credit card providers (linking consumers and merchants) and newspapers (linking readers and advertisers).

To ensure a platform's success, there are three major strategic challenges to overcome [17]. Firstly, the pricing must be done right. The right user group must be subsidized, as the willingness to pay between the two groups is skewed. In the case of the newspaper, readers would not pay a $100 for a newspaper in order to view advertisements. In addition, it is important to secure exclusive users in either group in order to attract more users from the other. Secondly, it is important to cope with the "winner-takes-all" competition. If the market will eventually be served by a single platform it is important to decide whether to share the single platform with other companies or fight for proprietary control. A good example is the DVD industry. The technology was jointly created in order to increase the market for all and reduce rivalry. The Blu-Ray vs. HD-DVD battle is an example of the exact opposite, where a single technology (and company)

won and became the standard. The last challenge lies in avoiding envelopment, in other words to avoid the platform's users to be swallowed by a similar platform. A good example is the weakened market for MP3 players as a result of MP3 support in modern cellular phones.

As already mentioned, a console manufacturer operates in a two-sided market with strong network effects, matching the demand from developers and gamers. The network effects are inter-group externalities. In other words, the externalities are crossed, meaning that the value for gamers lies in the number of developers associated with the platform and vice versa. The difficulty in establishing a new platform lies in this seemingly deadlocked situation. Developers will not work with a platform without a substantial user base of gamers due to the large costs associated with console game development. On the other hand, users will not buy a console without a sufficient selection of supported games. For a console manufacturer to gain foothold in the console market, a certain critical mass in both user groups must therefore be established before the platform can grow.

Critical mass in the gamer group is often reached through subsidizing the console hardware. Consoles of a new platform generation are thus often retailed at a significant loss for the manufacturer in order to penetrate the market quickly and attract developers, even though the research and development costs associated with console development are huge. The losses on console sales are justified through charging developers extensive royalties on their sales of games on the platform. A large user base of gamers is therefore a requirement for developers to develop games for a specific platform, as the royalties will only make the endeavor profitable if the developer sells a large number of game copies (typically several hundred thousand for a new console platform as described in Section 2.5.2). However, a console manufacturer often invests in the developer side of the market as well in order to stimulate development for their platform. Even though the console hardware is subsidized, a new platform requires a strong line-up of release titles for it to be attractive to users. If not, gamers would stick with the dominant and established platform(s). The investment is done through providing SDKs and other APIs to assist developers and generate network externalities on the developer side. This is also an incentive to keep developers from committing to competing platforms, although such tools often come with a price tag as well.

The pricing on each side is crucial and may indeed yield negative returns for the console manufacturer for years after the release of a new platform. However, if demand is matched properly and the platform grows, the manufacturer will receive increasing pricing power. They can charge higher individual royalties,

in addition to a larger volume of game sales. As time goes by, hardware cost reductions may also offset the loss on console sales. Success in the console market requires patience, as well as extensive funding, as the establishment phase of the platform indeed may last several years.

All the dominant console manufacturers as of writing rest on proprietary standards. No game for the PlayStation 3 (PS3) will work on the Xbox 360. Exclusive titles are therefore an important aspect of a platforms success, as large exclusive hits undoubtedly gives a platform a major advantage. The Halo series on the Xbox is such an exclusive hit franchise, in many ways defining the success of the platform through its highly popular online multiplayer component. Manipulating the technology life-cycle of a platform is also used to outperform the competition. Microsoft got a head start with the sales of seventh-generation consoles with its Xbox 360. Penetrating the market early can attract customers of a competing platform. In addition to strive for the larger share of the console market, all of the dominant manufacturers have some form of handheld device or service as well, countering the possible envelopment from the mobile platform.

The future of gaming consoles is interesting. The nature of the industry in many ways resembles that of the movie standard industry. If so, one would expect that it eventually will be dominated by a single standard and platform. According to [14], Dell and Acer plan to enter the video game market with consoles resting on open-source Operating Systems (OSs) based on Linux. Such a platform could potentially change the entire value chain and the dominant console industry business model.

3

Osterwalder's business model ontology

The purpose of this thesis is to describe the different revenue models in the OGS market and identify key variables dictating one model above another, depending on the service and its characteristics. The case study presented in [29] in conjunction with the case study of Microsoft's XBL (see Chapter 4) will be used to identify the models and the correspondig considerations. As in [29], Osterwalder's business model ontology will utilized when presenting the case study. Osterwalder's component driven framework has become one of the standard choices for business modeling and it is well fitted for the purpose of this thesis. This chapter thus intends to give a brief summary of the ontology.

Osterwalder defines a business model as a *conceptual tool that contains a set of elements and their relationships and allows expressing a company's logic of earning money. It is a description of the value a company offers to one or several segments of customers and the architecture of the firm and its network of partners for creating, marketing and delivering this value and relationship capital, in order to generate profitable and sustainable revenue streams* [40, p 15]. A well defined business model can thus be used to e.g. identify competitive advantages and possible areas of improvement and/or opportunity. If used correctly, the business model is a powerful management tool, which should not be taken lightly. In his dissertation, Osterwalder stresses that the concept of a business model must be understood at "company level". As the above definition shows, a business model is the combined logic of how a company earns money and must not be confused with parts of the overall business model, such as a pricing strategy. According

to Osterwalder, many executives and authors alike, use the term business model when they only refer to a part of it.

Osterwalder has divided the overall business model into four distinct categories, or pillars as he refers to them. The four pillars, product, customer interface, infrastructure management and financial aspects can be further broken down into nine building blocks, each with a set of related attributes. For an even finer level of granularity, even the building blocks can be decomposed into sub-elements with their own sets of attributes. For a visual representation of the ontology, see Figure 3.1. The four pillars correspond to the dotted squares which are made up of the dark building blocks. The representation also shows the links between the different building blocks, as well as the applicable sub-elements (shaded boxes). Notice that the representation only includes the the sub-elements used in this thesis, i.e. the figure does not show the complete ontology.
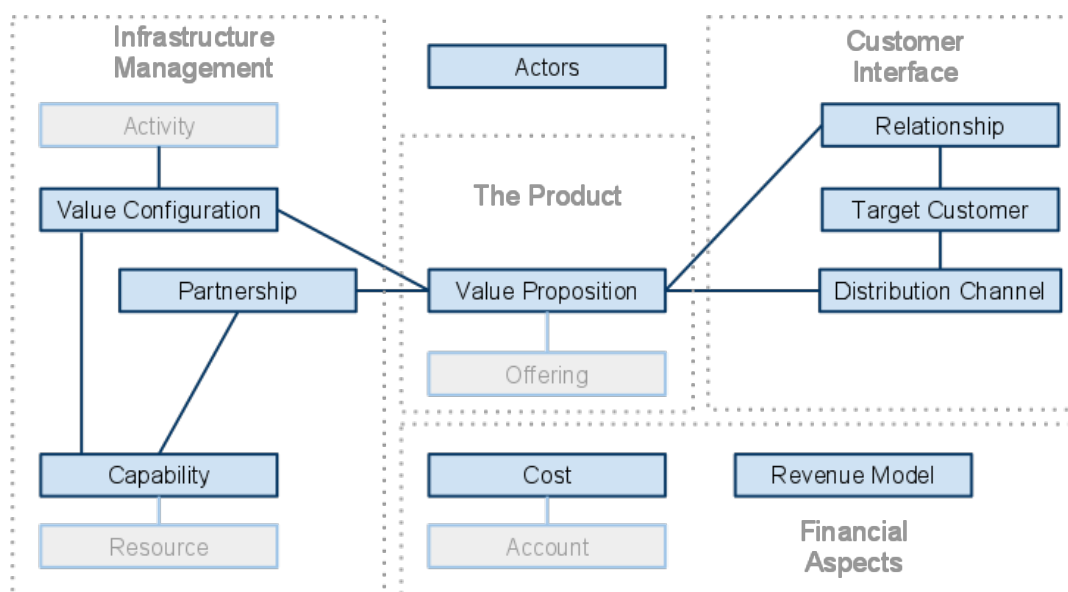
Figure 3.1: The business model ontology - A visual representation of the business model ontology as it is used in this thesis

Osterwalder's framework has the flexibility to describe a business model in either great detail, or in a more superficial manner, according to user needs. The presentation of XBL's business model is somewhere in between, the reason why this chapter does not present a complete summary of the ontology. Only elements necessary in order to understand the case study in Chapter 4 have been included. As in Osterwalder's thesis, elements and sub-elements will be presented in capital

letters (e.g. VALUE PROPOSITION) and their attributes in capitals and italic (e.g. *PRICE LEVEL*).

3.1 Pillar 1: The Product

The product, in short, covers everything a firm offers its customers and how it differentiates from the competition. The PRODCUT thus includes all bundles of products and services, and does not relate to a particular *product* in the common sense. PRODUCT is composed of the building block VALUE PROPOSITION(s), which again consists of a set of OFFERING(s).

3.1.1 Building Block 1: Value Proposition

A VALUE PROPOSITION is described by Osterwalder as how products and services are packaged in order to fulfill customer needs. In other words, a VALUE PROPOSITION has value for one or several TARGET CUSTOMER(s). The proposition itself is based on a set of CAPALITITY(ies) described in Section 3.3. A VALUE PROPOSITION itself can be composed of a set of OFFERING(s). A firm can offer one or several VALUE PROPOSITION(s).

OFFERING

An OFFERING simply describes a part or an item of one of the firm's VALUE PROPOSITION(s). An OFFERING is thus a product or service in the common sense, but may also refer to simply a feature of a product or service. An OFFERING has the following attributes:

Attribute value	Description
{Use}	Value is generated through use (e.g. wearing the pants)
{Risk}	Value is generated through the reduction of risk (e.g. insurance)
{Effort}	Value is generated through reduction of efforts (e.g. by providing music digitally over the Internet)

Table 3.1: Values for the attribute *REASONING*

REASONING: Covers the reasons why the firm believes the OFFERING or the corresponding VALUE PROPOSITION provides value for the TARGET CUSTOMER(s). The *REASONING* attribute can take on the values {use}, {risk} and {effort}, see Table 3.1.

VALUE LEVEL: Indicates the customer utility relative to the competition. The *VALUE LEVEL* attribute can take on the values {Me-too}, {Innovative imitation}, {Excellence} and {Innovation}, see Table 3.2.

Attribute value	Description
{Me-too}	The value offered does not differentiate itself significantly from the competition. However, differentiation might still take place through price differentiation which is captured in the *PRICE LEVEL* attribute.
{Innovative imitation}	The firm imitates an existing VALUE PROPOSITION or elementary OFFERING but improves it by adding innovative elements.
{Excellence}	The value is pushed to the extreme for the given elementary OFFERING or VALUE PROPOSITION.
{Innovation}	The firm introduces a completely new product or a revolutionary combination of products and services.

Table 3.2: Values for the attribute *VALUE LEVEL*

PRICE LEVEL: Indicates the price level of the OFFERING or VALUE PROPOSITION relative to the competition. The *PRICE LEVEL* attribute can take on the values {Free}, {Economy}, {Market} and {High-end}, see Table 3.3.

LIFE CYCLE: An OFFERING or VALUE PROPOSITION may create value in different stages of a product or service's life cycle. The *LIFE CYCLE* attribute can take on the following values {Creation}, {Purchase}, {Use}, {Renewal}, and {Transfer} see Table 3.4.

3.2 Pillar 2: Customer Interface

The CUSTOMER INTERFACE pillar relates to how a firm meets its TARGET CUSTOMER(s). It defines how they are reached and how they are interacted

Attribute value	Description
{Free}	The VALUE PROPOSITION or OFFERING is provided without direct financial compensation. The firm's revenues are often generated in another form (e.g. from advertisement).
{Economy}	The firm operates in the low-end segment of the market, and offers a price that is more attractive than the bulk of the competitors.
{Market}	The price level is set at the market price, i.e. no price differentiation from the bulk of competitors.
{High-end}	The upper boundary of the price scale. Include luxury goods and new and innovative value propositions that allows for high premiums.

Table 3.3: Values for the attribute *PRICE LEVEL*

Attribute value	Description
{Value creation} (requirements)	ICT has made it possible for customers to gain value in the creation process through e.g. customization of products before purchase.
{Value purchase} (acquisition)	Value may be offered in the purchase phase by ameliorating and facilitating the buying experience, e.g. through streamlining the transaction, convenient billing and payment etc.
{Value use} (ownership)	The most traditional phase. The value comes from the actual consumption of a product and services.
{Value renewal} (ownership)	Renewing after consumption may offer value, e.g. renew an outdated magazine subscription, empty phone card etc.
{Value transfer} (retirement)	A product or service that has lost its value for the initial acquirer may still generate some value through an ownership transfer. An example is to sell a used book through Amazon.

Table 3.4: Values for the attribute *LIFE CYCLE*

with. In short, it explains the relation between the VALUE PROPOSITION, TARGET CUSTOMER(s), the DISTRIBUTION CHANNEL(s) and the RELATIONSHIP(s) the company wants to establish with its customers.

3.2.1 Building Block 2: Target Customer

TARGET CUSTOMER describes in what market segment(s) the company operates in. Segmentation is important in order to offer the VALUE PROPOSITION(s) to the customers who value it/them the most. Segmentation may be done on specific demographics or using a more general approach. A company may have several TARGET CUSTOMERs.

3.2.2 Building Block 3: Distribution Channel

The third building block describes how the company delivers its VALUE PROPOSITION(s) to the TARGET CUSTOMER(s). The channel can be either direct (i.e. the company itself delivers value to the customers) or through the use of intermediaries. Each DISTRIBUTION CHANNEL has one or several corresponding functions in the Customer Buying Cycle (CBC). See Figure 3.2 for a description of the CBC.
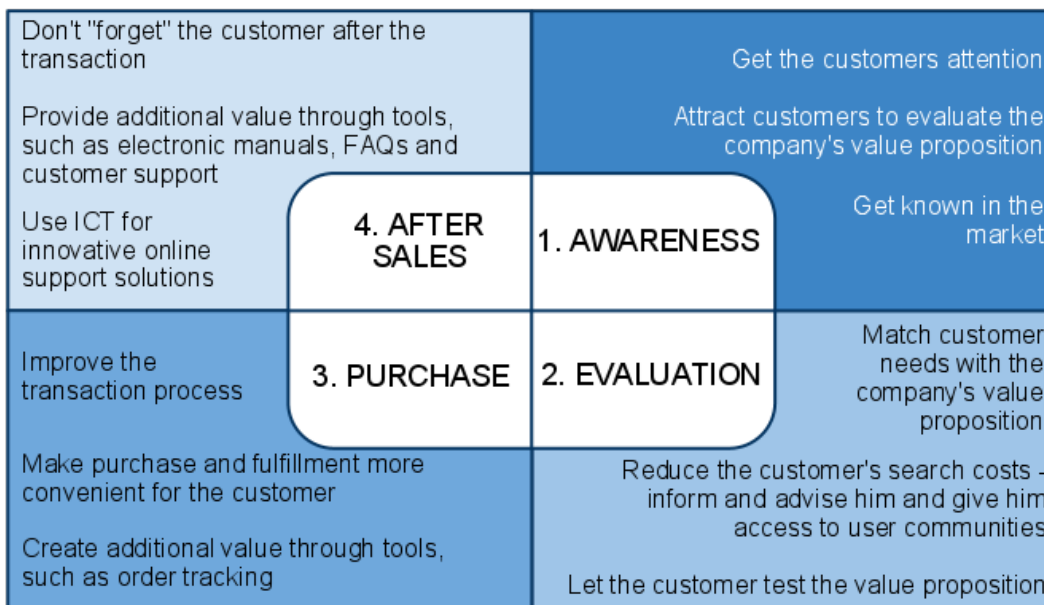
Figure 3.2: CBC - The four functions of the CBC [40]

3.2.3 Building Block 4: Relationship Management

The last building block of the customer interface pillar covers the relationship between the firm and its TARGET CUSTOMER(s). There are many ways to affect the relationship with a customer; all based on the attribute *CUSTOMER EQUITY*. A good relationship may lead to brand loyalty, a property most firms strive to achieve. *CUSTOMER EQUITY* is classified as {Acquisition}, {Retention} or {Add-on selling} which is explained in Table 3.5.

Attribute value	Description
{Acquisition}	All businesses must acquire customers to do business with. It is an expensive affair (often done through advertising), but is nevertheless vital even for businesses with high retention rates (customers die, go bankrupt etc). The relationship established with the customer during acquisition strongly influences both the retention and add-on selling phases, and must therefore be carefully managed and evaluated.
{Retention}	Retention is the art of keeping current customers. In most cases it is less expensive for a firm to keep a customer than to acquire a new one, and it thus makes sense to find a way to extend the relationship (only for profitable customers of course).
{Add-on selling}	Add-on selling is the activity of selling additional products and services to current customers (products that may or may not relate), often accomplished through a good customer relationship.

Table 3.5: The three *CUSTOMER EQUITY* goals.

3.3 Pillar 3: Infrastructure Management

The third pillar covers *how* a company manages to deliver its items of value. In other words, it describes how the firm is able to create its VALUE PROPOSITION(s) and at the same time maintain its CUSTOMER INTERFACE. This is achieved by forming a set of CAPABILITY(ies) under a VALUE CONFIGURATION, either in-house capabilities or those acquired through a PARTNERSHIP NETWORK.

3.3.1 Building Block 5: Capability

A CAPABILITY is a set of repeatable actions necessary in order to offer the firm's VALUE PROPOSITION(s). A CAPABILITY is dependent on a set of RESOURCE(s) that may involve outside ACTOR(s) through a PARTNERSHIP as described in Section 3.3.3.

RESOURCE

A RESOURCE is defined as an input to the value creation process. The RESOURCE may be classified as {Tangible}, {Intangible} or {Human}, see Table 3.6.

Resource type	Description
{Tangible}	Covers most conventional resources such as tools, machines, plants etc.
{Intangible}	Resources that are not easy to evaluate but do have immense value for a firm. E.g. brands, patents etc.
{Human}	Common in consultancies, hospitals, universities etc. where human intellect is the main resource.

Table 3.6: The three classifications of a RESOURCE.

3.3.2 Building Block 6: Value Configuration

The VALUE CONFIGURATION describes how a set of ACTIVITY(ies) is arranged in order to provide a VALUE PROPOSITION. The configuration has an associated *CONFIGURATION TYPE*. While Microsoft in reality is a combination of the different configuration types, the company will be considered a Value Network in this thesis. Figure 3.3 gives a brief description of the Value Network. (Notice that both the Value Chain and Value Shop have been omitted from this summary, as they are not relevant to this thesis).

ACTIVITY

An ACTIVITY is the actual actions a company performs in order to create value. The ACTIVITY is linked to one or several RESOURCEs and relates to the VALUE CONFIGURATION. Each ACTIVITY has an *ACTIVITY NATURE*.

The value creation of a value network lies not in transforming objects per se, but in their mediation. Value networks compete to capture rents from positive network effects, where one new member of the network increases the value of the network for all (See Section 5.2)
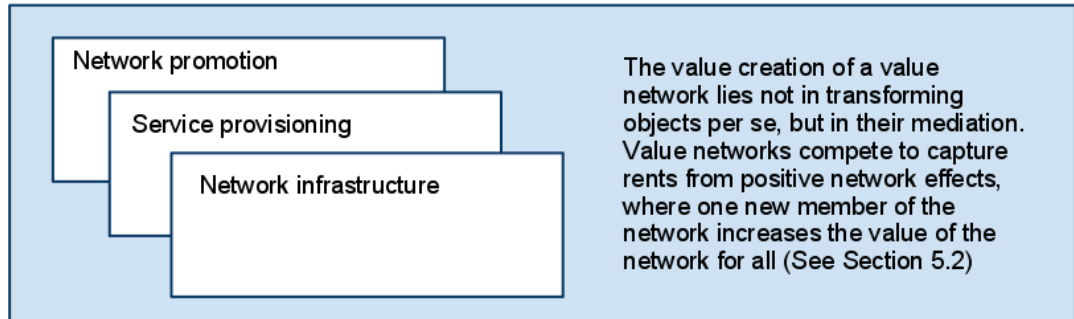
Figure 3.3: The Value Network - The value network [40]

The values of the attribute *ACTIVITY NATURE* for the Value Network are described in Table 3.7.

Main activity	Description
{Network promotion and contract management}	Consists of activities associated with inviting potential customers to join the network, selection of customers that are allowed to join and the initialization, management, and termination of contracts governing service provisioning and charging.
{Service provisioning}	Consists of activities associated with establishing, maintaining, and terminating links between customers and billing for value received. The links can be synchronous as in telephone service, or asynchronous as in electronic mail service or bankin
{Network infrastructure operation}	Consists of activities associated with maintaining and running a physical and information infrastructure. The activities keep the network in an alert status, ready to service customer requests.

