THE POTENTIAL GROWTH OF ONLINE GAMING AND GENDER REPRESENTATION

A Dissertation submitted in partial fulfilment of the requirement for the degree of Master of Science

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ABSTRACT

The study gives an in-depth analysis into the Online Games Industry, which, has grown extremely quickly over the last several years. The main issues, which, are dealt with in this paper are: gaming content, gaming gender and gaming market from a developer's perspective. In the past the online gaming industry has been a masculine area, with a small amount of female players. The main aim of this paper is to provide more understanding on gender representation within the online gaming market by analysing the current market from a developer's perspective.

The research reveals that there are disputes over the effects of playing online games, with findings of negative effects disputed by other research. The study also looks at whether the content of games i.e.; the violent elements, is an issue when it comes to females participating in games. The issue is further complicated by the fact that technology is rapidly evolving, making it difficult to compare studies with reliability over time.

The work is conducted by using a questionnaire as a means of collecting data from 110 games developers of, which 70 replied. The hypothesis is also scientifically tested using T-test so that reliable information is obtained.

The application of the questionnaire received a response rate of 63%. Testing of the hypothesis found that 'In the opinion of games developers, men prefer playing action games compared to any other type of game'. In addition to this, identifying the issues surrounding online gaming and gender representation gives way to drawing a conclusion, and further recommendations based on past and current information.

Keywords: Online Gaming; Gender Representation; Negative Effects; Positive Effects; Developers

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I certify that the work presented in the dissertation is my own unless referenced.
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Date……

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CHAPTER 1

1.1 Overview of Online Gaming and Gender Representation

The online gaming industry's, market covers a wide variety of backgrounds, and continues to grow. But what has caused the online games industry to achieve mass-market position during the last few year. A paper published by Jarett (2002) claims the following to be the reasons for the significant growth rate in online games.

- Internet Audience- The explosion of the Internet has given way to a variety of new online games customers. The games industry on the whole is seeing growth and diversification.
- Availability- Years ago finding a game which was free to play was difficult and this was a huge setback for consumers to enjoy playing online games. Now, however, games can be found through most ISP's, and in addition most online game sites offer prizes for playing games, which has been a strong force for growth and a valuable retention tool.
- Removing the technology barrier- Historically individuals had to be technically conscious to be able to download online games, but now with the creation of programs such as java and flash downloading online games is much easier.

For decades, there has been a cultural shift between males and females. This has, been reinforced by action figures for males, and Barbie Dolls for females. Researchers' such as Braun and Giroux (1989) have realised the importance of the misrepresentation of females and the inherent masculinity of males in the online games market. In general, the software market focused on males is divided into three age groups: over 35, 18-35 and under 18, (Figure 1.1).

In an article written by Buchanan and Lipinski (1999), which, is extracted from The "Girl Next Door", the authors write about several issues, which should be addressed in relation to gender representation of females in online games:

- Agency – Do women characters have a significant role in games?
- Invisibility – Certain games contain no women characters at all especially simulation games like Football.
- Identity – With whom do females identify in the world of online games?
- Audience – Does the online gaming industry 'speak' to girls and women, and is there a connection between girls and gaming?
- Subjectivity – Few Online Games offer the narrative perspective through female perceptions. Significance surrounds the availability of different narratives and tasks and such qualities are appealing to girls over the repetition of meaningless tasks.
- Intent – What do games teach young girls and women?
- Quantity – The numbers of Online Games catered towards females are minimal

It can be concluded from the evidence presented that gender representation is multifarious.

1.2 Online Games Consumers

The types of online games played by individuals vary according to gender, age and income. These individuals are all potential online games players, if developers change their view of thinking and produce games to cater for the market. Developers tend to take the notion that consumers are not individuals but look at them as a population of the whole with similar likes and dislikes. In actual fact they exist as segments of the market and appear in the genre, brands and products to play a part in determining the influence over the market.