Table 3.7: The main activities of a value network.

3.3.3   Building Block 7: Partnership Network

A PARTNERSHIP is a mutual agreement between one or several companies made in order to carry out some specific activity or project. The PARTNERSHIP makes one or several CAPABILITY(ies), RESOURCE(s) and ACTIVITY(ies) from each company available to one or several of the companies involved in the

agreement. Each company's value creating process is thus improved as a result of the PARTNERSHIP (in most cases).

3.4 Pillar 4: Financial Aspects

The last pillar of the ontology includes the last two building blocks; the company's REVENUE MODEL and COST STRUCTURE. The financial aspects are often misinterpreted as the only elements of a business plan. As Osterwalder's points out however, the financial configuration should come as a result of the choices made in the other three pillars. The choice of revenue model and cost structure is thus dependent on the other three pillars, the exact reason why Osterwalder has included them in his ontology. In short, the last pillar describes the company's money-making logic. The description of XBL's REVENUE MODEL will not follow Osterwalder's ontology, as his low-level granularity of this building block is out of scope for what this thesis wants to accomplish. The COST STRUCTURE however, consists of a set of ACCOUNTs, each which explain a specific expenditure in detail.

4

Case Study: Microsoft's Xbox LIVE

This chapter intends to give a thorough description of the business model of Microsoft's XBL service. In accordance with the goals of this thesis, emphasis will be put on the description of the service's revenue model. Osterwalder's ontology presented in Chapter 3 will be used as a foundation. If the reader is not familiar with Osterwalder's work, please review Chapter 3 for clarification. The business model presented is not complete, as it would require inside and competition sensitive information from Microsoft. This is mostly reflected in the description of the financial aspects. To cope with this problem, carefully researched estimates are provided in order to describe the financial aspects as accurately as possible given the public information currently available. The focus of this thesis is to describe the business model aspects of operating an OGS, which is the reason why any aspects related to the initial development of the service is omitted.

Describing a relevant service's business model is an excellent way of gaining insight and knowledge of the OGS industry, the reason why this case study is included. It is the tool used in order to answer the problems addressed in this thesis, and at the same time it works as a reference for the reader to further understand the mechanics of the industry. The reasons for choosing XBL specifically as a case study are many. Former work has presented a case study on one of the largest and most successful OGSs on the PC-platform. XBL is one of the largest and most successful service on the console platform. Comparing the two for similarities and differences is interesting in order to understand the gaming

market as a whole, and also to pinpoint important success factors when operating an OGS - regardless of platform. In addition, XBL stands out as the only console service currently charging users for multiplayer access. Identifying how XBL manages to be the most successful service, while at the same time being the only one with a premium fee for basic features, is valuable industry information. Furthermore, XBL was the first successful service in the console market and has since its inception introduced a number of features which have later become industry standards. Figure 4.1 presents a bird's eye view of XBL's business model. Each of the building blocks will from here be described in detail.

4.1 The Product

According to Osterwalder, the product covers all aspects of what a company offers its customers. This means that utilizing his ontology for defining the business model of a single product in the common sense is wrong, as the business model includes all the bundles of products and services offered by the firm. There are companies however, that do offer an OGS (e.g. Global Arena and their Garena service) as their sole product, which is how Microsoft and XBL will be viewed in this study. The purpose is not to give an overview of Microsoft's business model (which would also include Windows, Office, Live, Bing etc.), but to describe the business model and economics of an OGS.

In this fictive view, the main product offered by Microsoft is thus the XBL service itself, along with a bundle of other services and products built around it. This may sound somewhat counterintuitive, since the Xbox console in reality is the main product, while XBL is a value-adding service for the Xbox. Such technicalities have little meaning for what this study want to accomplish however. Viewing XBL as the main product only simplifies the description of its business model, which will hopefully become clear in the rest of this chapter. All products and services which relates to XBL together constitute the set of value propositions offered by Microsoft. The rest of this section will describe the value proposition offered in detail. From here on and for the rest of this thesis, the reader is expected to be familiar with all the terms and attribute values from Osterwalder's ontology. For clarification, the reader may review Chapter 3.

The product consists of a set of value propositions. A value proposition is in short an item of value that fulfills customer needs. An item may refer to a single product, but also a bundle of products and services. This study has identified
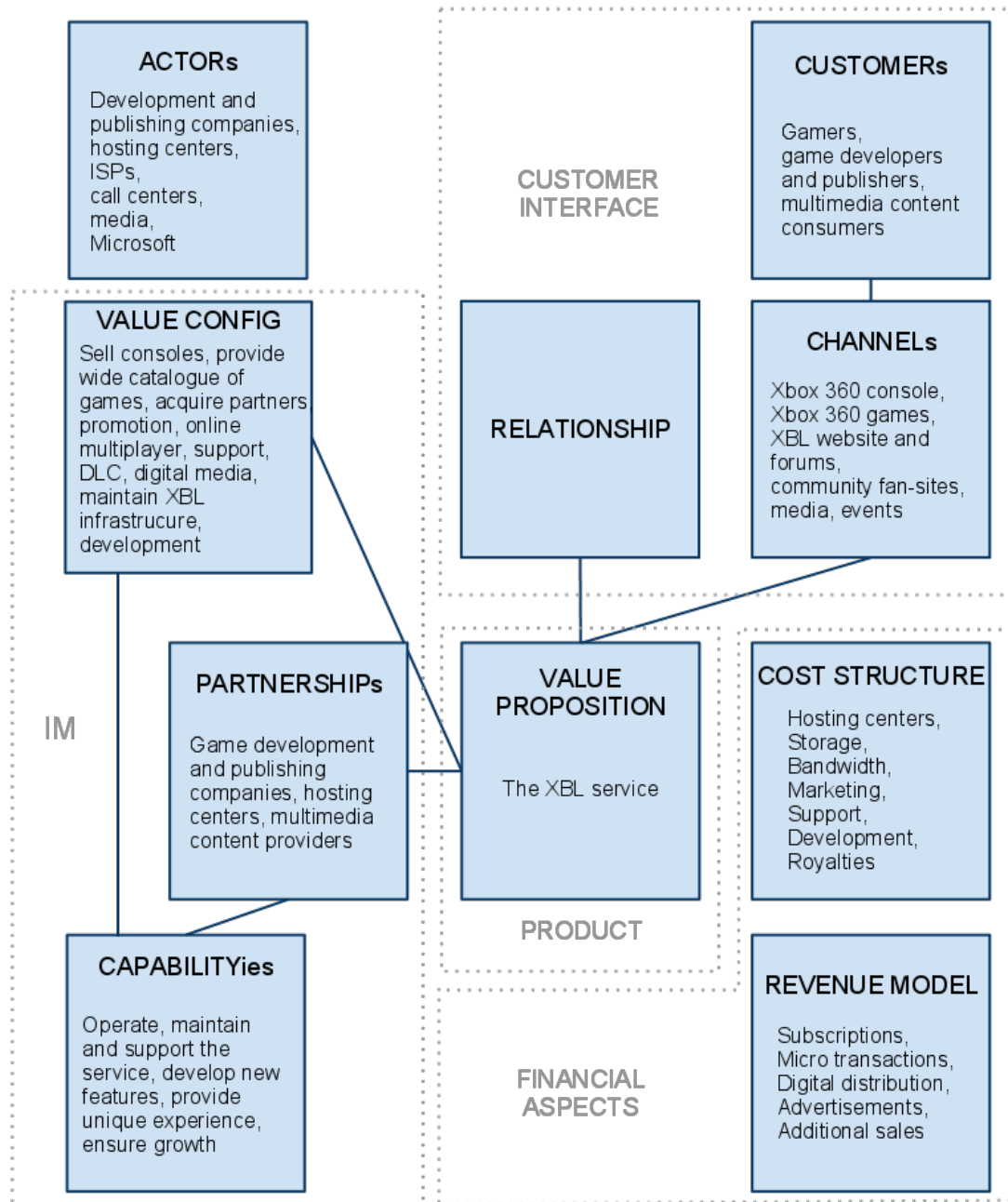
Figure 4.1: XBL business model - A bird's eye view of XBL's business model

3 different value propositions that together constitute the XBL product offered by Microsoft; the service itself, the Xbox 360 console and accessories and the Xbox community. However, a description of the console with accessories and the community will not be included, as it is not relevant for the scope of this thesis.

4.1.1 Value Proposition - The Xbox LIVE service

Microsoft's value proposition is the XBL service itself. Its main purpose is to connect Xbox owners worldwide in order for them to play online multiplayer with each other. In its current version, the necessary software is pre-installed on every Xbox 360 console (the original Xbox was discontinued in 2006) and works out-of-the-box with all XBL game titles. For a more thorough description of the service and its features, review Section 2.4. The XBL service can be further broken down into a set of 11 elemental offerings. A summary of the 11 offerings and their corresponding attribute values can be seen in Table 4.1-4.2

Offering	Reasoning	Value level	Price level	Life cycle
1. Seamless integration	{use, effort}	{me-too / excellence}	{free}	{use}
2. Matchmaking	{use, effort}	{innovative imitation / excellence}	{market / high-end}	{use}
3. Avatar and Gamercard	{use}	{innovative imitation}	{free}	{use}
4. DLC	{use}	{innovative imitation}	{market}	{use, renewal}
5. Games on demand (distribution store)	{effort, risk}	{me-too}	{market}	{purchase, use, renewal}

Table 4.1: Attribute values for offering 1-5 of the XBL service

Offering 1 - Seamless Integration

XBL works out-of-the-box, only requiring an Internet connection for the Xbox 360 console and the registration of a new XBL account. Account creation is an easy process done through the console itself, but it requires the registration of

a credit card for payment. Once the account is registered, all Xbox titles work seamlessly with the service - requiring no effort on behalf of the user. The XBL API provides developers with all the tools necessary in order to integrate the service into their games. XBL is thus invisible to the user while in-game in terms of UI - leaving the user interaction experience to the developers. This way, developers have all the freedom they want when designing their games, while still being able to utilize any number of features provided by XBL. This facilitates a full immersion into the respective games, with no XBL "overhead" interfering with the game experience, apart from small notification when completing an achievement, contacted by a friend etc.

Offering	Reasoning	Value level	Price level	Life cycle
6. Media content	{use, effort}	{innovative imitation}	{market / high-end}	{use}
7. Social interaction and integration	{use}	{me-too}	{high-end}	{use}
8. LIVE Web	{use, effort}	{innovative imitation}	{free}	{use}
9. Account management	{use}	{me-too}	{free}	{use}
10. Support	{use, effort}	{excellence}	{free / market}	{use, renewal}
11. Security and account control	{use, risk}	{excellence}	{free}	{use}

Table 4.2: Attribute values for offering 6-11 of the XBL service

Reasoning: {Use, Effort} The seamless integration reduces a user's effort when setting up the service. It also allows for a better gaming experience by making XBL "invisible" to the user while in-game.

Value level: {Me-too/Excellence} The level of integration does not differentiate substantially from the rest of the services available for consoles at present (although it was initially introduced by XBL). However, looking at the OGS industry at a whole, the integration level falls in the excellence category. Most PC-platform services require downloading, installation and in some instances also

configuration in order to work with supported games.

Price level: {Free}, **Life cycle:** {Use}

Offering 2 - Matchmaking

Matchmaking is the most important feature provided by XBL, allowing online multiplayer matches to be set up with minimal effort for the players. The feature is state-of-the-art and consists of several layers of complexity in order to match players of roughly equal skill automatically while at the same time minimizing latency. The feature also supports parties and clans, in order for players to be able to team up with friends before searching for a match. Figure 4.2 shows the matchmaking feature in work in Bungie's Halo: Reach.
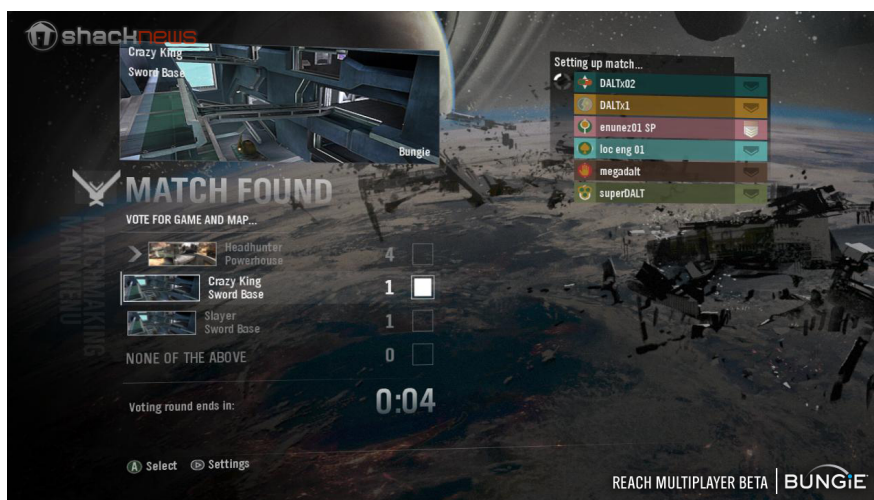
Figure 4.2: Matchmaking in Halo: Reach - XBL's matchmaking feature setting up a match in Halo: Reach [11]

Reasoning: {Use, Effort} The feature greatly reduces the effort associated with finding and connecting with other players around the world in order to play online multiplayer. Through its use, the feature will also make sure that players are matched with other players of equal skill level, enhancing the gaming experience.

Value level: {Innovative Imitation/Excellence} The TrueSkill system of XBL's matchmaking is an innovative feature added to the concept of matchmaking,

making XBL's matchmaking feature one of the best in the industry.

Price level: {Market/High-End} Looking at the services in the industry that do follow a subscription based plan, XBL is priced at market prices. At $9.99 a month, the service is also priced similar to the subscriptions of most popular MMOGs. However, most services in the OGS industry does not rely on a subscription based revenue model. In fact, XBL is the only service in the console market that does require a subscription for basic features such as online multiplayer, which puts XBL in the high-end classification.

Life cycle: {Use}

Offering 3 - Avatar and Gamercard

Each XBL account is associated with a Gamercard and an avatar (review Section 2.4). The Gamercard stores account information such as game statistics, achievement points (Gamerscore) and reputation. In-game achievements may also unlock different rewards which can be used to customize the avatar.

Reasoning: {Use} The avatar and corresponding Gamercard supports a competitive relationship between XBL users through the Gamerscore and various unlockables. Viewing recent games and other game statistics enhances the social aspect of the service.

Value level: {Innovative Imitation} The extensive avatar and achievement systems was both innovative elements first in use by XBL.

Price level: {Free}, **Life cycle:** {Use}

Offering 4 - DLC

XBL offers an extensive amount of DLC through XBL Marketplace. The Marketplace offers everything from game trailers, game demos and avatar content to wall-papers and entire arcade games. An important aspect of XBL's DLC is the Add-ons for existing game titles. Patches with new game content can be downloaded through the XBL Marketplace or in-game, either for free or for a premium fee of Microsoft Points. Updates apart from content patches are automatically

installed when starting a game with an outdated version.

Reasoning: {Use} DLC provides value-add content in various forms.

Value level: {Innovative Imitation} XBLA with all its smaller arcade titles, as well as the avatar and dashboard content are innovative elements.

Price level: {Market}

Life cycle: {Use, Renewal} Purchased digital content can be re-downloaded for later use. Updates also provide renewal value.

Offering 5 - Games on demand (distribution store)

In addition to its already vast portfolio of DLC, XBL also has its own digital distribution store for Xbox games named Games on Demand. As of writing, 235 original Xbox and Xbox 360 games are available for purchase and direct download through XBLM [37]. The ownership follows the account and can thus be re-downloaded and installed for as long as the account is valid at no extra cost.

Reasoning: {Effort, Risk} Games on Demand reduces the effort of acquiring and storing a game. In addition, risk is reduced by removing the need for physical discs.

Value level: {Me-too} Other services such as Battle.net and Steam also provides a digital distribution store for supported titles.

Price level: {Market}

Life cycle: {Purchase, Use, Renewal} The acquisition process is easier due to the digital distribution. Re-downloading a former purchase also provides renewal value.

Offering 6 - Multimedia content

XBL supports a number of different multimedia providers, allowing streaming and purchase of television shows, movies, sport events and music on the Xbox 360 console on demand, depending on the users geographical location. In the

U.S. and Canada, users can stream television shows and movies from Netflix and sport events from ESPN. Similar services are also offered in other regions, such as Sky Player in the U.K. and Foxtel in Australia. All XBL users can purchase music, movies and TV-shows from Microsoft's own Zune platform. All such features, apart from Zune, require additional subscriptions to the different content providers.

Reasoning: {Use, Effort} By providing additional multimedia content such as TV, movies and music, XBL reduces effort by merging all forms of digital entertainment in a single service as well as simplifying the acquisition process.

Value level: {Innovative Imitation} Streaming of on-demand entertainment content is an innovative feature added to the OGS concept.

Price level: {Market, High-end} It is somewhat difficult to classify the PRICE LEVEL of Offering 6. The features require a subscription to the applicable content providers, which does not relate to XBL's business plan, but the user does have to be a XBL Gold subscriber in order to have access to these features in the first place. Once a Gold subscriber however, the streaming is free-of-charge as far as Microsoft is concerned. These features are classified as High-end however, as other devices such as the PlayStation 3, Ninendo Wii and a number of Blu-Ray players could perform the streaming at no extra cost apart from the content provider subscription. On the other hand, the Zune store can be accessed without a Gold subscription. Digital content distributed through Zune is priced at market prices.

Life cycle: {Use}

Offering 7 - Social Interaction and Integration

Assuming a Gold subscription, XBL provides both textual, party, voice and video chat. In addition, XBL provides the possibility to integrate a user's XBL account with both Twitter and Facebook. If done, users may update their status, view other friends statuses and pictures, write Tweets etc.

Reasoning: {Use} The number of features is slim compared to the browser based version for normal use. However, the ability to search for XBL friends by

utilizing Facebook's friend list and vice versa, simplifies the process of finding acquaintances on both networks and is a desirable feature. The chat functions enhances the social experience through use.

Value level: {Me-too}

Price level: {High-end} As for Offering 6, Offering 7 is classified as High-end since it requires a Gold subscription. Other services (e.g. Battle.net) provide the same functionality for free.

Life cycle: {Use}
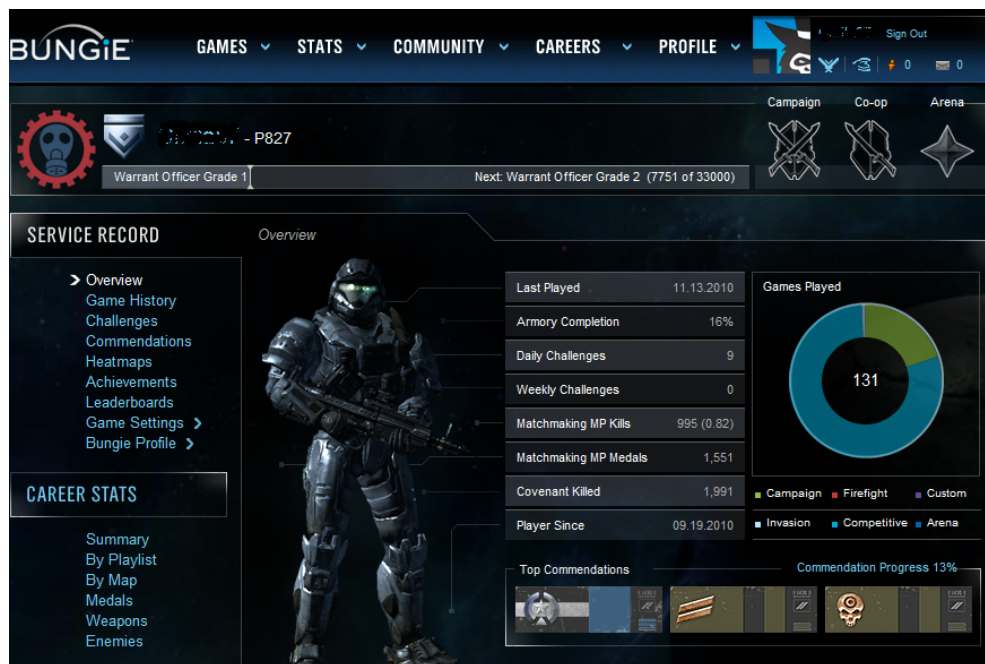
Figure 4.3: LIVE Web - LIVE Web statistics seen on Bungie's web portal for Halo: Reach

Offering 8 - LIVE Web

LIVE Web is the online XBL portal. The portal provides a complete list of a user's merits, hosts a web version of the Marketplace, the online support portal, the community forums etc. Everyone with an XBL account can log in and among other things alter personal information, edit the avatar, visit the official Xbox

forums, adjust security settings, view personal game statistics as well as those of all associated friends. The game progress and statistics features is also provided through an API to game developers, allowing them to create personalized pages for each title with statistics gathered through XBL, see Figure 4.3. In addition all forms of account management (see Offering 9) can be done from LIVE Web.

Reasoning: {Use, Effort} LIVE Web allows XBL users to access XBL without using the actual Xbox 360 console. The LIVE Web match statistics also far exceeds those presented in the console UI, providing additional value. Effort is also reduced as many features, such as account management, are more easily accessed on a computer than on a game console.

Value level: {Innovative imitation} The improved game statistics available on LIVE Web (as well as the API) is an innovative feature added to the OGS concept.

Price level: {Free}, **Life cycle:** {Use}

Offering 9 - Account Management

XBL provides an extensive account management section. Each user can among other things alter personal information including passwords, view and alter payment details, show the transaction history, alter the subscription as well as transfer licenses (on purchased content) between different physical Xbox 360 consoles. The section provides users with full control of their relationship with XBL and Microsoft.

Reasoning: {Use}, **Value level:** {Me-too}, **Price level:** {Free}, **Life cycle:** {Use}

Offering 10 - Support

XBL provides an extensive online support portal with introduction guides, troubleshooting and a Frequently Asked Questions (FAQ) section. The portal provides easy to understand solutions to (almost) every problem a user can solve him/her self, see Figure 4.4. In addition, the portal provides contact information for both email and direct call to Microsoft support personnel for additional support.

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Reasoning: {Use, Effort} Support enables customers to have otherwise unfixable problems (for a user personally) solved. In many cases, the effort exercised by a user in order to fix a problem is also greatly reduced through support. Some problems cannot be fixed by the user, in which case the support personnel upon contact will take over and further delegate the problem to the appropriate people.

Value level: {Excellence} The extensive and perspicuous guides in the XBL support portal is among the best in the industry.

Price level: {Free, Market} The online support is free of charge, while the phone support follows market prices.

Life cycle: {Use, Renewal}
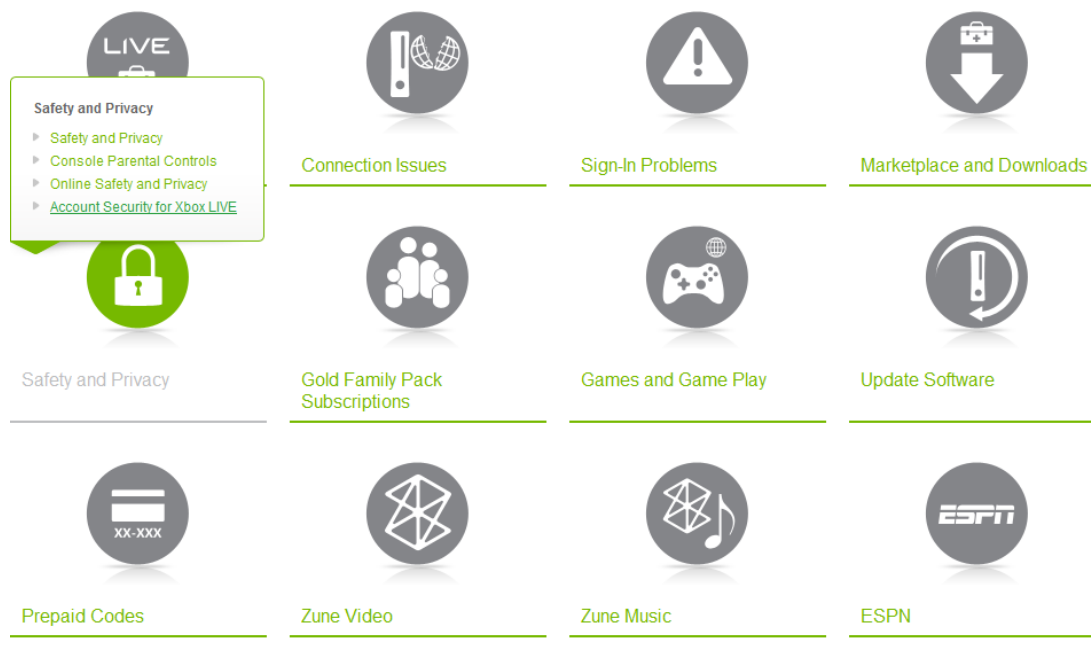
Figure 4.4: XBL Support portal - The troubleshooting section of XBL's support portal

Offering 11 - Security and Account Control

In addition to all the security measures provided on the technical level in order to prevent hacking, cheating and other forms of malicious actions, XBL provides a number of security options for the user. The user can change security settings regarding activity (what is allowed to do on XBL), privacy (who can view and interact with the user), content and opt-in (for various marketing purposes). Each of the categories provides a set of parameters which can be tuned to the each individual's preferences. To simplify the process, XBL also supports three distinct account forms; adult, teen and child. The security settings can be used by parents to control the XBL experience for their children and among other things restrict their play time, explicit content and interaction with strangers. The settings are easy to understand and resemble those of Facebook.

Reasoning: {Use, Risk} The security features prevents loss of personal information and account theft. The account control features provide value through personalization of the service and allowing parents to control their children's use.

Value level: {Excellence} XBL's security and account controls are state-of-the-art and among the best in the industry.

Price level: {Free}, **Life cycle:** {Use}

4.2 Customer Interface

The customer interface describes how a firm finds and interacts with its customers. It also describes how a relationship is established and maintained with all of the target customers. The customer interface is comprised of the building blocks target customer, distribution channel and relationship management.

4.2.1 Target Customer 1 - Gamers

Gamers are the main target customer for XBL. Microsoft does not intentionally narrow down the market segment any further with its OGS, removing the need for any additional demographics. XBL is meant to attract as many users as possible (i.e. gamers); casual, semi-hardcore and hardcore gamers alike. However, Microsoft does operate with a distinction between the different types of gamers.

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XBL is offered with two subscription models, XBL Free and XBL Gold (review Section 2.4). The former is aimed at more casual gamers, providing most of the functionality but lack the possibility of online multiplayer which XBL Gold provides. XBL Gold on the other side, is aimed at more semi-hardcore and hardcore gamers. This segmentation allows Microsoft to price differentiate between the customers.

4.2.2 Target Customer 2 - Game Developers and Publishers

The second target customer is game developers and publishers. A popular console OGS will increase the value of the overall platform, attracting more developers and publishers. More developers and publishers by itself do not directly provide any financial contribution to the OGS, but they do so indirectly. More developers and publishers result in more game titles for the platform and the OGS, and more titles will again attract more potentially subscribing customers, by appealing to a larger market.

4.2.3 Target Customer 3 - Multimedia Content Consumers

Microsoft has put a lot of effort in providing a complete multimedia entertainment experience with the Xbox 360 console and XBL. While being valuable to Target Customer 1 as well, Microsoft also targets media center customers with XBL, competing with established services such as TiVo.

4.2.4 Distribution Channel

The distribution channel describes how the company markets and delivers its value propositions to the target customers. This study has identified 6 distinct distribution channels relating to XBL. Each channel fulfills a function in the CBC (review Figure 3.2). Table 4.3-4.4 summarizes the distribution channels and their corresponding CBC function(s).

Distribution Channel 1 - The Xbox 360 console

Every Xbox 360 console comes with XBL pre-installed and configured. To date, the consoles themselves are the only direct distribution channel for the XBL

software. Under no normal circumstances should any user need the XBL software without owning an Xbox 360 console, in which the software is already installed. Using XBL legally therefore requires an Xbox 360 console. CBC function: {Purchase}
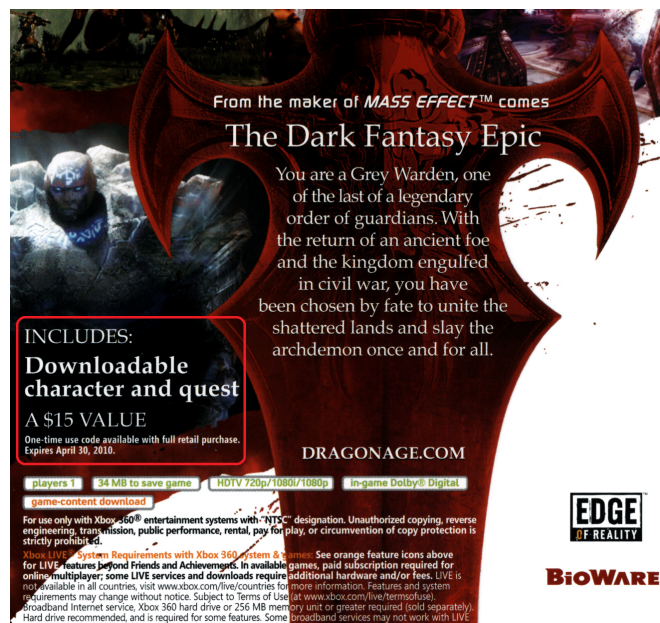
Figure 4.5: XBL marketing on game cover - XBL features and content marketed on the back of the Xbox 360 cover for Dragon Age: Origins [15]

Distribution Channel 2 - Xbox 360 games

Each Xbox 360 title includes a list of XBL features it supports on the game cover. In many cases, the cover also includes ads on premium content available through XBL. In addition, many titles tempts the player with slogans referring to "epic online multiplayer" etc, something that relies on XBL. Thus, even though a 360 title does not distribute any XBL content directly, they facilitate and market its use, see Figure 4.5. Each game is also required to have XBL support (in its simplest form through achievements only), which provides customer awareness one way or another, even though the customer may not have been interested in XBL to begin with. CBC function: {Awareness}

Distribution Channel 3 - Xbox LIVE Website and Forums

The LIVE Web site serves as an extensive marketing portal in addition to hosting many features such as the web marketplace and account management etc. It includes ads and information on the console itself, many of the popular game titles and everything related to XBL as described in Section 2.4. The main Xbox forums can also be accessed from the LIVE Web portal. The forums include everything from troubleshooting to user discussions about titles, features and upcoming additions to the service. CBC function: {Awareness}, {Evaluation}, {After Sales}

Distribution Channel	{Awareness}	{Evaluation}	{Purchase}	{After sales}
1. Xbox 360 console			Pre-installed and config-ured XBL software is included in every Xbox 360 console	
2. Xbox 360 games	Every Xbox 360 game supports XBL in some form and advertises the supported features on its cover			
3. XBL web-site and fo-rums	LIVE Web promotes XBL and its many features	The official forums pro-vide valuable feedback from users		The web portal provides many value-adding services to the customer such as account management

Table 4.3: Distribution channel 1-3 with reasoning for their respective CBC function(s)

Distribution Channel 4 - Xbox Community Fan-sites

The Xbox platform has several community fan-sites. Large and popular sites such as www.teamxbox.com market the service in many ways. Such sites closely follow news and updates about the service and platform in general and eagerly discuss and comment on any changes or planned improvements. In addition to valuable feedback to the developers, such community sites provide extensive and free marketing as well as its own portal for problem discussions (in addition to the official support portals provided by Microsoft). CBC function: {Awareness}, {Evaluation}, {After Sales}

Distribution Channel	{Awareness}	{Evaluation}	{Purchase}	{After sales}
4. Community fan-sites	Markets XBL and its supported games	As in the official forums, many fan-site operated forums provide valuable feedback on the service and its features		Troubleshooting and unofficial support threads is often provided as an additional value-add for customers
5. Media	Media markets the service	Articles and reports may also be a source of user feedback		
6. Events	The latest additions and development news are often presented at larger events	Demos and presentations are used for feedback from industry experts, journalists and fans alike		

Table 4.4: Distribution channel 4-6 with reasoning for their respective CBC function(s).

Distribution Channel 5 - Media

XBL is perhaps one of the OGS with the most media coverage worldwide. In addition to indirect marketing through the individual games, the service itself is

marketed on web sites, printed media (i.e. magazines etc) as well as television in several countries. Renowned magazines, newspapers and web sites also frequently include interviews by Microsoft officials as well as various articles and reports - all which provide marketing and publicity for better or worse, in addition to valuable feedback. CBC function: {Awareness}, {Evaluation}

Distribution Channel 6 - Events

The Xbox team as well as Microsoft's game development studios frequently attends various conventions in order to show off and market the latest news and features about the platform. The Electronic Entertainment Exposition (E3), Consumer Electronics Show (CES) and Game Developers Convention (GDC) are among the largest. In addition to show off the latest news, such conventions are a great way to receive feedback on prototype features and early game builds. CBC function: {Awareness}, {Evaluation}

4.2.5   Relationship Management

The relationship management covers how the firm interacts with its customers and describes what kind of relationship it wants to establish with them. A customer relationship in most cases does not start and end with the transaction, something that is covered by the three customer equity goals described in Section 3.2.3.

Acquisition

The first customer equity goal is acquisition, the process of acquiring customers to do business with. In most cases the acquisition process is done through marketing. Microsoft's acquisition process for XBL is no different, but due to the fact that Microsoft controls the entire game platform, the acquisition process for XBL includes other elements besides direct marketing of the service. XBL is fully dependent on the Xbox 360 console - there is little reason to subscribe to XBL without an Xbox 360. In other words, acquiring new XBL customers in many cases includes the sale of a new Xbox 360 console as well (unlike services on the PC platform; most households already own a PC). The two distinct products, the console and the service, are therefore in most cases marketed together. An example is the ad seen in Figure 4.6. The ad is really for XBL's Netflix support, where users can download movies and TV-shows on-demand. However, the ad does not include the XBL logo or any XBL reference at all, apart from the

text "live your moment", and is a good example of the dependency between the products. XBL and the Xbox 360 console are marketed as a platform, not individual products.

Figure 4.6: Netflix advertisement - Advertisement for Netflix on XBL [34]

The quality of XBL greatly affects the overall success of the platform. A quality service lays the foundation for quality multiplayer games. Successful games, especially hit-titles are important in order for the platform to retain its market share, or better yet, increase it. Hit-titles of late often include multiplayer, which is dependent on XBL. It is possible to play online multiplayer on the Xbox 360 without XBL through the use of third party software and privately run game servers. Although not illegal, such services are often hard to set up and don't include any of XBL's numerous features apart from multiplayer (albeit perhaps the most important feature). The use of such solutions is not widespread however, and most Xbox 360 owners do in fact have an XBL account. As of writing, XBL has over 30 million members out of approximately 50 million Xbox 360's worldwide [48]. All Xbox 360 titles are in fact required by Microsoft to support XBL as mentioned earlier. The marketing of all Xbox games thus indirectly

markets XBL as well. In addition, as described in the previous section, all Xbox 360 games include references to XBL on its cover.

Xbox 360 owners are also encouraged to create an XBL account when using the console without being signed in to an existing account. The dashboard features demos of everything XBL has to offer. In-game a player is also redirected to the XBL account section if he/she tries to access a multiplayer or DLC section of the game menu.

In short, the XBL acquisition process is rather complex and is highly dependent on the sales and use of both the Xbox 360 console and Xbox 360 games, as well as conventional marketing.

Retention

The second customer equity goal is retention, the art of keeping current customers. XBL plays an important role in the overall Xbox platform's retention ability. A singleplayer campaign of a console title normally lasts somewhere from 7-15 hours, with most titles in the lower end of that scale. The multiplayer portion made possible with XBL however, can occupy the user for tenths and even hundreds of hours. The ratio between dollars spent versus playtime is thus greatly increased with XBL, providing customers additional value for their investments.

In order for a company to have a low churn rate, it must ensure brand loyalty, high switching costs or a combination of both. For the most part XBL focuses on the latter, in other words to ensure that all of its subscribers have as high switching costs as possible. The size of an OGS is a critical factor due to network externalities (see Section 5.2 for more details on network externalities and switching costs), the exact reason why retention is as important as acquisition in the OGS industry. There is no value in acquiring a customer (have him/her subscribe to XBL) only to have the very same customer unsubscribe the day after.

A number of features are built in to XBL in order to generate high switching costs. In fact, the entire service is constructed to lock-in subscribers as much as possible, whether they are aware of it or not. The most obvious feature is the achievement system. Achievements are a great way to prolong a game's life by rewarding the player for replaying the game. Completing an achievement contributes to the overall Gamerscore (review Section 2.4). The Gamerscore is a source of competition, where friends often compete to have the highest score. LIVE Web also makes it possible to view the individual achievements and overall game progress for all friends. In addition, completing achievements often unlock

rewards, in-game, for the avatar, Xbox 360 dashboard or some form of multimedia (trailers, behind-the-scenes documentary etc). The system increases a user's switching costs; by changing to a competing service, all progress and rewards would be lost. The Gamerscore also works as a recruitment channel for XBL Gold. All games with multiplayer support have a subset of its achievements reserved for the multiplayer portion. In order for a player to complete all of the achievements, an XBL Gold membership is thus required. In addition to being fun and rewarding, the achievement system thus greatly increases the switching costs and help to improve the churn rate.

Other examples of features providing high switching costs are the friend and social system, XBLM and the media provider support. In the same way as a social network, encouraging social interaction through chatting, video conferencing or engaging in multiplayer results in a higher density of connections between the network's users. Having a large friend list increases the switching costs. XBLM have proven to be very successful, with tons of content available (review Section 2.4). Every purchase made on XBLM is connected to the account and is accessible only if the account is active. Thus, every purchase made on XBLM increases the switching costs. Supporting media providers such as Netflix, ESPN and Zune also increases the switching costs by integrating all forms of media on XBL, making the Xbox platform a complete entertainment system.

There are numerous other examples, but in short XBL's many features are designed in such a way that they increase the switching costs, making each customer less likely to leave XBL for a competing service and platform, while at the same time being attractive and valuable to the users.

Add-on sales

The third customer equity goal is add-on selling, which involves selling additional products and services to current customers. Add-on selling is attractive because it requires little effort in terms of marketing and other financial investments, as opposed to acquiring new customers.

XBL by itself provides add-on sales. Its success contributes to the growth of the platform, resulting in additional consoles and game titles being sold. As for specific XBL add-on selling features there are plenty, perhaps the most dominant being XBLM. XBLM is a great way for Microsoft to earn premium profits on content with close to zero development and marginal cost, such as wallpapers and avatar outfits. Third-party developed content, such as content patches for

games or indie XBLA games distributed through XBLM all pay a percentage of each sale to Microsoft as well. XBLM's virtual currency Microsoft Points also improves add-on sales, by "hiding" the real cost of a product or service, making customer more likely to purchase content. The web portal is also designed with add-on sales in mind, providing an online version of XBLM as well as being a direct channel to Xbox associated products.

XBL is one of the OGS's which provides the most content and merchandise, most of it for a premium fee. Microsoft's approach to add-on sales has been highly successful as we shall see in Section 4.4.1.

4.3   Infrastructure Management

The infrastructure management describes how the company is able to create value. In other words, it describes the set of abilities necessary in order to provide its value propositions and maintain its customer interface as previously described. The infrastructure management is recognized by a value configuration that takes a set of capabilities and resources as input, both in-house and those acquired through a partnership network, in order to produce value.

4.3.1   Capability

A capability describes the abilities required in order to offer a value proposition. This research has identified 4 distinct capabilities required in order for Microsoft to offer its XBL product.

Capability 1 - Operate, maintain and support the service

The operation of a global OGS is difficult task, requiring the ability to correct both software and hardware errors on a large scale. In order for XBL to retain its status as a premium service, any bugs or other malfunctions must be corrected quickly to minimize any potential downtime for users. Microsoft must also ensure that all partnership contracts and relationships are good in order to secure a stable infrastructure to host XBL on. When something erroneous does happen, the proper support functions must also be in place to satisfy customer needs. Capability 1 relies on the following resources: Infrastructure {Tangible}, Maintenance Team {Human}, Support Team {Human}.

Capability 2 - Develop new features

As the only subscription-based OGS on consoles for online multiplayer, XBL cannot afford to lack behind the competition when it comes to complementary innovative value-adding features. In order to justify the premium, the XBL team must constantly push out new features in order to satisfy but also surpass the expectations of the user base. The introduction of new features is also a basis for marketing campaigns, potentially recruiting new users. Capability 2 relies on the following resource: Development Team {Human}.

Capability 3 - Provide a unique online experience

With Capability 1-2 as a foundation, Capability 3 covers how Microsoft manages to get XBL to stand out in the OGS industry. With increasing competition, the ability to provide a unique experience is necessary in order to justify the existence of the service. An OGS and all of its features combined are no better than the presentation and usability experienced by the end-user. Microsoft has been a pioneer in OGSs for consoles in this respect, and must continue to be so in order to ensure future success for XBL and the entire Xbox platform. Capability 3 relies on the following resources: Development Team {Human}, Company "know-how" {Intangible}.