Three types of gamers are characterised in the (IGDA White Paper, 2002):

The Hard Core- These gamers tend to be relatively young, male and represent the smallest group of the market. They spend the most time online playing games, which is over 20 hours per month. The article states that these players are the ones who moved from the hard-core PC games to online games.

The Fringe- They are composed of the older generation who know all about games but were unable to play then when they were younger and so spend several hours online playing games. These players don't have the high bandwidth capacity and so avoid playing certain games.

The Resistance- These are the players who tend to play card games on the Pc without literally thinking about themselves as a gamer. They represent the potential online gamers. The challenge, which, lies with the developers is to be able to identify these new gamers and be able to offer products and services at affordable prices.

1.3 Problem Definition

Online gaming has gained considerable popularity as a tool both in an industrial and academic environment. Even so the greatest challenge to Internet gaming studies will no doubt come from within the academic world. Making room for a new field usually means reducing the resources of the existing ones and the existing fields respond by defining the new field as a sub-field.

A two-day academic summit 'The Game Developers Conference' in the USA and UK found that the concept of 'gaming' had many challenges. The researchers found that it was difficult to define what academic research is of interest to the gaming companies. They concluded that the interest and research into gaming continues to grow but are still in the early stages.

The researchers also found giving 'gaming' a definition difficult. According Peabody (1997) who quotes from the work of game designer Chris Crawford, online games have three basic characteristics Crawford (1997):

Representation: A game is a closed formal system that subjectively represents a subset of reality. (By subjective, Crawford means that a game is not necessarily trying to represent reality.)

Interaction: The game acknowledges and reacts to the player. (Unlike a puzzle, which simply lies still.)

Conflict: A game presupposes a conflict. This can be either between several players or between the players' goal and whatever prevents the player from reaching that goal.

Online gaming [1] is by definition; "An activity taking place on the basis of formally defined rules and containing an evaluation of the efforts of the player. When playing a game, the rest of the world is ignored," (Crawford 1982, p.35).

Game developers have stressed the importance of innovation, being in line with the changing technology. When targeting the relevant market it is not always important to constantly innovate with the latest graphics and animations. There needs to be focus on innovation and targets especially as the hard core market is highly competitive and has a lower growth potential. There are other consumers who value stability and familiarity rather than innovation.

Current studies are very much reflected on the growth of online gaming and this being a relative new topic there hasn't been much scholarly research in the area of online gaming and gender representation. Research such as 'Gender differences in children's reactions to success and failure with computers' by Nelson and Cooper (1997) and the representation of women in gaming by Haumasen (2002) needs to be investigated further and much deeper.

Although boys appear as regular gamers in investigations, even studies from the early and mid-1990's suggest that a large proportion of females play games online for 1-2 hours a week. Research shows that 75% of females compared with 90% of males played computer games online, Bryce and Rutter (2002). Figures such as these show a growing representation of women in online gaming. Given such growing figures why are the attitudes of gaming developers and academics towards a masculine culture?

Although online gaming is more advanced in the USA, the UK does lead Germany, France, Spain and Denmark in terms of visits to games sites and the number of people taking part in online gaming. At the current moment in the UK, online gaming is not restricted, by any means to the console manufacturers, and with the advent of new technology this is set to grow. Current figures show that Britain has developed a leading position within two decades and accounts for 71% of European investment in the production of games. British made games take 12% of the US market and a quarter of the European market, Leadbeater and Oakley (2001).

1 Online Gaming refers to PC Online Games, Card and Board Games, Puzzle Games and direct Online Gaming

The history of online games spans less than a quarter of a century. Technology, processes and content have evolved quickly over this time. Technology evolution has been the most consistent but content has evolved slowly. Rapidly changing from an American and Japanese undertaking, Europeans have now entered with companies such as British Eidos, Yates and Littleton (1999). In a report from the gaming industry Datamonitor, it forecasts that Europe may exceed the American industry by at least 60%, (IDSA, 2002).