Capability 4 - Ensure a growing user base

Success in Capability 4 is highly dependent on success in Capability 1-3. Without a stable and predictable service which receives regular feature updates, it is hard to sell the service in such a competitive market as the gaming industry. However, success in Capability 1-3 does by no means ensure future growth for the service by itself. Microsoft must in addition have the capability to market XBL efficiently in the right market segments in order to attract new users. A larger user base increases the network effects of all users, preventing them from switching to another service, while at the same time increases the value of the XBL brand. It is thus just as important to keep the current customers as to acquire new ones.

Additional users should not affect the current user base negatively in any way. Thus, Microsoft must ensure that the service scales seamlessly. This requires a solid infrastructure strategy as well as financial and political knowledge of the geographical regions in which the service is located. Capability 4 relies on the following resources (not including those of Capability 1-3): Brand {Intangible},

Marketing Department {Human}, Sales Team {Human}.

The relationship between the value proposition(s) (the excluded propositions are shaded), target customers and the necessary capabilities can be seen in Figure 4.7.
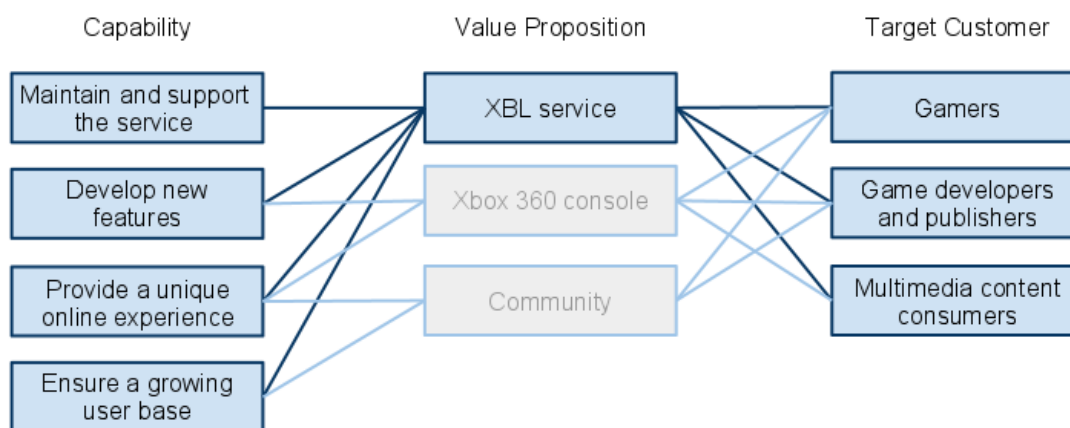
Figure 4.7: Capability relationship - The relationship between the necessary capabilities, value propositions and target customers

4.3.2   Value Configuration

The value configuration describes how a set of activities is arranged in order to provide the offered value propositions. The specific arrangement is often referred to as a configuration type. In reality, Microsoft includes elements of all three configuration types; the value chain, value shop and the value network. Microsoft plans, develops and publishes games for the Xbox platform and thus resembles the normal video game industry value chain. The development process of videogames however is often a dynamic and iterative proces which resembles a value shop. In the fictive view on product basis however, Microsoft operates as a value network, linking gamers together to allow online multiplayer between them. Thus in short, Microsoft offers a networking service (review Section 3.3.2 for a description of the value network). There are three primary activities associated with a value network: network promotion and contract management, service provisioning and network infrastructure operation. This research has identified 10 main activities associated with XBL, which can be classified in the abovementioned categories as follows:

{Network promotion and contract management}

Activity 1: Sell Consoles. Selling Xbox 360 consoles is an essential activity for Microsoft, as it is the only means of distributing the XBL service software. The Xbox 360 is also as of writing the only supported game console. Thus selling new consoles is the most important way of acquiring new XBL users.

Activity 2: Provide a large selection of high-quality online game titles. A market leading service requires an extensive list of supported high-quality games in order to stay on top. A large fraction of an OGS's success lies in the supported games. Without popular titles encouraging online play, XBL would lose players to competing services. To ensure future growth, Microsoft must therefore provide as many high-profile online titles as possible, either published in-house or by partners.

Activity 3: Acquire partners. Microsoft is dependent on a number of partners worldwide in order to offer its XBL service, among them hosting centers, ISP's, game publishing companies and call centers. See the next section for more details. The acquisition of new partners is essential in order for XBL to function and continue its growth.

Activity 4: Promotion. Promoting XBL is an essential activity in order to perform Activity 1 and other means of acquiring new customers. Promotion is done through Xbox 360 games, LIVE Web and official forums, community fansites, various media and events.

{Service provisioning}

Activity 5: Provide online multiplayer. XBL's main feature is to provide easy and fun online multiplayer on the Xbox 360 console.

Activity 6: Support. Microsoft provides extensive support for their entire Xbox platform. The support portal for XBL is critical in order to satisfy customer needs and maintain the quality of the brand.

Activity 7: DLC. XBL users have "endless" amounts of DLC accessible through XBL. Providing new content is an important activity in order to keep the cus-

tomer interest high.

Activity 8: Digital Multimedia. XBL provides digital multimedia in the form of on-demand music, TV-shows and movies in addition to the game related DLC. Such multimedia enhances the entertainment spectrum of the Xbox platform. As for DLC, additional content must be added continuously in order to keep the customer interest high.

{Network Infrastructure Operation}

Activity 9: Provide and maintain XBL infrastructure. XBL currently hosts around 30 million subscribers, with a peak load of as much as 3 million concurrent users [41]. This requires a substantial back-end infrastructure, even though online matches are hosted locally on the users' consoles. The quality impression of the service heavily relies on the up-time and performance of the infrastructure.

Activity 10: Development. In order for XBL to remain an attractive service, the development team must continue to push out new and innovative features. As a premium service, XBL must satisfy all expectations of an OGS at all times.

4.3.3   Partnership Network

As mentioned in the previous section, Microsoft is completely dependent on a number of partners in order to offer its XBL product. As a two-sided platform, the console and the XBL service have gamers on one side and game developers/publishers on the other. Microsoft has acquired several game developing studios over the years and works as a publisher in addition to being a console manufacturer. However, being the lone publisher for a platform does not provide enough variety and content to the users, resulting in Microsoft having to partner with several game publishing companies. In addition, a number of other partners are necessary in order to offer the XBL service itself. The following 5 classifications of partners have been identified, all required for Microsoft to hold the capabilities described in Section 4.3.1.

Partnership 1: Game publishing companies

For a console platform, having partnered with all of the industry leading game publishers is crucial in order to get a foothold in the market. Microsoft was able to acquire partnerships with giants such as Activision, Konami, Capcom, Eidos, Epic and finally also EA in the early days of the original Xbox, leading to a rapid success for the platform. Continuing to nurture these partnerships is essential, as a large and diverse selection of games is important to stay in business and keep the interest for XBL and the Xbox high. Such partnerships can also result in contracts on exclusive titles for the platform, something that may boost the popularity significantly if it's a hit title.

Partnership 2: Managed hosting centers

Xbox hosts millions of players worldwide, requiring a large and geographically spread server infrastructure. While matches are hosted by players locally, the service overhead, all the DLC, media and other numerous features is mirrored all over the world. In order to provide the necessary infrastructure, Microsoft must partner with local hosting providers who take on full responsibility for operation and maintaining the servers. Review Section 2.2.1 for more details.

Partnership 3: Multimedia content providers

XBL provides entertainment media in the form of on-demand music, TV-shows and movies. Media content is copyrighted and is licensed to different media providers in different geographical areas. In order to access such content through XBL, local partnerships with different providers must be established, such as Netflix and ESPN in the U.S. and Canada, and Sky Player in the U.K. and Ireland. Licensing agreements must also be made with copyright holders of the multimedia distributed through Zune.

Partnership 4: ISP's

An extensive OGS such as XBL generates large amounts of data being sent back and forth between players and the XBL servers. Microsoft must partner with ISP's all over the world in order to reserve necessary bandwidth for the service to operate. In some regions, the local ISP may also be the hosting provider.

Partnership 5: Call centers

Microsoft offers XBL customers direct call support. In order to avoid lingual and/or cultural difficulties, Microsoft must partner with different call centers around the world.

4.4 Financial Aspects

The financial aspects describe the profit-making logic of the firm and conclude the business model. It is comprised by the revenue model and the cost structure of the company.

4.4.1 Revenue Model

Describing the revenue model of XBL with only public information at hand is a difficult endeavor. As explained in Section 2.5.3, the Xbox platform operates in a two-sided market, making an economic description far more complex than that of a conventional product. However, as mentioned in the introduction to this case study, the Xbox 360 console is not included in this business model description as the focus is on the OGS. This makes the description of XBL's revenue model easier and more precise, as it leaves out every revenue-making aspect not directly connected to the service.

XBL is the sole OGS for consoles that charges users for online multiplayer through a subscription model. However, this is not XBL's only source of revenue. XBLM contributes with revenue from each transaction of digital content, both DLC and digital distribution of games. The service itself also increases the overall demand for the Xbox platform, earning additional revenue from royalties on game sales. In addition, XBL generates revenue through feature ads on XBLM (See Section 5.3.2 for the definition of feature ads).

The following calculations all lack important information in order to be accurate. The information missing is not publicly available, but business secrets on Microsoft's behalf. However, the purpose is not to accurately outline XBL's financials, but to capture the nature of its operations. The calculations thus provide insight as they show an approximate order of magnitude, regardless of the actual accuracy of the provided estimates. Notice that feature ad revenue has been omitted from the revenue model description below, as no public information regarding revenue from feature ads has been identified.

Revenue Source 1: Subscriptions

XBL is a very large service in terms of users, with currently more than 30 million subscribers. XBL is offered with three different subscription models. XBL Free does not allow multiplayer or include access to entertainment media features such as Netflix, ESPN etc, but does give access to XBLA. However, it is only the XBL Gold subscription plan which generates subscription revenue. As of writing, XBL Gold provides access to all XBL features and is priced at $9.99 for one month, $24.99 for three months and $59.99 for twelve months. In addition, Microsoft offers a Family Pack, a subscription model which allows for up to four individual Gold accounts, priced at $99.99 a year. In other words, if two individuals in the same household have/want an XBL Gold account, the Family Pack is the cheapest alternative on a yearly basis. See Table 4.5 for an overview of the features associated with each subscription plan.

Even with the numbers outlined above, calculating an exact yearly revenue stream from subscriptions is impossible. The reason is simply because Microsoft has never accurately announced the ratio between XBL Free and XBL Gold members. Even with the exact ratio, one would also need the number of Gold members taking advantage of the Family Pack discount in order to provide a satisfactory number. When estimating the ratio, several variables must be taken into account. Firstly, XBL Free has the major advantage of being free. Not everyone is interested in online multiplayer, and the Gamercard and XBLM still provides plenty of reasons to subscribe to the service. However, online multiplayer is without a doubt an integral part of an OGS, something that favors the Gold model. In addition, using the Xbox 360 for other purposes than gaming (ESPN, Netflix etc), also require a Gold subscription. Without further information I therefore estimate a fifty-fifty ratio between the two subscription models, leaving the Family Pack discount out of the equation for simplification. A leaked Microsoft spreadsheet dated February 2008 also confirms that a slight majority of the XBL user base pay for the service [46][6]. A fifty-fifty ratio means 15 million paying subscribers as of writing.

To provide a lower bound on the revenues from subscriptions, users are assumed to renew their subscriptions on a yearly basis (receiving the most value). The yearly subscription cost in the U.S. is $59.99. The prices are higher in Europe. Microsoft charges $39.99 in the U.K. which translates into about $66 as of writing, and the price in Norway for a 12-month subscription is NOK 499, or as

much as \$93. In the rest of the world it is the other way around (with the exception of Japan and Australia). However, the majority of XBL members are located in North America and Europe. I therefore assume an average worldwide price of \$60 per year, the same as the price in the U.S. XBL's total yearly subscription revenue is thus an estimated 15 million × \$60 = \$900 million.

Feature	{Free}	{Gold}	{Family}
Free demos	✓	✓	✓
Watch HD movies and TV from Zune	✓	✓	✓
Download new games and game add-ons	✓	✓	✓
Create and customize the avatar	✓	✓	✓
Control movies from Zune Marketplace with Kinect	✓	✓	✓
Industry-leading, built-in family settings	✓	✓	✓
Chat and text with friends	✓	✓	✓
Online multiplayer		✓	✓
Netflix support		✓	✓
TV-shows and movies with Hulu Plus		✓	✓
ESPN support		✓	✓
Video Kinect, Facebook and Twitter		✓	✓
Music from Zune and Last.fm			✓
Family Center			✓
Family XBL activity report			✓
MS points gift allowance			✓
Exclusive discounts			✓

Table 4.5: Included features in the three XBL subscription plans

Revenue Source 2: Micro transactions and digital distribution

XBL offers a vast collection of multimedia, games and other forms of DLC - most of which comes with a premium fee. Micro transactions and digital distribution have become big business on XBL. Microsoft reported that the revenue from XBLM surpassed the total subscription revenue for the first time during the fiscal

year 2010 [35]. These results were published in July 2010. At that point in time XBL had approximately 25 million members, which corresponds to around 12.5 million paying subscribers. The subscription fees were raised as of November 1st 2010, meaning that the average worldwide price for a yearly subscription would be closer to $50 during the fiscal year 2010. This corresponds to about 12.5 million $\times$ $50 = $625 million in subscription revenue. In other words, XBLM generated somewhere between $600-700 million in revenue on micro transactions and digital distribution. A similar analysis and valuation has been done by Bloomberg [6].

Assuming the ratio between digital sales revenue and subscription revenue remains constant, micro transactions and digital distribution should generate approximately 15 million $\times$ $50 dollars = $750 million in revenue during the fiscal year 2011 (the price increase is neglected as it was not accounted for in the statement provided in [35]).

Valuing the different sections of XBLM individually however is not as easy, as Microsoft reveals no specific data regarding micro transactions at all. The main categories constituting XBML are XBLA, games on-demand, multimedia (music, TV-shows, movies) and other DLC (avatar outfits, game specific DLC, wallpapers etc). The revenue of all the categories combined should total the estimate of about $750 million.

FADE LLC (Forecasting and Analyzing Digital Entertainment, LLC) specializes in analyzing the market for digitally downloaded gaming titles. According to FADE LLC, the top 10 selling titles on XBLA during the calendar year 2010 sold approximately 4 million units. Furthermore, XBLA overall generated an estimated $122 million in revenues throughout 2010, an increase of 16% compared to the year before [19]. With a similar growth in 2011, Microsoft could expect an estimated $140 million dollars in revenue from XBLA.

Multimedia is another large source of revenue. Emerging Media Dynamics (EMD) estimated in late 2006 that the "Television 2.0" section of XBL could top $726 million in aggregated revenue during 2007-2011, with an estimated $92 million in 2007 [18]. It is unclear as of this point whether Netflix, Sky Player etc pay royalties to Microsoft for views through XBL (which is likely). In any case, the XBL Video Marketplace (XBLVM) is a large success for Microsoft, contributing to the continuous growth in the overall XBL revenue. Assuming an even growth throughout the period of EMD's estimate, XBLVM would have to grow approximately 50% each year, resulting in an estimated $310 million in revenue in 2011.

With the estimates for XBLA and XBLVM, the remaining $300 million comes from games on-demand and other DLC. No further definitive numbers or estimates have been found regarding the two latter categories.

Revenue Source 3: Additional sales

Royalties on micro transactions is not a source of revenue, but an expense. Microsoft receives payment for all content distributed through XBL and then pays royalties to the license and copyright holders for each transaction. The royalty payments received is from transactions outside of XBL. The Xbox platform operates in a two-sided market, linking game developers/publishers and gamers. When a game is published for a certain platform, the publisher must pay royalties to the platform owner for each transaction. In other words, Microsoft receives royalty payments for each Xbox 360 game sold. Although royalties from sold games is not directly connected to XBL, the service greatly improves the popularity of the platform and increases its sales. Some of the royalties must thus indirectly be contributed to XBL. The same reasoning applies to additional sales of Xbox 360 consoles. However, analyzing the contribution to sales from XBL is close to impossible, as the service has been an integral part of the overall platform from the beginning. To put things in perspective however, assuming a 10% increased sales, as was the case for Battle.net, it would result in about 50 million game titles during the course of XBL's lifetime [45]. This corresponds to around 6 million titles a year assuming an even distribution. With an average price of $60 per title and 12% in royalties to Microsoft (review Section 2.5.2), the yearly royalty revenue from additional sales would total approximately $43 million.

The total estimated operating revenue for 2011, based on subscriptions, micro transactions, digital distribution and additional sales is thus approximately $1.693 billion.

4.4.2 Cost structure

The cost structure of XBL is fairly similar to that of Battle.net, including all the cost accounts summarized in Section 2.2.1; namely managed hosting center, storage, bandwidth, marketing, customer support and continuous development. Providing an accurate cost structure description of XBL is not within scope of this thesis, which is why detailed estimates of the accounts described in [29] have been

omitted from this case study. However, a discussion of the two services' notable differences in the cost accounts mentioned above can be found in Appendix C.

Unlike Battle.net, XBL has an extensive distribution store for externally developed content. Microsoft thus incurs a major expense not described in [29], namely licensing, royalty and copyright payments. As mentioned in the previous section, Microsoft must naturally pay a royalty fee for each transaction of digital content not owned by the company itself. The amount of royalty paid varies with the type of content.

Section 2.5.2 provided a breakdown of the costs associated with a retailed console title. The data from [43] shows that the publisher typically receives 60-75% of the retail price, depending on the number of distribution links and the relationship with the wholesalers. Apart from the cost of a distributor, a retail placement fee and the retail markup, the publisher's share covers all costs associated with a console game. This includes development costs, marketing, royalty fee to the console owner, manufacturing costs, possible licensing royalties and fixed costs before the publisher sees any profit. Thus, Microsoft receives a royalty fee for each retailed unit, about 10-15% of the retail price. When games are distributed on XBL however, Microsoft receives a larger portion of the revenue. Some of the costs are eliminated, such as the manufacturing and distribution costs. Any costs and markup associated with a retailer is also eliminated. Microsoft reaps the benefits of both the cost savings as well as the former retailer's share. Overall, the publisher thus receives a smaller share of the retail price, but still has the same gross margin on each unit. From this reasoning, around 50% of the retail price of each digitally distributed unit is thus paid to the publisher. For smaller titles distributed on XBLA, Microsoft charges 30% of the retail price. In addition, they add in a 10-30% promotional fee for the first months in sale [23]. On average, the payments to the developers of XBLA games are around 50% of the retail price as well. Looking at the estimates for XBLA in the previous section, royalty payments is thus close to $70 million for XBLA alone. No sales information on the games on-demand service has been found, but the publishers' share of revenues is most likely close to that of XBLA (selling less but more expensive units). Another source of royalty payments are media content. As for game titles, royalties must be paid for each movie, TV show or music track downloaded on XBL. According to [1], Apple pays about 70% of each purchase to the record companies (for single tracks). XBL most likely follow similar rates.

For simplicity, assuming Microsoft has to pay 50% to license and copyright holders on the sales of all digital content on XBL, it would result in a total of

$750 million $\times$ 0.5 = $375 million in 2011 alone. According to Sarah Friar, an analyst at Goldman and Sachs Group Inc, XBL has a gross margin of about 65% [43]. Using the 2011 estimates, XBL's total cost is thus (excluding additional sales revenue) $1693 million $\times$ 0.35 $\approx$ $593 million. Royalty payments are thus by far the largest cost account associated with XBL.

4.4.3 Financial summary

The financial estimates provided above show that as an isolated product, XBL is a highly profitable service. Table 4.6 summarizes the financial aspects of XBL.

Revenue	
Subscriptions	$900 million
Micro transactions	$750 million
XBLA	$140 million
XBLVM	$310 million
Digital distribution and DLC	$300 million
Additional sales	$43 million
Sum revenue	**$1.69 billion**
Costs	
Royalties on digital content	$375 million
Other costs	$218 million
Sum costs	**$593 million**
Gross margin	**$ 1.10 billion**

Table 4.6: A summary of the cost and revenue estimates for XBL in 2011

4.5 Actors

The following seven actors involved in XBL's business model have been identified:

Actor 1: Game development and publishing companies. Game development and publishing companies are mainly involved in the customer relationship management of XBL. Without a varied catalogue of supported high-quality games, XBL would struggle with all three customer equity goals (acquisition, retention and add-on sales).

Actor 2: Managed hosting centers. Managed hosting centers is vital in order for Microsoft to have the necessary hardware resources in order to hold capability 1 (operate, maintain and support the service).

Actor 3: Multimedia content providers. Multimedia content providers is directly involved in the value proposition through offering 4 (DLC), offering 5 (distribution store), and offering 6 (multimedia content), by providing digital content for sale in XBLM. The offerings affects several aspects of the busines model, such as XBL's ability to reach target customer 3 (multimedia content consumers) as well as the service's retention ability, which in turn affects capability 3 (provide a unique online experience) and 4 (ensure a growing user base).

Actor 4: ISPs. ISPs provide necessary resources (bandwidth) in order for Microsoft to hold capability 1.

Actor 5: Call centers. Just as for ISPs and managed hosting centers, call centers provide Microsoft with necessary resources (support personnel) in order to hold capability 1.

Actor 6: Media. Media acotrs are important in order to improve the service's acquisition abilities through marketing. Acquisition is important in order to hold capability 4 (ensure a growing user base).

Actor 7: Microsoft. Microsoft is naturally the most prominent actor in XBL's business model. The company's resources lays the foundation for all of the four required capabilities.

5

Revenue models in OGSs

This chapter will introduce and provide an analysis of the most dominant revenue models in the OGS industry based on the case studies in Chapter 4 and [29]. Section 5.1 will start off with a description of the revenue model analysis framework used to analyze the different models present in the OGS industry. However, Section 5.2 will provide a description of the presence of network externalities in OGSs before the revenue models are presented, as the principle is important in order to understand the different models and pricing considerations present in the OGS industry. Section 5.3 then follows with the actual analysis of the identified revenue models.

5.1   The analysis framework

The analysis of each revenue model will be presented using the analysis framework introduced in [21]. The analysis framework covers the following six aspects of a revenue model:

- **Description:** How the revenue model works from a birds-eye point of view in a general context.

- **Implementation:** How the OGS industry makes use of the specific model compared to other industries.

- **Payment methods:** How the OGS owner collects revenue from the service.

- **Pros:** The advantages associated with the use of the specific model from the OGS owners' point of view

- **Cons:** The disadvantages associated with the use of the specific model, again from the OGS owners' point of view

- **Future aspects:** The future of the specific model is evaluated with respect to recent market and technology trends.

Even though the framework is simple, it enables a structured and concise description of the most important aspects of a revenue model.

5.2 Network externalities in OGSs

Network externalities or network effects is the phenomenon where a user of a product or service affects the value perceived by other users. Positive network externalities implies that the value of the product or service increases as more people use it, negative network externalities is the opposite scenario, where the value decreases as the user base increases. Positive network externalities in networks are often described by Metcalfe's Law, which states that the value to each of a network's N users is roughly proportionate to N^2 - in other words the relative value of the network grows approximately twice as fast as the size of the user base [30]. The Law is based on the number of connections between all users as N grows large and thus implies directly that the value lies in the interconnection between users, not simply in the number of users itself, see Figure 5.1.
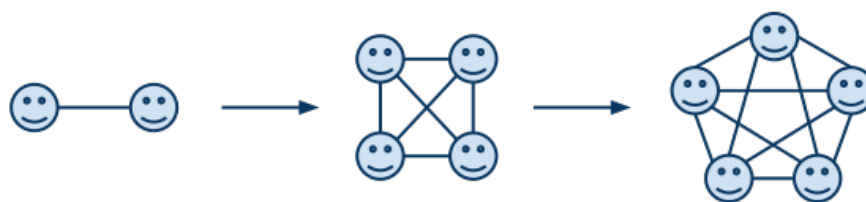
Figure 5.1: Metcalfe's Law - An illustration of Metcalfe's Law through interconnections between users in a network

Positive network externalities are present in OGSs, but not for all features. The perceived value of features such as digital distribution of games and DLC is not dependent on the size of the user base. However, the value of the core feature of many OGSs, online multiplayer, depends extensively on the number of users. A large user base increases the possibility of good matchmaking in many ways. The possibility of finding users geographically close to each other increases, resulting in

lower latency and a higher quality experience. More users also mean an increased possibility of having users geographically close with approximately equal skill, resulting in a fairer match and a better gaming experience for all parties. More users also results in a larger community, increasing the popularity of the service and platform, in turn increasing investments - resulting in better games and a better service. This phenomenon where the network becomes more valuable as more users join, which in turn attracts even more users is often referred to as a positive feedback loop.

Network externalities are powerful. If exploited correctly it may result in customer lock-in, "forcing" users to continue using the service or product due to high switching costs, even if they do wish to switch. Switching costs refers to the cost a user incurs if he/she wishes to switch to a competing service or product. Switching costs may refer to actual monetary cost, e.g. as in the fee charged by mobile operators if a subscription plan is broken before the contract has ended, but it may also refer to more abstract costs such as loss of reputation which is built up over time, or simply the time investment needed in order to switch. When a user is locked-in, the product or service owner is most cases receive increased pricing power. In other words, the owner might exploit users for additional revenue as the value of the network increases, as long as any price increase does not exceed the increase in switching costs over the same period.

Modern OGSs include several valuable features which increase switching costs. Among these are friend's lists, earned achievement points, purchased DLC and other forms of content and everything else tied to the specific user's account, which will be lost if the user switches service. The value of the network itself also increases the switching costs. In short, the more users who join and the more a user utilize the service; the higher the switching costs will be for that specific user. As Chapter 6 will show, exploiting high switching costs and lock-in due to positive network effects is often the only way an OGS can out-price a competitor. However, one can argue that OGS users are relatively price sensitive due to the existence of close substitutes. The indivdual pricing power of each individual service is therefore often limited. See Appendix B for more details.

5.3 The models

The research done for this thesis as well as [29] has uncovered five different and significant revenue models in the OGS industry; the subscription model, the ad-

vertisement model, the micro transaction model, the digital retail model and finally the additional sales model. Each of them will be described in detail using the abovementioned framework. Notice that the descriptions of each model assume that it is used alone. In reality, most OGSs rely on a combination of the five for revenue; as will be discussed in detail in Section 6.2.1.

5.3.1 The subscription model

Description

Subscription models are often associated with networks and services where the value to the user lies not in a single transaction, but in continuous utilization or consumption. The service may involve specific physical products (as in a newspaper subscription where the newspaper is delivered in the customer's mailbox), or it may simply provide access to a limited resource (such as Internet access from an ISP where a certain amount of bandwidth is guaranteed). In some instances, the service may not involve either physical products or be of limited resources, but require a premium to consume licensed content, such as the music-streaming service Spotify or on-demand movie channels for Television. Regardless of the specific pricing details and the service/product involved, the subscription is a contracted agreement where the user periodically pays for access to something he/she values.

Implementation

There exist several proven pricing strategies for the subscription model. The OGS industry does not utilize any unique and tailored pricing strategy, but follow one of the many proven strategies for networked services in general, which is to offer the service for a flat fee. In industries such as mobile operators and ISPs, flat rates often come with restrictions, i.e. the flat rate only covers consumption or utilization up to a certain threshold. A subscription plan may e.g. allow a certain amount of minutes or Giga Bytes (GBs) to be consumed during a given period for the flat fee. If the user exceeds the amount given in the subscription plan, the operator may lower bandwidth or charge premiums (often expensive) for the excess utilization. The landline telephone operators normally utilizes a subscription plan where users pay a flat, normally monthly, fee in addition to charge users for all consumption. This model has been popular for mobile operators as well, but the "flat fee with restrictions" model is by far the most

common implementation as of writing. Some operators also offer a stepwise flat subscription fee. In other words, the user subscription fee increases in increments after certain thresholds of utilization has been reached.

Unlike the telephone, ISP and mobile operator industries however, most OGSs follow a pricing structure similar to other leisure services such as television and premium MMOG's - instead of restricting the use, the user pays a flat fee for unlimited access. The price itself often closely follows the prices of MMOG's, as a MMOG and an OGS in many ways provides the same experience. However, an MMOG is frequently updated with additional content, enhancing the value received through the initial game transaction. While OGSs also receives frequent updates with additional features being added, it is difficult to justify the same premium - as the service itself only is a value-add to already purchased games. Most OGSs relying on a subscription model thus implements a pricing strategy less aggressive than the dominant MMOGs.

The flat subscription fee itself is often offered with different plans, depending on the duration of the subscription and/or the amount of accessible features. It is common to offer discounts on longer commitments, i.e. the monthly rate is cheaper if a user prepays a full year compared to a month-to-month renewal plan. Even though the discounts may be large (up to 50% off), committing users for longer periods increase the possibility of positive network effects during the subscription duration, which again improves the possibility of further renewal. The most common implementation is to offer the basic service without a subscription, and then require a subscription for access to premium features and/or content.

Revenue collection

The collection of revenue is done directly from the users. Most OGSs with a subscription model rely on the use of credit/debit card support for payment. The purchase of a subscription plan can often be done as a retail transaction, e.g. ordering a 3-month plan either through the service's own web portal or through the service itself. If so, the account will be deactivated after the three months have passed if the user hasn't purchased a new plan. Automatic renewal of all the different plans is in most cases also supported. In other words, if a user pays for a single month of subscription and chooses to opt-in for automatic renewal, his/her credit/debit card will automatically be deducted each month. Unlike most other industries implementing subscription models however, some OGSs also support purchase of service time in retail stores. This is done through sales of game time

cards. The card includes a unique serial key used to unlock a certain amount of access to the service, depending on the type of card (and its price). Game time cards can be retailed by digital stores such as Amazon, as well as conventional retailers as EB Games etc.

Pros

- **Stable revenue stream:** One of the main advantages of a subscription model is the predictable revenue stream it generates. The purchase of a subscription involves a contractual agreement allowing the service owner to track active accounts. Having the number of active user at any point in time makes predicting future revenue streams easy, which in turn reduces the business' risk and uncertainty.

- **Customer lock-in:** Having users pay a subscription in order to use the service increases the chance of customer lock-in. The chance of generating positive network effects increase when the user prepays for access, as it makes him or her likely to use the service for the duration of the subscription regardless of the initial impression. The positive network effects will in turn increase the probability that the user renews the subscription.

- **Price differentiation:** A subscription model allows a service provider to price differentiate between its users. Different plans including different sets of features may be created to earn additional revenue by exploiting the difference in the users' willingness to pay.

Cons

- **Entry barrier:** A subscription may severely increase the entry costs and switching costs for a potential user if not priced right, especially if it exist alternative services relying on other revenue models. If users are reluctant to join the service the churn rate will eventually increase, resulting in an overall negative growth for the service. Pricing the subscription correctly is thus essential.

- **Favors frequent users:** As OGSs implements the subscription model with a flat fee for unlimited use, it favors those who intend to use the service frequently. Infrequent users with a more casual and recreational approach to gaming might be intimidated by a subscription if it means that they pay

for a service they seldom use. Alternative services without a subscription model may thus be favored based on the revenue model alone, which is bad if the intention is to capture all segments of gamers.

- **Expectation of supremacy:** As the subscription model is by no means the industry standard, the services that do implement it is expected to be superior compared to its seemingly free competitors. The expected superiority may be concrete as in additional and unique features or abstract as in a unique gaming experience (e.g. an exceptional community). Most likely, this results in high research and development costs.

Future aspects

The future of subscriptions as a revenue model for OGSs is somewhat uncertain. As Chris Anderson points out in [4], the cost of providing digital services approaches zero. He uses a combination of Moore's Law and Mead's Law to support this. Moore's Law states that the amount of transistors that can be placed on an integrated circuit such as a CPU doubles approximately every 24 months. Mead's Law is a corollary of Moore's Law, stating that if the processing power for a given cost doubles every 24 months, the price for a given unit of processing power (transistor) must halve over the same period. He continues to show that the increase in bandwidth speeds as well as storage capacity grows even faster than the processing power. As a result he argues that the cost of services based on the combination of the three, processing power, bandwidth and storage, eventually will approach zero. The book revolves around how markets operating in the digital space thus can make money by offering something for free (as the costs are practically zero), through indirect revenue sources.

The overall cost of operating an OGS is indeed dominated by costs associated with computation, bandwidth and storage. The expectation of free is also strengthened by the fact that early popular services such as Battle.net was (and still are) free of charge. This does not necessarily mean that the revenue model will be phased out anytime soon however. Some OGSs incorporate factors such as licensing and extensive human support, which may justify its use depending on the quality experienced by users. Clever implementations providing the basic service for free - satisfying expectations, while at the same time charge users who are willing to pay for premium access, also justifies its future use. The model will most likely see new and innovative implementations in the future, as the stable revenue stream it generates is a sought after property by investors.

5.3.2 The advertisement model

Description

The advertisement model assumes a two-sided market. In other words, the product or service implementing the advertisement model works as an intermediary between two different user groups. As explained in Section 2.5.3, the intermediary often subsidizes one of the groups in order to generate demand and positive network effects. In the case of the advertisement model, the intermediary subsidizes the user group by offering them a cheap or even free product or service that would otherwise be expensive, and finances and profits from it by exposing them to advertisements paid for by third-party companies. The larger the user group, the more pricing power the intermediary receives towards the advertisers. However, balancing the demand between the two groups is crucial in order to ensure a stable growth.

Figure 5.2: In-game advertisement - In-game Verizon ad in Remedy's Alan Wake [13]

Implementation

The implementation of the advertisement model is often tailored for the specific industry. However, what they all have in common is exposure to the target audience. Using advertisements has been increasingly popular in the gaming industry, both in-game ads and those not in-game. Traditional ads can be placed on web-portals, in game-lobbies or other game interfaces. The recent trend however points at in-game advertisements where they are incorporated into the game

itself, see Figure 5.2. The OGS industry follows the more traditional advertisement approach and the number of channels depends on the implementation of the service itself. Services with an external lobby or interface (outside the game) have the opportunity to display ads directly in the service interface. The service's web portal is also a great place to advertise. In addition, if the service provides a digital distribution store, advertisements for new game titles, discounts etc is also common, see Figure 5.3. The latter form of ads, referred to as *feature ads* throughout this thesis, is by far the most common implementation. Conventional ads were common around the millennium change, but are less common as of writing.
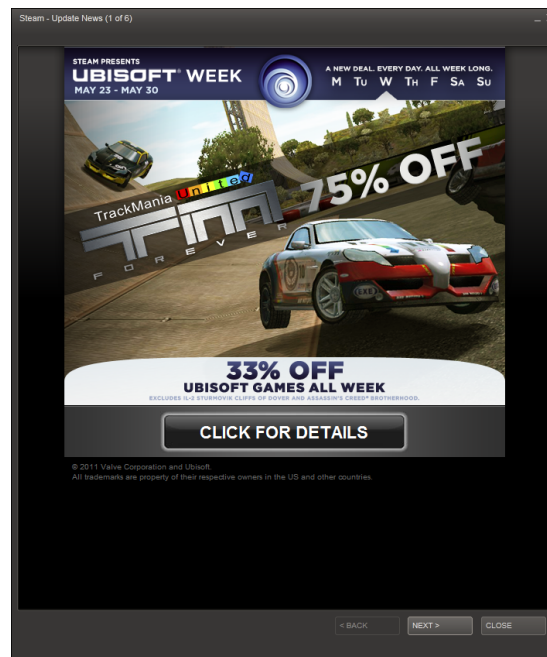

Figure 5.3: Feature advertisement - Feature ad (pop-up) seen from Valve Corporation's Steam service

Revenue Collection

All the revenue from the advertisement model is paid for by the companies who wish to advertise through the OGS. The payments may be fixed and paid up front, or it may vary depending on the number of exposures and/or clicks they receive.

Pros

- **Subsidizing users:** By relying on advertisements, the OGS can subsidize its users and remove the need for direct payments such as subscriptions. A free service has a very low entry cost for users, making them more likely to join the service.

- **Reputation:** As explained above, users are increasingly demanding digital services and content for free. If the service owner manages to balance quality and no cost (on the user's behalf), there is a good chance that the OGS will gain a positive reputation and gain market shares from competing services with premiums.

Cons

- **Unpredictable revenue stream:** Relying on advertisements for revenue makes it somewhat difficult to predict future revenue streams. Unstable and unpredictable revenue streams increases a company's uncertainty and risk. Revenue will be dependent on market trends and receiving external financial contribution may prove more difficult. In addition, the company will have to acquire new partners and negotiate advertisement deals on a regular basis, something which is costly and requires substantial effort.

- **Interfering with the gaming experience:** Depending on the specific implementation, the advertisements may interfere with the overall user experience and quality impression. Distracting or annoying ads will frustrate gamers and may eventually drive them away from the service. A well constructed ad placement strategy is thus important in order to only expose users in a subtle, but still effective way. Feature ads are in general more tolerated than non-gaming related third-party ads.

Future aspects

The advertisement model has been an important revenue model online for more than a decade. Recent trends also show that games are increasingly using the model for additional revenue besides the normal retail revenue. As opposed to the subscription model, the advertisement model allows the OGS owner to provide users with a cheap or even free service (for all features), meeting the increasing demand for free online services and content. However, the model has changed over

the past decade from conventional ads to feature ads associated with a digital distribution store. The reason is simply because the model alone has in most cases proven unable to generate enough revenue to support an OGS, which is why most services have abandoned conventional ads completely to minimize any user experience interference. However, as the cost of bandwidth, storage and computing power decrease even further in the future, indirect revenue models such as the advertisement model may become more dominant, and conventional ads may yet again find its way into OGSs.

5.3.3 The micro transaction and digital distribution model

Description

The micro transaction revenue model is a variant of the retail model. As the retail model, it depends on the sale of products or services, but the micro transaction model relies solely on a high volume of sales with a very low unit price (typically $1-$10). Because of the low unit price, the model is only widespread in digital markets, as the marginal cost in such markets is close to zero. Online games and MMOG's often use the model for additional revenue, by offering the users in-game content or premium services for a small fee. Some online games in fact rely solely on micro transactions for revenue. To be successful, the pricing strategy of the product or service involved must stimulate purchase, but the overall catalogue of content and services must at the same time provide sufficient markup to ensure continued operation. The model has been commonplace in digital markets in Southeast Asia for some time, but it is only recently starting to be adopted in the Western market. Digital distribution in this context refers to larger transactions involving e.g. complete games. Micro transaction and digital distribution are thus two different models, as they involve transactions of different content. However, the characteristics of both models are similar enough to present them together.

Implementation

As in the gaming industry, most OGSs who support micro transactions provide both content and services for small fees. While the markup on digital content may vary greatly, premium services often have close to a 100% profit margin. Externally developed content such as small indie games or television-shows is copyrighted and/or licensed. In other words, the profit margin for the distributing OGS is relatively low, but the long tail principle still make such content profitable,

due to the marginal associated costs, see Appendix A for more details. Internally developed content and services however are highly profitable. Designing a lobby wall-paper or an avatar outfit used to personalize a user's account costs close to zero. The cost of performing services such as an account name change is also close to zero. The profit margin on everything provided by the OGS owner is thus very high, and micro transactions can generate substantial revenue if the user base is large. A few services have chosen to price their premium content and/or services above the normal micro transaction price range. At around $20, such transactions can hardly be referred to as *micro*. However, the revenue model is still the same, which is why *macro transactions* are not dedicated its own subsection. Most services distribute the content through its own digital marketplace, the same holds true for games on-demand (complete game titles distributed digitally). The premium services can often be accessed from the services web portal, as well as through the service itself. A service can choose to specialize solely on micro transactions, or include sales of complete game titles as well (digital distribution). A few services also specialize on the latter only. Figure 5.4 show Steam's online digital distribution store.
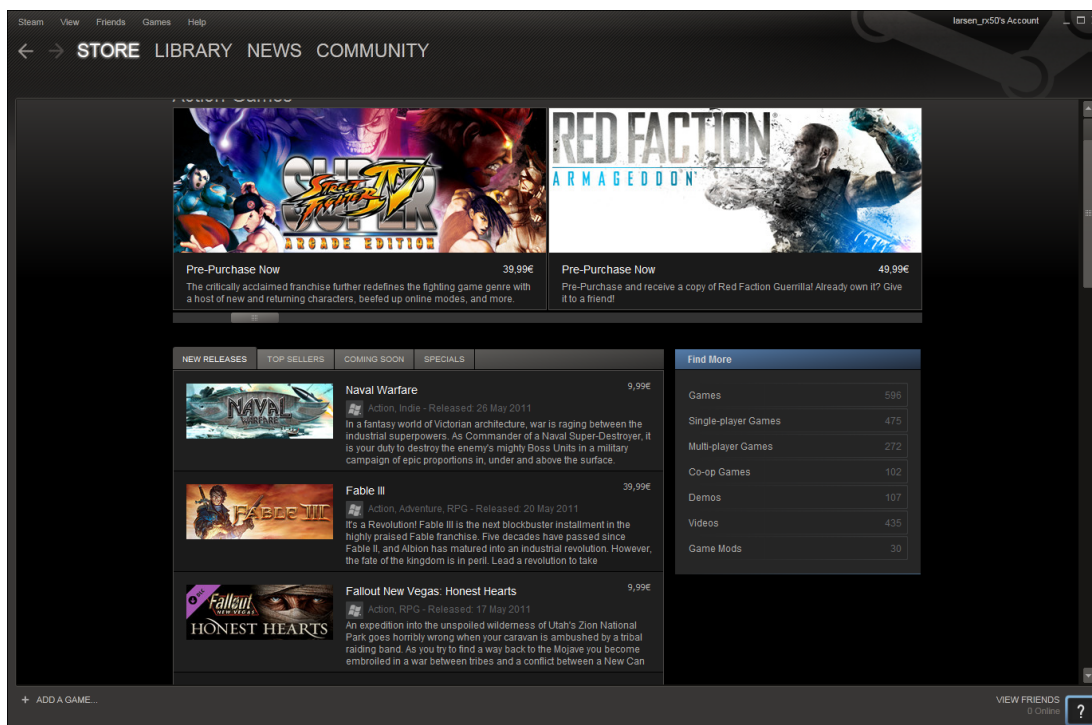

Figure 5.4: Steam - Steam's online distribution store

Revenue collection

Micro transactions and the purchase of digitally distributed games is naturally paid by the OGS users themselves. Most services support a variety of payment options, including credit/debit card, as well as third-party intermediaries such as PayPal and ClickandBuy. Some services have also adopted a virtual currency scheme where users pay in advance for a certain amount of a service/company specific virtual currency (such as Microsoft's Microsoft Points). In most cases a virtual currency scheme favors the issuer through reducing the number of credit card transaction fees. When most transactions only involve a few dollars, the credit card fee per transaction may indeed constitute a substantial fraction of the price. In addition, a virtual currency may stimulate additional sales as the user may have to buy a larger batch of currency than necessary to cover the initial purchase plan.