1.4 Aims and Objectives of Dissertation

This paper outlines a conceptual framework and explores some empirical objectives for analytical work on the growth of online gaming and gender representation within the UK. Although strategic researchers recognise the growing importance and the significance of online gaming, scholarly research highlighting in-depth research and analysis have been slow in coming. It is particularly in the last 5 years that online gaming is becoming popular but is this growth connected with the type of gender marketed and the types of games created?

There are many new and unanswered questions about online gaming. The industry being new is now driving much of the technological development in computer animation. New audiences mean designing for new cognitive models of fun and taking advantage of new research. Electronic gaming could also evolve to include a wide variety of events. All these new products and markets require technical design and developments, Haddon (1992). To understand how this translation works we have to develop a coherent picture of how the online gaming industry is currently constituted and how it may evolve in the future.

The aim of this paper is to examine the gender aspects of online gaming and examine online gaming in three key aspects: gaming content, gaming gender and gaming market. Over the past decade there has been much debate on the target of online games within genders. The other research aims are set below:

- Who do the developers market their games products towards?
- Study the positive and negative aspects of gaming
- Is there an actual market for online games in the UK

- Is there a missing link between the type of individuals marketed and the type of games produced?
- Games are driven by new delivery systems, which underlie market growth, but what is 'online games' content all about?
- Contributing to existing research which have been slow in coming
- To develop a coherent picture of how the online gaming industry in the UK is currently constituted and how it will evolve in the future.

This paper provides a context to contemporary online gaming by looking the popularity of the industry and the major concerns raised over online gaming. The main contributions of this research, is an approach that looks at the growth of online gaming within the UK and its current market (gender representation) from the perspective of games creators.

According to (IDSA, 2002) gaming used to be male dominated, but women now compromise 43% of PC gamers and 35% console gamers. 53% of women are likely to play online compared to 43% of male gamers. Clearly a great number of women play games, yet the industry has not responded to their need and interests.

From the above the objectives it could be said that the concluding rationale for this study is based on creating a factual representation of a subject population of gaming developers and gain an insight into the way the gaming environment is constituted.

This quantitative study should in fact accomplish three goals: it should report the findings of the study of gaming developers as well as provide an overview of the current literature and new findings on this study. It also should interpret these facts based on a comparative reading of the sources relative to the data analysis outcome. Finally, the research itself should analyse the trends in online gaming and future predictions.

1.5 Scope of Dissertation

When one talks about the computing world, online gaming isn't mentioned much. But with clear observance it can be seen that, the pleasure of play of individual and multi-games are a potential force in technological advancement now and will remain

so in 2038. A study Goldstein and Carr (2001), predicts that over the next five years computer games will create an unique educational opportunity: the development of computer coaches will gain individual skills. The research predicts that in the future gaming will be widespread, active and motivating. Another study claims that gaming companies are concerned as they see the female representation as being 'a largely untapped market' but they need the formula to create games that attract females in the future, Ansbergs (1998). Therefore the different types of users within UK who are unable to fully utilise the benefits of the Internet lose out in several ways:

- The value of the internet is diminished
- The diversity of available content is reduced

Critically these issues must be addressed now and to get the public's interest considered or the Internet will be ultimately lost. By presenting a very clear and coherent picture services can learn valuable lessons from the gaming market and increase the revenue stream by promoting games. The novelty of this research will be that by focusing on how and whom the online games market is aimed at, it will provide individuals with a grasp of the key trends shaping the technological world in years to come. As well as this it will be a solid concrete piece of research application, which, businesses can use for more detailed research.

1.6 Dissertation Outline

The previous chapter introduced the topic of discussion, background of the study, and covered the aims and objectives as well as the scope of the dissertation. Following this, subsequent discussions of the thesis are outlined below.

Chapter two focuses in detail the research carried out in the line of online gaming and gender representation and explains' the theoretical foundations of the research in this context. It also looks at the negative and positive aspects of online gaming. As well as this it provides context and clarifies the relationship between the current research topic in question and previous work.

Chapter three describes the steps taken to investigate research problem. It explains the research design, methodology, hypothesis, the sample of respondents selected and the description of the data collection process.

Chapter four analyses the results from the data collected with facts, presented as tables and figures. Furthermore it also, tests hypothesis stated at the beginning to prove whether the results of the study show relationships between variables and whether they hold true.

Chapter five provides a summary and discussion of results to the entire research process. This chapter relates the findings to the original statement of problem and the literature review. A review of the results is provided with meaningful answers to the questions.

The final chapter summarizes the conclusions from the discussion chapter. Here the limitations of the study are noted with recommendations for further study and research in this area. The interpretation provided is objective and subjective, with a conclusion, which is defensible.

CHAPTER 2 LITERATURE REVIEW

2.1 Introduction

This chapter expands on the objectives set out in the previous section as it clarifies the fundamental concepts of online gaming and gender representation. It will also provide an in-depth understanding of all the issues relating to online gaming.

Furthermore, the work described in this thesis lies at the juncture of several fields. It incorporates the online gaming market, gender representation and gaming content. This chapter will thus survey the relevant literature and highlight the important factors associated with online gaming and gender representation.

Despite the undisputed success of online gaming in Asian countries and the growing emergence of online gaming in European countries, many important fundamental problems and questions remain unanswered: for example why is the games market much slower to take off than other counter-parts; why are games built with violence; are just to name a few.

Without doubt the most widely discussed of these is the violence of online games. Like most fundamental issues in the gaming context, this question leads to challenges at several levels.

2.2 History of Online Gaming

The history of online gaming has seen the development towards complexity and flexibility. The games developed today are more unpredictable and open than 10-15 years ago. Online gaming has not had much attention within research circles as it being a relative ‘young field’, much of the information is vague. Many research articles available don’t even state facts such as the first online game available, Aarsten (2001).

The gaming industry consists of two major sectors: The video market and online games market. Up until the early 1990's both markets evolved following a boom and bust cycle. The games market particularly has stabilised because of a growing market dominated by the PC's. The maturing of the market over the last ten years has envisaged a uniform pattern of growth, (Forrester Research, 2002).

The history of the online game is, in parts, a history of technology. The computer game requires technology capable of handling large amounts of data and of representing this data. The relationship between a technological phenomenon such as the computer and the less formally based culture is not a simple one: some theories will claim that technology determines culture; some will claim that culture determines technology. It may be most reasonable to see this as a history of mutual influences, where technology can inspire (or enable) cultural developments, and cultural developments can inspire new technology. To quote an obvious example, the computer game was originally developed on equipment designed for military and academic purposes. But today the online game is the driving force in the development of much hardware such as 3d graphics accelerators.

2.2.1 Growth of online Gaming

The first game is generally assumed to be Spacewar, developed in 1962 at MIT. Spacewar originally ran on a PDP-1 computer the size of a large car. Two players each control a spaceship circling a planet. The players can shoot each other, turn their ships, and accelerate where the goal is naturally to hit the other player, Aarseth (1998).

The first commercially available game, Pong, was introduced 11 years after Spacewar. Pong is a simple concept that has turned out to be surprisingly durable. In the beginning, Pong was played at entertainment venues, markets, and fun fairs. Another game, Space Invaders falls into the category of action games: A player controls an object/an actor against some enemies; a score is kept; the game is real-time and requires fast reflexes; the player has a fixed amount of lives; the game is based on successive levels of increasing difficulty; the game places the player's action as part of a minimal narrative, (Gaming Resources, 2002).

It is an important development in this context that online games have changed from being primarily played at an arcade to be primarily played in the home. This has made it possible to develop games of longer duration, Haddon (1992).

Many developments in the history of the online gaming are not technological but purely conceptual. Where as Spacewar and Pong are games for more than one player, the time from approximately 1977 to 1993 is completely dominated by games for single players. The other advancement of games came with the emergence of multi-player games. Multi-player games mean that more than one player could play a certain game, and play against opponents. It also represents unpredictability and challenges as technology changes so does online games and the types of games created.