Pros

- **Seemingly free:** The micro transaction and digital distribution models may enable the OGS owner to provide the core service for free. To avoid the majority of users to speculate in using the service without paying a single cent however, the business model must ensure that the premium content and services provided are coveted - and indeed something the average user would pay for.

- **Pure profit opportunities:** As explained above, the marginal cost of digital content and performed services can be close to zero. If the OGS manages to generate substantial demand for such content and services, it may prove highly profitable.

- **Stimulates consumption:** Since each transaction only involves a few dollars, the threshold for completing a transaction is lowered. In many cases, a user thus completes many transactions, as it is difficult to keep track of the overall costs. The strategy is similar to that of IKEA. Each item is cheap, but after the journey through the entire store is completed one has usually picked up several items - resulting in a large total payment.

- **Customer lock-in:** Personalized content such as avatar outfits etc makes the user connect more with the service. Other forms of purchased content such as games, music and movies are in most cases tied to the specific OGS

account. Providing premium digital content and personalization services thus increases a user's switching costs, making him/her less likely to leave the service for a competing one.

- **Paying for value** Micro transactions enable users to pay for what they personally value, unlike the subscription model where they pay for the entire package - regardless of how many features the individual user will utilize. Paying only for features or content valued further increases switching costs and customer lock-in, as the OGS delivers something of personal value for every dollar spent.

- **Convenience:** Providing digitally downloaded games is convenient for gamers. Acquiring a game can be done from home and delivered in a relatively short amount of time. Since each purchase is tied to the account for its lifetime, a user may delete a purchased game client from his/her platform and re-download it later. This removes the need to store any physical discs, which again removes the risk of them being broken or stolen. From the developer's point of view, digital distribution makes pirating a lot more difficult, which may help the sales figures for the respective titles.

Cons

- **Expectation of new content:** Relying on micro transactions of personalization content requires constant development of new content in order to keep the customer interest up. If the service provides additional content such as externally developed games, music and/or movies, the OGS owner must ensure that the catalogue is constantly updated with new content for the same reasoning.

- **False expectations:** Depending on the implementation, users may feel deceived and abandon the service if they suddenly face some unexpected expense, if under the perceiption of using a free service. It is thus difficult to "force" micro transactions on the users.

- **Initially unpredictable revenue streams:** As for the advertisement model, predicting future revenue streams may prove difficult for the micro transaction and digital retail model. As fiscal years pass, calculating an average attach rate or average number of transactions per user is easier and

more accurate, but in the establishing phase - the sales of digital content are unpredictable by nature as it is often hit-driven.

- **Increased support and bandwidth costs:** Providing digital content for download increase the need for customer support, as the OGS takes on more aspects of the overall game production cycle. It also increases bandwidth costs due to the digital distribution.

Future aspects

The micro transaction model has proven to be increasingly popular in both the OGS industry and the overall gaming industry in general. As mentioned, the model has proven its success in Asia, especially Korea [39]. The Western market has been slower to adopt the model, due to its rather revolutionary way of charging users. However, the mobile platform app-stores first introduced by Apple for its iPhone, builds on the concept of micro transactions. Mobile app-stores are now common on almost all mobile phones, and in conjunction with popular online games such as Second Life, the micro transaction model is becoming increasingly popular and accepted in the Western market as well. The concept is ingenious, and allows other corresponding services or products to be offered at low or no cost at all. The use of the micro transaction model will thus most likely grow in the future, as OGS owners find new ways to offer digital content, features and services for a small fee. Digital distribution is becoming increasingly popular in all regions with high broadband penetration. The model is beneficial to both the service provider and its users, and its use will likely increase in the future.

5.3.4 The additional sales model

Description

The additional sales model differs substantially from the other revenue models discussed above. Implicitly, relying on additional sales means that the analyzed service or product is developed as a complementary value-add to another product or service. The revenue thus lies in the sales of the value added product or service. In other words, the additional sales model is fully dependent on at least one other revenue model in order to profit the owning company. Google uses the model extensively for their complementary services such as Gmail, Google Docs etc, in order to earn additional revenue from the ads connected to the famous search engine by extending their reach.

Implementation

The implementation of the additional sales model is highly dependent on the market. The common factor is that the complemented product or service is controlled by the very same company. In the OGS industry, this implies that the OGS owner must be present in another gaming market as well. In most cases, OGSs utilizing this model is owned by a company also developing and/or publishing games. Providing an OGS is a great way to enhance the gaming experience of a company's games, in turn increasing the game sales. Depending on the scope and strategy of the service, the additional sales model may very well be the only revenue model associated with the OGS.

Revenue collection

Revenue collection in the additional sales model is done directly from users, but also indirectly in the sense that the revenue is used to pay for another product. The payment methods supported is thus dependent on the product added value by the OGS. In addition, the additional sales model may collect revenue from advertisers who receive additional exposure due to the OGS.

Pros

- **Transparent revenue model:** The service itself must of course satisfy users' expectations in order to provide increased sales, but the additional sales model is the only dominant revenue model in the OGS industry that is completely transparent to the customers, laying the foundation for a successful value-add. The service does not appear free as in the micro transaction and advertisement model, but it is indeed gratis from a user's point of view, in many aspects solving some of the drawbacks of the other models.

- **Reputation:** As for the advertisement model, there is a good chance that the OGS will gain a positive reputation and gain market shares from competing services with premiums if the service owner manages to balance quality and no cost (on the user's behalf). This effect is even stronger with the additional sales model, as it is also devoid of any distracting advertisements.

Cons

- **Hard to track revenue:** The overall revenue contribution due to additional sales is by nature difficult to audit. If the owning company possessed strong historical sales records, enabling them to accurately predict future sales before the introduction of the OGS, the contribution to sales from the OGS could in theory be tracked. However, the sales of computer and video games are highly hit-driven, making future sales volumes difficult to estimate. In addition, the OGS and the value-added games will naturally form a symbiosis over time, making it increasingly hard to measure to what extent the OGS contributes to the success of those games. Providing an OGS which solely relies on additional sales for revenue thus requires a solid business model and unconventional accounting practices.

- **Pressure to release new products:** Since the success of game titles is the sole source of revenue, the owing company is forced to release games in a timely manner in order to offset the continuous cost of operating and maintaining the OGS. This might affect the overall quality of the games, again affecting their success. In other words, if the company is to develop and publish high-quality and successful games, sufficient funding is necessary in order to operate the service during development periods.

- **Difficult to generate enough revenue:** As the revenue relies on the sales of other products, the service must indeed boost their sales significantly in order to be profitable. This requires a high focus on quality games and a quality service, which may indeed increase the associated costs even further.

Future aspects

The additional sales model is in use by several current OGSs. While it is difficult to justify from an accountant's point of view, the model generate positive network effects due to its transparent revenue collection methods, in turn increasing the overall value of the network and the value-added products substantially. Proven OGS business models rarely rely on additional sales alone due to the difficulty of generating enough revenue, but the concept is a driving force for their development. To date, no OGS is operated by an independent publishing company (such as EA). Recognizing the recent success of such services, we will most likely see OGSs operated by publishing companies in the future, as they are dependent on

high sales volumes for profit (review Section 2.5). If this prediction holds true, the use of the additional sales model in OGSs will grow in the future.

6

Discussion

Chapter 4 described the business model of XBL in detail, including estimates of its revenues and costs, although detailed estimates of the various cost accounts were omitted. Section 6.1 provides a discussion on the general cost model and conclusions outlined in [29], as a response to the results from the case study in this thesis. Section 6.2 then provides a discussion of the five pricing models analyzed in Chapter 5. Emphasis is put on the variables and considerations behind the choice of a specific model in the OGS industry, in accordance with the main goal of this thesis.

6.1   The general OGS cost model

The results from the comparison of XBL's and Battle.net's business models which is found in Appendix C, does not provide any new information that contradicts the results and conclusions drawn in [29]. However, the former study did not include the cost of royalty payments to copyright holders of digitally distributed content, which is commonly associated with many modern OGSs. As the case study of XBL shows, the cost of digitally distributed content can surpass even the other six cost accounts added up.

In terms of economic interpretation, royalty payments follow a close to linear growth function just as bandwidth and account storage costs. The sales of digital content are often measured by an attach rate, i.e. the number of sales per user. With the attach rate and an average cost of digital content, one can easily calculate the average cost of digitally distributed content per user. However, it can also be done by dividing the total costs of digitally distributed content with

the number of users. The case study showed that XBL incurs an estimated $375 million in costs of digital content in 2011. This corresponds to an annual average of $12.50 per user (assuming 30 million users). The general cost model introduced in Figure 2.4 was based on a total of approximately 30 million users. Adding in the average cost of digital content per user from the XBL case study thus provides us with a new general cost model for services selling externally developed DLC, see Figure 6.1. The figure clearly supports the results presented in the case study; the costs of digital content outgrows the other cost accounts several times and do so even for small OGSs (in terms of users). XBL provides one of the most successful digital markets to date, but even if the average cost per user (in other words if each user only purchased half as much content) - the result is in essence the same.
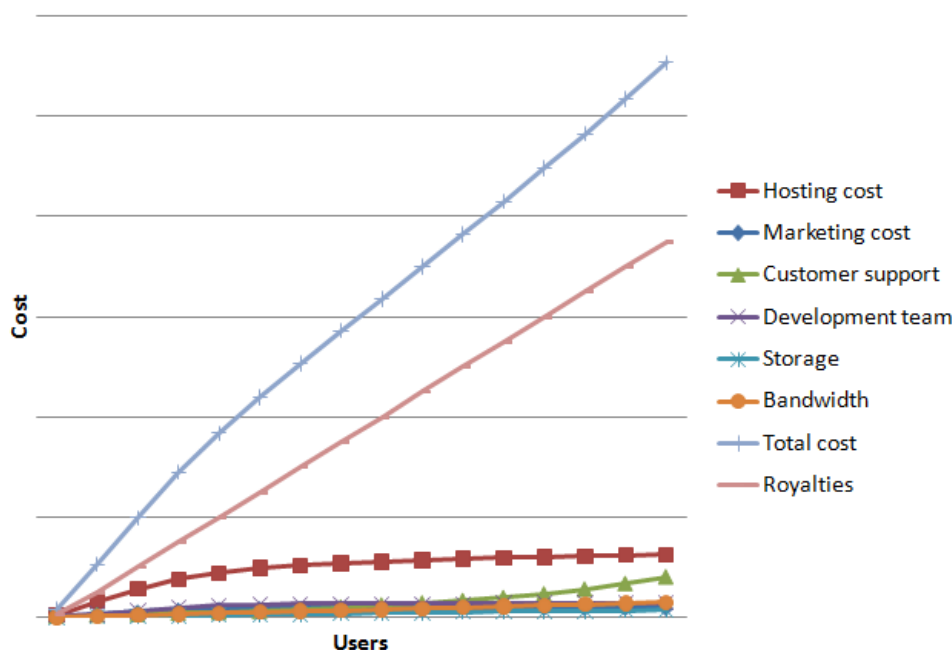
Figure 6.1: General cost model - The general OGS cost model including royalty costs

There is however a clear distinction between the costs of digital content compared to the other cost accounts. The reason is simply that premium content is sold with a significant profit margin. This eventually means that no matter how much content is distributed, the net profit from sales is always positive as long as the additional bandwidth and support costs due to distribution are taken

into account. This does not hold true for the remaining accounts, as they are all directly connected to the operation of the service and its costs. In other words, selling twice the amount of digital content from one year to the next doubles the royalty costs, but doubles the profit from digital sales at the same time, assuming all other variables remain constant. However, doubling the hosting costs from one year to the next, again assuming all other variables are constant, only lowers the overall profitability of the service by the very same amount. Including the cost of digital content in the total cost function thus undermines its very use, as it appears that the total cost of an OGS providing third party digital content grows linearly and independent of the underlying strategies for the remaining six cost accounts. The curve is meant as an illustrating tool to understand the development of the direct operating costs of an OGS as a function of users. Figure 6.1 is therefore misleading, as it includes costs not associated with operation (the royalty payments). In addition as described above, increased royalty costs means increased revenue, something that definitely is not true for the remaining accounts.
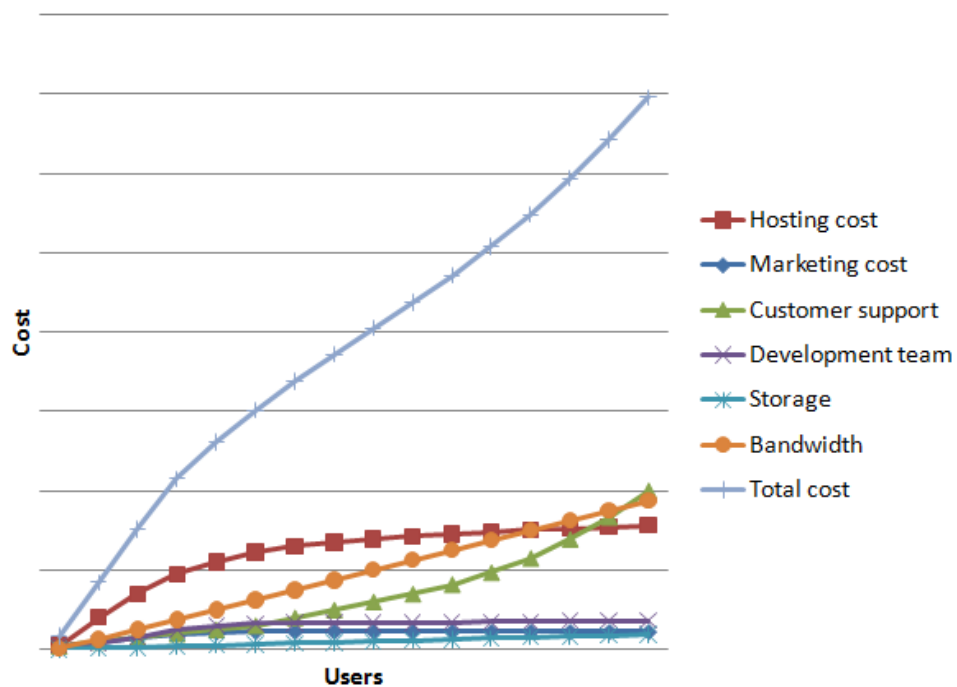

Figure 6.2: Adjusted general cost model - The general OGS cost model adjustet for a service with digital distribution

The total cost curve in Figure 6.2 however, is equal to the original from [29]

presented in Figure 2.4, only with adjusted bandwidth and support costs to reflect the increase due to digital distribution of content. The base of the bandwidth costs are taken from the Battle.net case study, which estimated approximately 1 GB of data downloaded per user annually on average. In addition, a conservative estimate where the average user downloads three game demos (1 GB each), as well as 2 DLC packs for individual game titles (500 MB each) for the $12.50 annually, results in 4 GB of additional bandwidth consumption per user from digital content. The overall average bandwidth utilization of an XBL user is thus five times that of a Battle.net user according to the estimates provided above. How much support costs increases due to digital distribution is hard to estimate with public information alone. The support costs estimate in the Battle.net case study was based on one incident per user every other year on average. Without any further information, Figure 6.2 shows the case where each user contacts support once a year on average. While unlikely that the number of incindents double due to a digital distribution store, it provides a clear picture of how quickly support costs fluctuate, outgrowing both bandwidth and hosting costs around the 30 million users mark.

As Figure 6.2 clearly shows; the bandwidth and support costs of a service offering an extensive digital distribution store are significant compared to an OGS with less focus on digital distribution. Bandwidth accounted for an estimated 7% of Battle.net's overall costs while hosting costs accounted for almost 50%. For a service such as XBL however, the bandwidth costs may indeed exceed the costs of hosting the service, depending on the amount of digital distribution. While the actual increase in support costs is unclear, apart from the fact that they do increase, its exponential growth property still makes it a significant contributor to the overall increased cost as a result of digital distribution. As summarized in Section 2.2.1, the key sources of cost savings for an OGS were a good hosting server localization strategy, as well as careful design and other means to minimize customer support. As the above results have shown, for an OGS offering a wide selection of digital content, negotiating favorable contracts with ISPs to minimize the cost of bandwidth is just as important.

The case study in this thesis supports the conclusions and results presented in [29]. In addition, it builds on the model by showing how the bandwidth and support costs dramatically increase and becomes a significant expense for an OGS providing a large digital distribution store. In addition, as the comparison in Appendix C showed, the results of this thesis is believed to be applicable in a

general setting, as most of the differences between XBL and Battle.net was tied to the service strategies, not platform specific aspects.

6.2 The choice of revenue model

One of the goals of this thesis was to identify the logic behind the choice of a specific revenue model as well as to try to classify under what conditions each model may be profitable in the OGS industry. The choice of revenue model(s) is perhaps one of the most impactful strategic decisions to be made when constructing an OGS business model. This section will discuss the abovementioned problems for each of the revenue models presented in Chapter 5.

6.2.1 The revenue models in use

Chapter 5 analyzed the five dominant revenue models in the OGS industry. They are all in widespread use in currently operating services and will continue to be so in the foreseeable future. As explained in Appendix C.1, Battle.net initially relied on a combination of the advertisement and additional sales models for revenue, before changing the business model to rely on additional sales and digital distribution of games. Due to its increasing operation and support costs however, Battle.net is expected to yet again incorporate the advertisement model as well as the micro transaction model sometime in the future.

Another highly popular OGS on the PC-platform is Steam by Valve Corporation. The service provides all basic OGS features and supports a wide variety of PC games. Steam currently has over 30 million members, with concurrent user volumes as high as 3 million at peak times. While in part generating revenue through micro transactions of DLC, as well as feature advertisements, Steam's main source of revenue is digital distribution of games. The service offers a product catalogue of more than 1200 games and accounts for 50-70% of the total market for digital distribution of games on the PC-platform [12]. The service brought in an estimated $1 billion in 2010 on PC sales [20].

Unlike the abovementioned services, XBL's business model includes all five revenue models. The service distributes games digitally, as well as music, TV-shows, movies and other DLC. XBLM supports feature advertisements which content providers can purchase for additional marketing of their products. The service itself is value-add to the Xbox platform, earning Microsoft revenue through royalties on additional sales of Xbox games. In addition, users who want access

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to all of the services features (including online multiplayer) are required to pay a subscription.

Sony Entertainment's PSN is the second largest OGS for consoles, behind XBL. Unlike XBL, PSN does not charge a subscription fee for access to online multiplayer, but they do charge a subscription fee for access to a premium service plan called PlayStation Plus. The PlayStation Plus service provides special membership discounts, the ability to try a full game for a restricted amount time (not just a demo), access to exclusive items in the PlayStation Store etc. The service is priced below XBL Gold at $49.99 a year [44] compared to XBL Gold's $59.99. Apart from the subscription, PSN also generates revenue from micro transactions, digital distribution and advertisements through the PlayStation Store, as well as royalties from increased sales of PlayStation games. Both PSN and XBL thus rely on all five revenue models, the only difference being the pricing strategy and included features in the premium subscription plans.