The multi player game became widely popular when Doom (ID Software, 1993) allowed for connecting several PCs, for having several people present in the same game world. Doom on the whole is an incredibly influential game. It has been criticised for being violent, but it's one of the most popular online games ever and it has led to a whole genre of games.

In the 1970s, the idea of the personal computer emerged. In the beginning of the 1990's the Internet took off outside academic circles, and the computer started to be seen as connected to other computers, part of a network. The single-player online game is dominant during the reigning years of the isolated, personal computer.

According to research, online games will be six times more compared to the present by 2006, (DFC Intelligence, 2002). The report also states that 114 million people worldwide are expected to play online games in comparison to 50 million at the present time. Contrary to this claim the report also states that the gaming market is still in its infancy and that it will take time for the gaming companies to fully utilise the resources available.

Lara Croft is an example of the British industry. Online games are one of the fastest growing areas in the world. Britain holds 71% of European investment in the making of games. British developed games are 12% of the USA market and ¼ of the European, Oakley (2001). Official figures also state that the UK is second in line only to Japan in writing and creation of online games.

In the UK, the games market is expanding into to other circles. Games can be played on digital television sets and high bandwidth mobiles. Some predictions are that the

numbers playing online games in Europe will rise from 13 million in 2001 to more than 111 million in 2005, (Datamonitor, 2001). Within the UK itself there are many developers with creative ideas and a wide market of users also exist. Other publications indicate that with different technologies and games entering the market better-funded competitors will overshadow online games. The British industry has very much relied upon developers who have taught themselves, Leadbeater (2001).

There are many claims that the games industry has found it difficult to grow in the past as it has the disadvantage of largely being populated with young people who make products that are intangible. Even so the industry is rapidly growing without help from the government or research funds.

Britain's strength in developing games belies its weakness in marketing and publishing them, where as the USA companies dominate them. Gaming development is a very volatile business very much like the rise and fall of dot.com companies. Initially the gaming industry prolonged itself by sheer enthusiasm but it needs much more to be able to grow and stabilise itself and to have closer links with the market it targets. The IT infrastructure is also very important as more games are delivered online the price and type of gender targeted will become criteria, Oakley.K (2001).

2.3 Types of Online Games

There are many types of online games. In the classical action game you can almost never win, the game just gradually becomes harder, and the highest honour achievable is to enter the high score list. The most general thing to say of the evolution of the online game is probably that it has become gradually based on genres. Almost all of the early online games introduced new game play elements; later games tend to be examples of specific genres, borrowing qualities from earlier games, (Figure 3.1) for the top five categories in the gaming market.

Action games formed the first genre. These games place fast reflexes and coordination ability as a criterion for success. Spacewar, was the very first game Bellis (2002) along with Pong, Bushbell (1972). It is where two players compete against each other in a game of virtual table tennis. The success of this game paved the way for other games. These games often appeal to hard core and fringe gamers.

Space invaders, was developed in 1978 and here the player must defend the earth against the invasion from outer space. In the following years this success was, followed by, Pacman, Aarseth (1998) Then during the 1980's action games were synonymous with car and motorcycle games but missile firing space ships have been more popular. The one on one fighting games inspired by Spacewar were games like, Yi-Ar-Kung-Fu, Konami, (1985).

The popularity of these games was the motivation behind the developments of concepts focusing on cinematic narratives, such as Double Dragon. In 1993 the same makers of Double Dragon created a 3-D game called 3D shooter, which was very intense. Several other copies of this type of game was also created like, Doom ID Soft, 1994 and Quake II ID Soft 1996.

Simulation games try to give a totally concrete experience and places realism as the ultimate goal and objective. From the players perspective they must try to master complex principles involved. By the late 1980's these games were divided into two types: complex realism and entertainment.

Strategy games are all about priority. These games demand analytical skill and good tactics, as the player must balance the relation between resources and various elements in the game. Strategy can be further divided into two types: turn based games and real-time strategy games. Hammurabi is an example of turn-based game, which is in phases with, breaks in between. They were very much popular up until the end of the 1980's mainly due to the modest demands on processing power. By the end of the 1980's real-time strategy games came into action. Here the players action proceeds continuously and is more hectic and demanding. By 1993, real-time games were still in the market. Dune II was created and combined a highly accessible user interface with a balanced strategy. Without tactical understanding it was impossible to win the game, Ansbergs (1997).

The final category of games classification is Adventure games. They demand logical thinking and great persistence from the player. They are very much compared to the loose structures of a movie. William Crowther, a programmer and cave explorer created a game with the help of Don woods. This is the game now known as Adventure games. The game appealed to the more technology-interested side of the business. Years later a group of students created a more advanced and complex game

called, Zork. Then this was taken a step further by adding graphics in a new game called Mystery House. Since then menu based interaction has not changed much.

2.4 Elements of an Online Game

Online games can be broken down into 5 parts:

- Graphics
- Sound
- Interface
- Game play
- Story

Graphics are contained of images that are displayed and any effects that performed on them such as 3-D objects and 2-D full screen shots. Graphics are what attracts players when playing the game and draws them into the experience of playing in a virtual community, Crawford (1999). Every year when designing games, gaming developers keep up with the cutting edge graphics. 3-D graphics take up much of the processor time and limits the developer in the kind of game developed. Where as 2-D games carry the advantage that they are more flexible. All games have their own specific styles of display modes. Games such as command and conquer have an overhead terrain display while doom and quake have a first person perspective.

Sound, another element of games consists of any music or sound effects played during the game, such as CD music, mod tracks. It is a very crucial element of gaming as it creates a reality in the players mind, and draws them into the game. When a player plays a game they are more attracted to the graphics and do not really look at the sound elements. The sounds still are played in the background, but all along the players are sub-consciously aware of it without realising it.

The third element is the interface and it is anything the player has to use or have contact with to play the game. The interface includes graphics the player must click on, menus and controls. To develop a good interface one needs to know the target audience, who the developers think, wants to play the game. The key to interface design is simplicity. Doom is a good example of where the interface designed is user friendly. It uses arrow keys to move the player around the world.

Gameplay is like a bridge between fun and the player, which creates challenges and excitement for the player. The game should balance, allow the players to grow into the game and offer variety in the context of the game.

A game should have a story theme. Doom was the first mass-market first person shooter but it still had a story behind it. A good game needs to have a balance between the type of game and how the context is presented. Individuals also need to be able to identify with characters through, which, they identify with.

2.5 Negative aspects of Online Games

Several taxonomies of online gaming culture and gender representation has been proposed in many studies and literature, for example; Amory and Naicker (1998); Southern (2002). Amory suggests that playing games is an important part of our social and mental development. This is further re-instated by other authors Rieber (1996) who say that playing performs important psychological, social and intellectual development, which, is motivating.

However some authors McKee (1992) argue that games affect cognitive functions, motivation and remove the player from the real world. Thomas (1994) says that games appear to motivate players by stimulating due curiosity and this may be due to challenges and elements of fantasy. Studies of the effects of Internet gaming are very different in some ways, similar in others and at times contradict each other. Even studies, which state the negative and positive aspects of gaming, fail to present a clear picture of online gaming as a negative or positive influence.

The effect of online games on individuals has been a popular topic in the past. At times the negative dangers of games has been viewed in-depth, as the individual has to become actively involved in playing the game. In the USA this issue received attention when two students from a high school killed 13 people and wounded 23 as well as killing themselves. Reports stated that these two individuals were players of violent online games, Ivory (2002).

Delinquency and aggression have also been linked in several studies and research articles. Keepers (1990) conducted a study on one specific individual who behaved in an unacceptable manner in order to keep up with his gaming habit. It was also found that the child was abused by his father and so this could have been a significant factor

in his behaviour. Keepers' study also lacks credibility as the case was based on only one child and so is not reliable enough to be transferred across a whole population. In saying so a similar study conducted by Anderson and Dill (2000) found that there was a positive correlation between playing games and delinquency.