The common denominator between all services is that none rely solely on a single revenue model - they all utilize two or more. While there do exist services which rely on a single model (Game Center on iPhone only relies on additional sales), it would seem that most successful OGSs incorporate several ways to generate revenue. While several revenue models complicate the business model and creates more company overhead, several models may in many cases be the only way to offer a quality service without pricing it out of the market. As discussed in Appendix B, pricing in the OGS industry is very difficult and a quick route to a service's downfall if not done correctly. By diversifying the revenue sources, the service may generate substantial revenue without being particularly aggressively priced in any of the segments. XBL is a great example, while the subscription fee is more aggressive than most OGSs it is still below the price of most subscription based MMOG's, making the subscription fee accepted by most users (XBL Gold do provide a lot of content and features). All digital content on XBL is priced at market prices and the service does by no means overexpose its users to advertisements. As a result, users often end up spending a substantial amount of money on the service, but the large number of smaller transactions (as well as the advertisement revenue) makes the service seem relatively cheap compared to what the user receives in return. As the case study showed, the service still generates more than $1.5 billion annually with a gross margin of as much as 65%. Proven business models thus prefer more sources of revenue to fewer, although one or two of the revenue models often dominate. Below follows

a discussion of when each of the five revenue models should be considered in a service's business model.

The subscription model

As explained in Section 5.3.1, the major advantage of relying on a subscription model is the stable and predictable revenue stream. In addition, different subscription plans makes it possible to price differentiate, exploiting the different users' willingness to pay. However, the subscription model is the most aggressive way of charging users. If there are close substitutes on the same or a similar platform, requiring a subscription may drive users away from the service.

In general, most services that do utilize the subscription model have some degree of uniqueness, which increses users' willingness to pay. The uniqueness may be a unique feature, exclusive games to the specific platform and service or even tied to strategic business decisions. XBL is as described the only console OGS requiring users to pay a subscription in order to play multiplayer online. One can argue that Microsoft's ability to charge users for online multiplayer is tied to their time-to-market strategy. Since the service was the only console OGS at the time of its inception, Microsoft could introduce an aggressive pricing strategy as there were no close substitutes on the market. XBL prospered as the only OGS on consoles for years before PSN was launched together with the PlayStation 3. Sony chose not to charge a subscription for online multiplayer with their service, in order to have a competitive advantage towards XBL. PSN would most likely have flopped if Sony chose to copy XBL's pricing strategy. The reasons are obvious. Xbox 360 and XBL had millions of users before the PS3 and PSN launched, providing its users with substantial positive network effects. PSN did not launch with any additional unique features and if the service was still priced equal to XBL, rational users would choose XBL due to the superior network effects. PSN's premium plan, PlayStation Plus, was not introduced until the summer of 2010, almost four years after the initial launch. Although PSN does not generate revenue anywhere near the levels of XBL, Sony's strategy made PSN a success. As of writing the two services have approximately the same amount of registered accounts.

The conclusion to be drawn is that using the subscription model for revenue is highly dependent on the strategic position of the service in question. It is a bold revenue model in a market with price sensitive consumers. In general, if the service can provide its users with something unique no other competing

Use if	- No close substitutes (e.g. as a result of unique features, early time-to-market strategy etc) - All potential substitutes rely on subscriptions - High switching costs and lock-in effect on users
Avoid if	- Close substitutes without subscriptions
Comment	- Even if the there exists close substitutes without subscriptions, the model can be used if basic features are free, and the subscription is required for premium features and/or content

Table 6.1: Considerations for the subscription model

service may offer, a subscription model is a viable choice and could be used as the dominant source of revenue. A good example is the OnLive service, which allows users to stream games (removing the need for expensive hardware) for a subscription. This is not to say that the model is useless otherwise, as the case with XBL has shown, but XBL is more of an exception than the norm. Due to the abovementioned reasons, most OGSs utilizing the subscription model only do so for premium non-multiplayer essential services and features. Dividing the service into different plans (where a subscription is not required for basic features) is by far the most common implementation of the model. It provides the benefits of price differentiation, stable revenue stream and customer lock-in, while at the same time partially removing the negative effects of frequent user favoritism and high entry costs. If used correctly, the subscription model provides safe and stable revenue, and may well be the dominant model even though only a small subset of users pays subscription fees. The most important considerations for the subscription model is summarized in Table 6.1.

The advertisement model

The advertisement model provides the opportunity to subsidize users, making it possible to offer the OGS at a low or no cost for users, apart from the inconvenience associated with advertisement exposure. The unreliable nature of future revenue streams is the models major drawback however, making it difficult to utilize as the only source of revenue. In the late nineties, former successful PC-platform services such as MPlayer and TEN converted from a subscription model to a an advertisement model (alone) to counter Battle.net - the first real OGS

to be offered at no cost for users. Unfortunately, as for many other services and websites during the .com bubble, the advertisement model proved not to be able to support the operating costs of the OGSs, eventually leading to their downfall. In other words, if the service incurs substantial costs (i.e. associated with game hosting), the model works best in conjunction with one or more of the other major OGS revenue models.

Use if	- The service operates with an external interface on the PC-platform - The service has a web-portal
Avoid if	- The service operates on a console or handheld platform - The service relies on an in-game interface
Comment	- As for feature ads, the banners must be placed carefully in order to not be of nuisance to users - Non-gaming related ads may reduce the overall impression of the service, depending on the implementation and the nature of the ads

Table 6.2: Considerations for the advertisement model - conventional ads

There are two different prevalent implementations of the advertisement model in the OGS industry. One is the feature ad model, where all advertisements displayed in the overall OGS-portal are for digital content or services distributed and/or accessed through the service itself. An example is a discount feature ad for a game distributed through the service's digital marketplace. The other implementation is the conventional ad model, where ads without any specific connection to the service are displayed. The former model thus, in most cases, expose users to gaming or entertainment related advertisements, in turn also benefiting the OGS positively by marketing their distribution store and/or features. The latter may advertise just about everything without a specific strategy. Non-gaming related ads are naturally less tolerated in a gaming environment and must therefore be placed with care.

The feature ad model can thus be viewed as the more user-friendly of the two, while it may prove just as, if not even more, profitable than displaying non-gaming related adds. The requirement is of course a digital distribution store. If present, a service should consider the feature ad model as an additional source of revenue. Without any major drawbacks if implemented correctly, the

Use if	- The service has a digital distribution store
Avoid if	- No particular reason
Comment	- Ads exposure must be carefully implemented, in order to not be of nuisance to users. Feature ads are most commonly exposed when first entering the digital distribution store, and only once per session if it's a pop-up

Table 6.3: Considerations for the advertisement model - feature ads

model generates revenue through both the ads as well as additional sales in the distribution store.

If the service does not have a digital distribution store, conventional ads can as described in Section 5.3.2 be placed in either the service interface or on its web portal. The portal is in general a safe place to display ads, as users are accustomed to watch ad-banners online. Placing non-gaming ads in the service interface however, may or may not be a good strategy depending on the service and platform. On the PC-platform, external (out-of-game) service interfaces can include ad-banners just as web pages. In most cases, this will not interfere with the gaming experience significantly. A PC is a multi-functional technical device, and the gaming experience on the PC platform does not start until the user has launched the game. On a console or handheld gaming-device however, the user's gaming experience starts on power-up. As a result, service lobbies on such devices is a part of the overall gaming experience, in which non-gaming ads may be a larger nuisance than on its PC platform counterparts.

The above reasoning is also reflected in the four services described in the introduction to this subsection. All of them have a digital distribution store and rely on the advertisement model for revenue through feature ads. However, none of the four display third-party non-gaming related ads, neither on the web portal nor the service interface. In fact, none of the current OGSs known to the author do rely on third-party non-gaming related ads for revenue. The web portals do include ad-banners, but they in most cases advertise other value-added products connected to the service or service owner. However, the model was popular before the .com bubble, and the recent trend with in-game ads might open future possibilities for the model in the OGS industry. The conclusion is thus that the feature ad model is an established revenue model which should be considered by all services providing a distribution store. If not present, the service may rely on third-party ads if it operates with an external interface on the PC-platform,

but should in most cases be avoided otherwise due to the negative effects on the users' gaming experience. The most important considerations for the conventional advertismenet model and the feature advertisement model is summarized in Table 6.2 and Table 6.3 respectively.

The micro transaction and digital retail models

The micro transaction and digital retail models have several positive aspects. The basic features of the service can be subsidized through smaller transactions of digital content or through sales and distribution of entire game titles, making the service itself cheap or even free of charge. Micro transactions also allow users to pay for only the content and/or features they value and any purchases increases users' switching costs, making them less likely to switch to competing services. A difficult aspect of relying on micro transactions and digital retail of games on the other hand, is the constant expectation of new content from users. However, if the service provider manages to push out new content in a timely manner, there are few drawbacks associated with micro transactions and digital retail.

Use if	- The OGS owner has the capabilities and resources necessary to produce content and/or services in a timely manner - The OGS has acquired favorable agreements with third-party content providers (of either mini-games, DLC packs for larger games, TV-shows, music etc)
Avoid if	- Close substitute services provide the planned content/features for free
Comment	- The use of micro transactions often results in increased support and bandwidth costs, which must be taken into consideration before implementation

Table 6.4: Considerations for the micro transaction model

Choosing between micro transactions, digital retail or both is a matter of service strategy. In most cases, micro transactions can be implemented on most forms of OGSs without any negative consequences, as long as the content or features is priced at market prices. Premium services, features and DLC for supported games are valuable to users regardless of service. As the development costs of such content and features are minimal, there is little risk involved in its

support - each consequent transaction is close to pure profit. However, relying on digital retail of games is more complex. If the service in question has a monopoly on the platform, such as the console OGSs, digital distribution of games is great way to earn additional revenue. On the PC platform however, earning substantial revenue on digital distribution is difficult due to the extensive competition. Both Steam and Battle.net supports digital distribution. As mentioned, Steam accounts for more than half of the total digital distribution of games on the PC platform. Battle.net is also successful in digital distribution, but the service is rather privileged, as it is owned by Blizzard Entertainment and only distributes Blizzard's games which work exclusively on Battle.net. New services relying on digital distribution of games for the PC platform thus have to have some sort of competitive advantage in order to position itself adequately in the market. Securing exclusive deals with publishers or negotiating good deals with ISP's in order to undercut Steam is possible, but due to its strong position, new and ground-breaking features or services seems a more likely approach. Unlike most forms of micro transactions, digital distribution of games also increases bandwidth and support costs substantially as described in Section 6.1 - making the model more risky.

Use if	- The service owner also develops/publishes games - No close substitutes - Favorable agreements with publishers can be acquired
Avoid if	- Close substitutes with a competitive advantage provides a similar catalogue of games
Comment	- Although close substitutes with competitive advantage and a similar catalogue do exist, digital distribution may turn out profitable. However, it should not be considered the dominant revenue source - Digital distribution severely increases support and bandwidth costs

Table 6.5: Considerations for the digital distribution model

To conclude, micro transactions in its various forms is a relatively safe and potentially profitable revenue model regardless of the underlying platform or competitive advantages associated with the OGS. The model is in widespread use in many current OGSs, among them Steam, XBL and PSN mentioned above. Battle.net will most likely implement the model in the future as well, as they have

for their popular Massive Multiplayer Online Role-Playing Game (MMORPG) World of WarCraft (WoW). Unlike the digital retail model, the volume of micro transactions does not seem to depend noticeably on the number of similar services offering the same content or features, but more on the quality of the premium content and features provided. In other words, micro transactions can prove highly profitable even for services with many close substitutes on the same platform. Digital distribution on the other hand, is highly dependent on the number of close substitutes. Services relying on digital distribution thus need some form of competitive advantage in order to separate it from the competition. Without close substitutes, digital distribution of games is a less risky model and may indeed be the major source of revenue. Time-to-market is also an important factor when it comes to digital distribution. Steam was the first OGS on the PC-platform to really invest in the model, which has proven to be highly successful. The most important considerations for the micro transaction and digital retail models are summarized in Table 6.4 and Table 6.5 respectively.

The additional sales model

The additional sales model is completely transparent to users. The revenue from the model comes from another product, in most cases video games developed and/or published by the same company which owns the OGS. Relying on the additional sales model thus implies that the OGS owner profits from selling another product(s) which is added value by the OGS. Considering the fact that additional sales revenue is difficult to track however, the model is hard to justify financially if used alone.

In many cases, OGSs owned by game developing/publishing companies were initially developed with additional sales of games in mind. As a value-add service, the choice is thus not if the additional sales model should be used (as it is the reason for developing the service in the first place), but how the service could be implemented in such a way as to maximize the possible value perceived by users, in turn maximizing the additional sales of the value-added products. Hence, all OGS owners who can profit from additional sales design their services to support it. As the additional revenue is indeed difficult to track, most OGSs rely on other sources of revenue as well. Normally, the additional sales is not even accounted to the OGS, it is just a response to the value it provides. Other revenue models thus justify the service financially by directly contributing to offset its costs and

hopefully add to the company's bottom line. The most important considerations for the additional sales model is summarized in Table 6.6.

Use if	- The service owner may profit from a value-added product as a result of the OGS
Avoid if	- No particular reason
Comment	- Due to the difficulty of tracking the generated revenue, the model should in general not be used alone

Table 6.6: Considerations for the additional sales model

6.2.2 Which model(s)?

The above discussion provided a number of variables that influence the choice of revenue model(s), as well as conditions necessary in order for the specific models to be profitable. The research performed for this thesis and [29], shows that the leading operating services in the OGS industry all rely on several revenue models in conjunction. The difference in revenue model strategies between the services lies in different weights on the different models. Most of Steam's revenue comes from digital distribution of games, while most of XBL's revenue comes from micro transactions and subscriptions, even though both rely on featured advertisements as well. From the empirical data provided in the case studies, the subscription, micro transaction and digital distribution models seems to be the most profitable as of writing. However, the advertisement model and additional sales model can in many cases be used in addition to any combination of the other three, making all of the identified models viable options for most OGSs.

The potential reasons why several models in conjunction is used by all four of the successful services studied may be many. One explanation can be that the price differentiation advantages of relying on several models outweigh the additional company overhead. The apparent price sensitivity of OGS users explained in Appendix B may also be an explanation, allowing the service owner to profit from several aspects of the OGS experience (many which are indirect), in a way "hiding" the true costs for the users. In any case, utilizing several models in conjunction may be seen as an industry best-practice, based on the studies of four of the largest and most successful OGSs currently in operation.

Table 6.1-6.6 summarizes the most important considerations for each revenue model, highlighting when each model can be used and when it should be avoided.

Notice that the recommendations by no means are a blueprint of how to operate or utilize the models in the future. Novel use or combinations of the models which contradict the recommendations may prove profitable for future services. Hence, they should only be used as guidelines.

6. DISCUSSION

7

Conclusion

The main goals of this thesis was to determine, analyze and present the dominant revenue models in the OGS industry, as well as to identify when each model is appropriate, in terms of profitability, depending on the OGS in question. An in-depth analysis of XBL's business model using Osterwalder's business model ontology, as well as the case study and results presented in [29], have been used to answer these problems. In addition, this thesis is an extension of the work presented in [29], and therefore also set out to improve and strengthen the results and conclusions presented in the former report.

The case study of XBL showed that the service is highly profitable as a standalone product, with an estimated gross margin in 2011 of more than $1 billion. The cost accounts presented in [29] applies to XBL as well, and most of them follow the same development with the network size as those outlined in the former study. However, unlike Battle.net, XBL has an extensive distribution store which generates hundreds of millions in revenue through sales of various DLC and multimedia. The cost of digital content is by far the largest cost account associated with XBL, but it is not recognized as a direct operating cost. However, extensive digital distribution has been shown to greatly increase the overall support and bandwidth costs of the service, which must be taken into account when pricing the digital content offered through the service. The comparison of XBL and Battle.net also showed that most of the differences lies in different service strategies, supporting the claim that the results of this thesis is applicable in a general setting (platform independent).

The case studies of the two services have uncovered five different revenue models in use in the OGS industry; the subscription, advertisement, micro transaction, digital distribution and additional sales model. In addition, a short analysis of

two other large OGSs, Steam (PC platform service) and PSN (console platform service), has not uncovered any other dominant revenue models. The five revenue models outlined above is thus present in at least one of the four proven business models of the major services in the industry. From the estimates provided, the subscription, micro transaction and digital distribution models is the most profitable of the five. However, all of the four services use several of the revenue models in conjunction in order to minimize the negative effects of each model, as well as to generate additional revenue from the users. The case study of XBL showed that the service in fact relies on all of the five models for revenue. The extra overhead associated with multiple models thus seem to be outweighed by the price differentiation possibilities that lies in the use of several models.

The choice of revenue model(s) is dependent on the individual platform and the existing competition. Cross-platform competitors may be seen as close substitutes, which influence the choice of model as well as the individual pricing strategies even though the service has a monopoly on its platform. The extensive competition may in some cases outweigh the potentially increased pricing power received through positive network effects. The micro transaction, digital distribution and advertisement model (implemented through feature ads) seems to be the safest choices for revenue for OGSs in general, as long as the service follows implementation standards and market prices for digital content and services, but they naturally require an online distribution store. As of writing, the advertisement model implemented through the use of conventional ads is less widespread, unlike the recent trend with in-game ads, but this may change in the future. Additional sales cannot be implemented as a model in line with the other four, but it is a result of the value-add the service generates. Thus, any OGS owner who may profit from additional sales on some other product should implement the service to support it to the maximum extent possible.

Unlike the other models, the subscription model is difficult to implement for basic features due to the vast amount of existing services that are free of charge. However, if the service possesses some unique feature or otherwise has a competitive advantage, the subscription model can be used and may indeed be the most profitable model of them all. Most services choose to implement the model with different plans however, charging subscriptions for premium features, allowing users with low willingness to pay to utilize the service for free (or collecting revenue from them through one or several of the other models), while only charging subscriptions from those who value the extra features.

The popularity of the micro transaction, digital distribution and feature ad model, as well as the additional sales and the step-wise implementation of the subscription model all point in the same general direction; the willingness to pay among OGS users is low for features and content they do not personally value. Recognizing this factor is crucial in order to construct sustainable future business models for OGSs, based on the revenue models presented in this thesis.

8

Future Work

This thesis has complemented previous work performed by the author, strengthening the former results. In addition, the major revenue models of the industry have been analyzed, completing a high-level study of the financial aspects of OGSs. However, the industry is vast and complex, with several interesting areas of research that have not been exhaustively described or even mentioned in this thesis. Below is four proposed areas of future research, which may improve, justify or even disqualify the results presented in this thesis, in addition to improve the understanding of the OGS industry in general.

8.1 Development and deployment costs

While the dominant costs of operating an OGS has been described, neither this thesis nor [29] has taken the initial development and deployment costs and how they influence the business model into account. What does it cost to develop an OGS? What resources are necessary? How does it affect the choice of revenue model(s) and the corresponding pricing strategies? The importance of a good server localization strategy as well as careful design to minimize support costs have been identified as key aspects in terms of (operational) cost savings. However, how does this influence the service's development costs? Such information is crucial in order to understand the industry and the existing business models, and may be answered through future research.

8.2 Pricing strategies

While the dominant revenue models have been thoroughly researched and presented, the individual pricing strategies of the different models have not been covered in detail. What means does a service use to calculate the price of content and features? How is switching costs and brand preferences valued? How is the pricing power of a service determined, and what does it translate into in dollars and cents for the end user? Such questions is important to answer in order to fully understand the financial mechanics of the OGS industry and could be found through future research.

8.3 Network effects

The presence of network effects and their importance in the OGS industry was briefly outlined in this thesis. As described, network effects play an important part in a service's acquisition and retention abilities, in addition to directly influencing the pricing strategies. Future research might be able to classify or even measure the network effects accurately, which in turn may provide valuable information when constructing individual pricing strategies.

8.4 The general cost model

The general cost model presented in this study is mostly based on speculative estimates and industry insight on the author's behalf. Although the estimates have been carefully researched, confirming or disqualifying the cost development outlined in this thesis with empirical data would be of great interest. However, this would require industry sensitive information, which is extremely difficult to acquire. Nevertheless, future research can improve the model by performing in depth analyses of other services and correlate the results with those outlined in this thesis.

8.5 Demand

While the demand for an OGS has been described indirectly for deployed services (through increased network effects), the demand aspects of OGSs has not been covered in detail. How does a new service generate demand? How does OGSs

affect the demand for online multiplayer games? With increasing demand for DLC, how does OGSs influence and affect the demand for traditional multimedia? Such questions of interest might be answered through future research.

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Appendix A

Long Tail

Long tail in retail refers to the fact that our culture and economy is shifting away from the traditional hit-driven or mainstream markets, towards a huge number of niches. While the range of products in a traditional physical retail outlet is limited by shelf-space, the digital marketplace can provide an almost endless variety of products due to the low cost of server storage. The low cost of storage means that digital products can be profitable even though the sales volumes are low. The prediction of the theory is that the aggregate size of the many small markets someday will outgrow the demand for traditional retailed goods. In short, the concept is perhaps best summarized by the title of Chris Anderson's book on the subject: *The Long Tail: Why the Future of Business is Selling Less of More* [3].
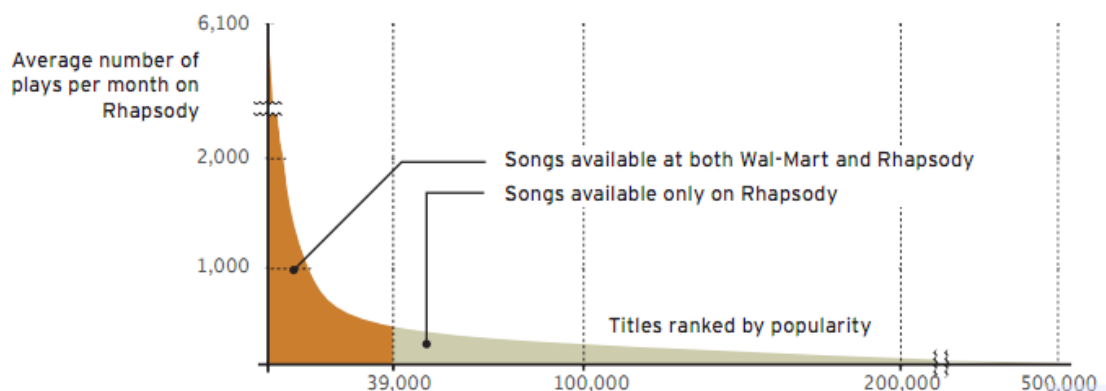

Figure A.1: The long tail - The long tail illustrated through sales of invidiual songs [2]

As an illustration, consider Figure A.1 which shows the demand curve for songs available at Wal-Mart (traditional retail store) and Rhapsody (online music

store). The dark shaded area to the left represents the 39,000 songs (the hits) that are present at both Wal-Mart and Rhapsody, while the area to the right represents the songs that are only present on Rhapsody. As the figure shows, the area under the tail is significant and can generate substantial revenue. Wal-Mart does not have the ability to offer all songs due to physical constraints, but Rhapsody can at almost no marginal cost per song. Thus, Rhapsody is able to make money off of songs which is not offered by Wal-Mart. However, Rhapsody is also in a position where it can benefit from the hits as well.

The OGS industry is in a position where the services may generate substantial revenue from offering a wide selection of products and digital content, following the principle of the long tail. Just as in the example above, the sales of games, smaller arcade titles and other forms of DLC are hit-driven. A few titles and content thus constitutes a large fraction of the overall sales. However, due to the low cost of providing a wide variety of content, substantial revenue can be generated from low sales volumes of many different unique products. The more products the service distributes, the larger are the possibilities of profiting from the long tail. As we saw with XBL, the service provides games and DLC, as well as music, TV-shows and movies - all which generates hundreds of millions in revenue annually. As of writing however, most services do not fully exploit the long tail possibilities - mostly due to the difficulty in acquiring licenses for copyrighted material. Indie-games are perhaps the best example of the use of long tail in the OGS industry, where individual developers and smaller companies without publishers are able to sell their games through the OGSs. The wide selection of games means that very few titles sell in large quantities. However, the OGS owner profits from a small cut on each and every transaction, resulting in major profit overall. Long tail possibilities is the driving force behind the recent explosion of digital content provided by OGSs, paid for by users through micro transactions.

Appendix B

A Price Sensitive Market

A key aspect of the OGSs industry to be noted is its relatively high price elasticity of demand. Price elasticity of demand (e_d) is the percentage change in the quantity demanded (Q^D) of a product divided by the percentage change in the price (P) of that product, see the equation below and Figure B.1 [10].

$$e_d = \frac{\%\Delta Q^D}{\%\Delta P}$$

As the relation explains, the more price elastic demand is, the more responsive consumers are to price change (price sensitive). In the extreme case, a perfectly elastic market has many perfect substitutes. In other words, the market is full of equal products sold at the same price. Thus, if the price of one of the products is adjusted up even the slightest, all of the customers would be better off buying one of the substitutes (and they most likely will). The opposite scenario is called perfectly inelastic, where the market has no substitutes. In such markets, a price change will not alter the demand for the product or service at all. In reality, the demand curve for most products and services is located somewhere in-between the two extreme cases as in the figure. Even so, the theory dictates that in markets with few close substitutes, consumers do not respond notably to slight price changes.

Due to the platform specific nature of gaming, many services operate without any real close substitutes - but the OGSs still doesn't possess any notable pricing power. From a bird's eye perspective, using a service on one platform or the other may be viewed as close substitutes - they provide online multiplayer in any case. However, the console platforms only have a single OGS each, operated by the console manufacturer. Battle.net on the PC-platform supports Blizzard games
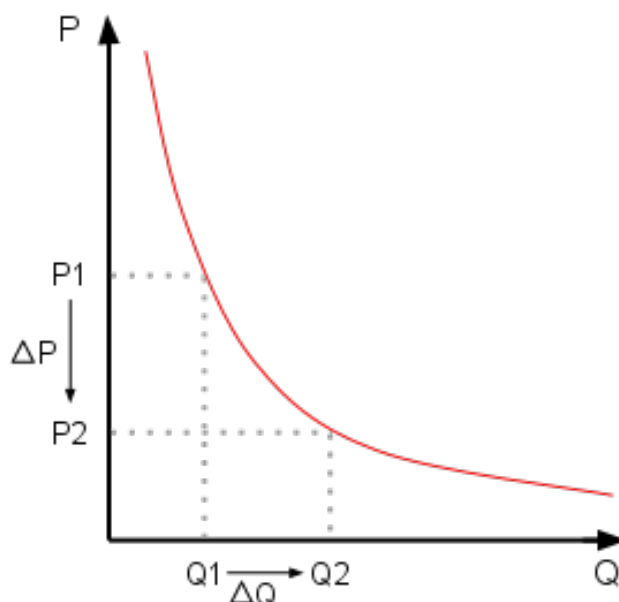
B. A PRICE SENSITIVE MARKET

Figure B.1: Price elasticity of demand - A demand curve showing the difference in quantity demanded ΔQ as a response to a price change ΔP

exclusively and Game Center is the only OGS on the iPhone-platform. These services are substitutes in the sense of online gaming, but gamers in most cases have stronger preferences than choosing between online or offline play - they often prefer one platform over another. If a player prefers the exclusive titles on the Xbox 360, he/she plays them online on XBL. On that specific platform, the user has no close substitute. Even so, Microsoft cannot price XBL without considering the strategies of OGSs on all competing platforms. If the price exceeds that of the competition plus the users' switching costs (including the Xbox preference), the users (assuming they act rationally) will abandon the service and the platform for a competing one.

Consider a specific OGS denoted X and its main competitor denoted Y. For simplicity, both services operate in a finite market with N users and both services follow a monthly subscription model exclusively for revenue. The monthly price for service X is denoted α_X and the price for service Y α_Y. Now let β_X denote the switching costs and brand preference for each user of service X. In other words, β_X denotes service X's pricing power compared to its competitor Y. The demand for service X denoted D_X, under the assumption of rational prices and consumers (i.e. non-negative prices and that each consumer seeks to maximize

his/her value at every point in time), will thus follow the following relation:

$$D_X = \begin{cases} N, & (0 < \alpha_X \le \alpha_Y + \beta_X) \\ 0, & (\alpha_X > \alpha_Y + \beta_X) \end{cases}$$

In reality, not all consumers act rationally and valuing the switching costs and brand preferences are difficult. Thus, the change in demand will not be as dramatic as the relation above outlines. However, it does show how difficult pricing of OGSs can be. Just as valuing switching costs and brand preferences is difficult for the users, it is difficult for the OGS owner as well. In addition, this research has shown that most OGSs price their features and content without any major discrepancies, which supports the conclusion that OGS users are fairly price sensitive and that most services have low pricing power compared to the competition. Thus, even though many platforms have exclusive OGSs and no real substitutes, the OGS market must be seen as a whole, where OGSs compete for the same users even though they operate on different platforms. Pricing OGSs efficiently is a difficult endeavor, and may be seen as just as important as the choice of the underlying revenue model(s).

Appendix C

A comparison of XBL and Battle.net

Battle.net and XBL are perhaps the most well known OGS's across all platforms. XBL dominates the console market while Battle.net largely dominates the PC market. Excluding WoW players (Battle.net and WoW merged prior to the release of Battle.net 2.0), Battle.net has approximately 12 million members while XBL has around 30 million members. The list of supported features directly related to gaming are very similar in both services. They include true matchmaking, seamless integration, chat in various forms, achievements, party and clan support etc. When playing multiplayer on either the Xbox 360 or a Blizzard title on a PC, it is therefore difficult to tell the services apart, assuming the UI and platform used is not taken into account. However, while an OGS at the core, XBL also provides other forms of entertainment. The DLC section (XBLM) of XBL provides music, TV-shows and movies. XBL also supports on-demand streaming from various content providers such as Netflix and ESPN. The scope of XBL's business model is thus a lot wider than that of Battle.net. Microsoft's overall plan for the Xbox platform has always been to provide a complete entertainment center, channeling all forms of home entertainment through the console and/or the XBL service. Therefore, while the core functionality of both services is similar, the two service's business models are quite distinguishable.

C.1 Revenue Model

As presented in Section 4.4.1, XBL relies on five sources of revenue whereas three major; subscriptions, micro transactions and digital distribution. In addition, the service generates indirect revenue through additional sales of games and Xbox consoles, as well advertisement revenue from featured games and other forms of digital content on XBLM. Today, Battle.net fully relies on additional sales and digital distribution, but the initial model also depended on advertisement revenue. Under the provided estimates, XBL's revenue exceeds $1.5 billion in 2011, while Battle.net earned approximately $20 million in 2010 on additional StarCraft II sales - a miniscule sum compared to XBL's revenues. The major difference in earnings is a result of two completely different product strategies. As described in [29], Battle.net was developed as a value-add service for Blizzard's customers. The initial business plan for the service were constructed in such a way that it would be self-sufficient (i.e. not a cash sink), but the service was never to be recognized as a source of profit. The real value would come from an enhanced gaming experience when playing Blizzard's titles, which again would improve the company's bottom line by selling more games. The initial business plan did not account for hosting server costs from hosting game matches however, as this was added years after the launch. After match and game hosting were introduced, the cost of operating Battle.net skyrocketed. Hosting costs accounts for almost half of the overall costs of operating the service. As a result, the initial self-sustained business plan is most likely not equally sustainable at present (probably offset by profit from Blizzard's highly popular MMORPG WoW). Blizzard has also officially stated that they have to monetize Battle.net somehow in order to cope with the rising costs [24]. Micro-transactions and/or well-designed subscription plans seems most likely, although starting to charge users for a service that has been free for almost fifteen years is a difficult and risky strategic move.

Unlike Blizzard's business model for Battle.net, XBL's business model was designed to make the service profitable from the very beginning. Microsoft entered a difficult and highly competitive market when releasing their Xbox system. Nintendo and Sony had cooped the entire game console market after Sega was forced to abandon their manufacturing business, and both companies had sold tenths of millions of consoles over several generations (review Section 2.3. In many ways, XBL was Microsoft's only way into the market. The timing on the service's release was perfect and it became an instant success, soon positioning the Xbox as the second most popular console in front of Nintendo's GameCube, but behind

Sony's PS2. However, Microsoft had spent enormous amounts in research and development of the Xbox platform and they were in no position to recoup the investment through console sales alone. As described in Section 2.5.3, most of the profit for a console manufacturer lies not in sales of the console itself, but in accessories and more importantly royalties on all games sold for the platform. For the newcomer Microsoft however, this still wasn't enough. Without proper profit from XBL, Microsoft's Xbox adventure may have ended before it began.

Being the first-to-market with a successful OGS, Microsoft was able to price the service relatively steep, soon resulting in major profit. The profit was used to offset the development costs, as well as the losses from console sales [47]. New consoles are often retailed at a price below manufacturing costs in order to gain market penetration, as described in Section 2.5.3. According to [6], Microsoft did not break-even before the release of their second console, the Xbox 360. The new console however, like the first, was retailed at a loss of as much as $100 or more per unit. In short, Microsoft may not have earned a single cent on the Xbox platform until very recently. Over the years however, the success of XBL has given Microsoft a strong foothold in the console market. The service's now 30 million members are generating enormous amounts in annual revenue as described in Section 4.4.1. Thus, Microsoft can still afford to price the Xbox 360 competitively (only breaking even), as the real profit for the platform now lies in XBL. The history of Xbox is a good example of the difficulty in earning profits as a console manufacturer. It takes years to break-even, and the success of the console is all but certain.

Initially, the two services had fundamentally different revenue models. Battle.net was developed as a value-add service only, relying on advertisements and increased sales. XBL was also developed and intentioned as a value-add service to the Xbox platform, but its business model was also designed to eventually have the service become a major source of profit through micro transactions, digital distribution and subscriptions. While Blizzard continues to keep Battle.net's initial strategy as a value-add service only, the service's revenue model will most likely converge towards XBL's in the future due to increasing operating costs.

C.2 Core OGS vs. complete entertainment service

As mentioned in the introduction to this section, the most notable difference between Battle.net and XBL is the overall product strategy. Blizzard is primarily a game developer; one of the best in the industry. Their self-owned, developed and maintained service focuses solely on increasing the value and quality impression of the company's own games. The main goal for the service is to provide PC gamers with an online experience unlike any other. The strategy has proven successful; Battle.net is among the biggest OGSs on the PC platform - quite the accomplishment considering the low amount of supported games. While the quality of Blizzard's games without a doubt plays an important part in Battle.net's success, the relation goes both ways. The success of the individual titles is also highly dependent on Battle.net. The initial success was driven by the services ease of use. No configuration apart from account creation was required on behalf of the user, and the service worked seamlessly with each game. At the time, all OGSs utilized external interfaces for overhead and match setup - a common feature of OGSs for the PC platform even today. Battle.net however, could be accessed from within the game menu. These characteristics were adopted by XBL and later by PSN as well. XBL followed the success of services such as Battle.net and improved them by adding new innovative features. Voice chat soon became a standard in XBL, and the service in many ways pioneered the use of achievements, character avatars and cross-game messages - features which later were implemented in Battle.net as well. Today, both services are, from a gaming perspective, almost identical. The main difference is in the use of hosting servers, which will be explained in the next subsection. However, XBL doesn't stop there. In addition to the core online gaming features, XBL offers an extensive digital marketplace. XBLM, as described in Section 2.4, offers everything from arcade games, indie games and avatar outfits to on-demand TV-shows, movies and music. The XBL strategy thus appeals to other customer segments than gamers as well. In many respects, XBL is a complete entertainment service, offering all forms of digital multimedia. An Xbox 360 with an XBL account thus functions as a media center in addition to the gaming functionality. Battle.net however, is made exclusively for gamers and gaming purposes.

C.3   The use of hosting servers

According to the estimates provided in [29], hosting server costs constitute almost half of Battle.net's total costs. The same ratio does not apply to XBL, but hosting servers still constitute a major expense for the service. The use of hosting servers however, differs extensively between the two services. Battle.net hosts all online matches on behalf of the users. Such a strategy has several benefits; it reduces cheating since players cannot alter local game files and it in many cases solves latency and performance issues associated with local hosting. On the other hand, hosting all matches on behalf of the users requires an extensive server infrastructure. Ensuring low latency also restricts the possible localization strategies and corresponding cost savings (review Section 2.2.1 for a short summary). Battle.net's hosting server strategy thus favors the user rather than cost efficiency. For XBL, it is the other way around. Hosting matches on behalf of the user is simply not feasible for a big console platform. The reason is simply the number of supported games. Battle.net has the luxury of only supporting Blizzard's own titles. As of writing, Blizzard has released seven individual game titles (excluding expansion packs), minimizing overhead on game support on each server. Xbox 360 on the other hand, has close to 800 individual titles according to Wikipedia [52]. While certainly not every game supports online multiplayer, the server overhead associated with hosting matches for all multiplayer titles is still unfeasible. The benefits of hosting matches on behalf of the user are still, to a certain degree, maintained by XBL however. Being a console-platform, performance issues are unheard of, as every XBL user utilizes the same hardware, namely the Xbox 360. The same reasoning prevents users from cheating through altercation of local game files, as the user cannot access any code (at least not easily). This leaves the issue of latency, which indeed is an important issue in any OGS. Although online e-sports competitions are less prestigious on XBL than Battle.net, a good gaming experience requires low latency. XBL has a number of mechanisms in place in order to minimize latency. The TrueSkill matchmaking algorithm sorts out unsuitable hosts when setting up matches. Players are also matched against other players with similar latency and if a host suddenly gets a latency spike, the algorithm automatically assigns a new host for the match. The nature of console gaming indirectly eases the latency requirements as well, unlike gaming on the PC. The joystick on a console's hand controller is considered less accurate than a PC mouse. The reaction time lost due to latency is thus partially offset by the increased aim time when using a joystick. All in all, XBL can thus

provide a similar quality online experience without having to host matches on dedicated servers

Since XBL is not dependant on having servers located geographically close to all players, at least not to the same extent as Battle.net, Microsoft has more localization strategies to choose from. Having larger clusters of servers in fewer regions is one possibility, reducing costs through large-scale contracts with a number of selected ISP's or managed hosting centers. Since XBL does not host matches on behalf of the users, it's easy to draw the conclusion that the XBL infrastructure is smaller than that of Battle.net. However, the service itself is more than twice as large as Battle.net in terms of users (again excluding WoW players). In addition, XBL provides a far wider spectrum of services than Battle.net. All content provider features and all the DLC available is most likely mirrored in many geographical regions in order to minimize download times as an example. The estimates in [29] for Battle.net showed that the service accumulated annual hosting costs of approximately $10 million. This estimate was based on Battle.net's peak load of around 500,000 users. No peak-load number has been found for XBL overall, but reports of almost 3 million simultaneous players of the single hit-title Call of Duty: Black Ops appeared in November 2010 [41]. Coordinating and setting up matches for such an amount of users simultaneously requires an extensive infrastructure. It is thus somewhat safe to assume that the annual hosting costs for XBL are larger than those of Battle.net.

C.4   Bigger equals more expensive

The comparison of the remaining five cost accounts described in Section 2.2.1 can in short be summarized as in the header of this subsection. XBL is a larger service, in all respects, and thus accumulate more costs. Each user account stores more data on XBL than Battle.net (more games to accumulate data from, more available DLC to synch with the profile etc). In addition, there are more than twice as many users. The overall storage costs are thus inevitably larger for XBL. The same reasoning applies to bandwidth costs, customer support costs and the size of the development team as well. The bandwidth costs are higher due to the extensive distribution of digital content through XBL. The development team must in addition to create new and innovative features, also develop DLC continously, and more users means more customer support. Even though there is no notable difference in strategy between the services in any of the abovementioned

cost accounts, the use of marketing is slightly different. XBL operates in a more competitive market. Without proper market penetration of consoles, XBL would be helpless in acquiring customers and providing a great user experience, resulting in a catastrophic failure for the entire platform. To ensure a steady growth in the user base, Microsoft thus relies more heavily on expensive marketing forms such as TV commercials. TV advertisement of the platform is also done through displaying the Xbox logo and slogan after all game commercials.

The comparison of the two services has shown that XBL and Battle.net is quite different in many respects. While the basic online gaming features are similar, the overall product strategy for the two services is different. The XBL strategy overlaps Battle.net's strategy in providing a unique online experience, but XBL includes other customer segments as well by providing additional multimedia content such as movies and music. This makes XBL a broader entertainment service, not just a core OGS. Furthermore, the revenue model differs substantially, as XBL functions as a profit source where Battle.net is regarded as a value-add service only. The core OGS cost accounts are fairly similar for both services. The main difference lies in the royalty payments Microsoft incurs when distributing third-party content, as well as different hosting server localization strategies.

From the above comparison, it would seem that most of the differences between the services lies in the different service strategies and not the operating platform. The results and conclusions presented in this thesis are thus believed to be applicable in a general setting.