There are some theories, which, try to explain online gamers behaviours; Affective theories: They claim that playing games offers emotional and psychological escape. It is believed that women tend to play more games than men to escape problems in life according to Lesieur and Blume (1991). Cognitive theories: The basic argument here is that when an individual losses a game they are perceived as near wins and this encourages them to continue participation, Walker (1992).

Research shows that pre-teen boys play games more often than girls and show an interest for violent games, Funk and Buchanan (1996). This gender difference gap goes through adolescence. A study conducted in 1997 of 229 people aged between 15-19 found gaming to be more popular in males than females, Barnett (1997). While some studies indicate that males show more preference for games than females, female use of online games is predominantly growing, (Figure 4.1). Another aspect in the negative side of online games is the psychological effect of violent games. Researchers have argued over the years that violent games can increase violent behaviour in individuals. Irwing and Gross (1995) found that spontaneous and reflective children showed more aggression towards play objects after playing a destructive game. Another study of 221 older students found that violent games increased short-term violent behaviour, Anderson and Dill (2000).

The fact that male game players go for violent game content is backed by the gaming industry. A study in 1989 found that 80% of 176 games analysed by Nintendo were harmful, (Video Game, 1993). Another study of games in 1983, found 85% of games analysed contained destruction, violence or killing, Scott (1995).

2.5.1 Positive aspects of Online Games

There are many contradicting studies each presented within a period of a few years. In 1989 a study found that both males and females reaction time rapidly decreased after playing games for a 15 minute period, Fildes and Allan (1989).

Years later a related study of 105, 7-9 year old children found a positive relationship between reaction times and timing, Kuhlam and Beitel (1991). The authors found that games aided and helped hand-eye co-ordination and reflexes.

Several physiological benefits in the areas of co-ordination and reflexes have been identified with gaming usage. In 1989 a study conducted by Fildes and Allan (1989) found that both females and males reaction time decreased in a series of tests after the subjects played games for 15 minutes. Years later a very similar study found that there was a positive correlation between an individuals gaming experience and their reaction times, Kuhlman and Beital (1991).

Research such as the ones mentioned above and others give good reason for an investigation into the effects of gaming on individuals. Studies into the violent aspects of gaming are all varied and reveal different findings. There are two arguments towards online gaming: They can be viewed as a negative aspect in the sense that they can be a health deterrent as they replace physical movement. Findings suggest that an injury called Nintendinitis, which, is a short-term injury, develops as a result of pressing the thumb too hard for too long, Dorman (1997).

The use of Internet games has been extensively researched overseas but less frequently in the UK. Overseas research is associated with the existing theories, which, exist in the relevant country of research and so it is very difficult to apply it elsewhere. There are significant research materials, which indicates computers and computer games as a threat, Noble (1991). There are many condemnations that the usage of computers replaces human interaction with the view that there is a deficiency of verbal cues that occur in a face-to-face environment, Holden and Wedman (1993). In contrast other scholars oppose this idea and stress the humanising aspects of virtual reality and put forward that human interaction is of more significance in a computer driven establishment as people are challenged to communicate with others from a wide variety of backgrounds.

The question being asked by many is whether online games are really addictive? Is violence and sexism damaging to kids psychological well-being? The author David Deutsch (1996) states in a journal article that instead of games being harmful they are believed to be beneficial. He claims that children actually like games and are not forced into it. He further goes on to say that society has the wrong attitude that if children do like something, adults perceive it as wrong or something bad.

Research conducted by Smith, Sachs (1998) found that young people are positioned by the strength of computer-based technologies. In a paper written by Newman and Curtin (2002), they quote the work of Smith and Sachs (1998) and say that the research found that there were indications of 'social saturation' and 'immersion'.

Other studies by Bigum and Green (1993) indicate that individuals are more emergent and have changed their way of thinking to evolve with the new network of technologies. And so their needs will be very different to what maybe 'old' society accepts.

Research also looks on the potential of computer technology games to offer educational value such as Wark (1992). These and many other studies make the point out that online games are, very commonly used by young people and males are more often catered for. Braun and Giroux (1989) conducted a Canadian study and found that male characteristics were more represented in displays of games.

The question asked by many psychologists to parents is; why and how is playing online games good for individuals? The simple answer to this is that they provide an unique learning environment, new advances in technology and an interactive entity which is/can be accessible at low cost. When compared to other educational aspects, which, are very diverse and give knowledge, online gaming provides a different educational benefit in that it is interactive. And interaction is very important for children and adults alike, as interacting with another entity is what encompasses life, art and creativity in general.

In the article written by Lawrence (1992), she quotes from an article written by Margaret (1992) by saying that," Apart from increasing your manual dexterity and hand to eye co-ordination, games speed up your neural pathways." The author also goes on to state that this enables knowledge to travel faster and speeds judgements and decisions of individuals.

Are games violent? Some critics argue that this is not so even though it may have been so in the past. The demand is for games with action characteristics and so it is very difficult not to write a 'shooting game', Holt (1983). Violence is where you hurt people, where as games don't physically hurt people.

Certain research critics say that boys tend to play online games much more than girls, and some say that there is an equal division of play. But even so this argument is deliverable and is likely to carry on as more research is carried out. This whole

division of boys and girls came about through culture and the way that society is constructed and inflicts attitudes and behaviour, which, is seen as the 'norm'. Some examples include girls dressed in pink and boys in blue, girls playing with Barbie dolls and boys batman. This whole pattern of behaviour from years ago, towards a girl rewards her for suppressing her creativity.

Most parents have a preconception of what is right and wrong. And so they use force to make another person act out what they in actual fact feel. Karl Popper quotes in his writings, " the belief that the truth is manifest is the basis of all tyranny". In actual fact truth can only be found by indulging in critical process, and by learning through trial and error. Individuals who play games are in actual fact going through a process of learning.

2.6 Gender Representation in Gaming

The Internet is thought of as a technology, which, allows all individuals to communicate equally. It is supposedly continuously changing, or at least that is what we are led to believe. But has it really changed? Is what is happening online a reflection of power structures in the real world?

Two arguments could be presented with this assumption: firstly that the enabling technology has changed nothing, and secondly technology has changed structures. An amalgamation of these two arguments leads to an examination of gender representation within online communities. Without doubt one of the most widely discussed issues, which carries on from the above discussion is the different gender representation within games. Like most fundamental issues in online gaming, this question leads to challenges at several levels of thought.

The first published research on gender came in the late 1980's. Then as more women began to discover the online community, which, was previously dominated by men, more studies and research appeared. Although males are classified as regular game players, studies from the past ten years suggest that a large amount of females are found to be playing games for an average of 1-2 hours a week. Funk (1993) found that 75% of females compared with 90% of males played games. While one may be in doubt about the research reliability and validity, figures such as the ones above show that there is a growing representation of women players. Therefore with such figures,

why is the attitude within society and academic researchers aligning it as a male phenomenon?

It has been argued that the gendering of game content and focus on violence has made games unappealing to female players. The determinist perception of gaming texts and perceptions of gender differences has led to arguments of whether games developers should develop games with feminine themes to encourage female players. Cassell and Jenkins (1998) claim, that a large amount of female gamers have similar preferences and tastes as male players. The study also found that the players disagreed with the notion that there should be games, which targeted specifically females. The author therefore claims that such a point is very consistent with the decreasing differences between males and females leisure activities.

Other studies also provide further evidence of the male / female divide in the gaming environment. A study conducted in the USA found that there were great gender differences in playing games: the stories, characters and worlds created by girls were different from those created by boys, Kafai, (2001). The author further goes on to say that the media did not provide appropriate software for girls, and female figures are rarely cast in the main role. Many girls then start creating their own world, which includes familiar spaces and characters. These results the author states, allow some conjectures as to why females lack involvement in games. (Figure 2.1) shows a list of current games, which, are aimed at females.

Gender issues within online communities, brings about two types of theories: The first theory implies that online communication is equal than is portrayed, Sapiro (1999). The second theory is that online interaction is simply a reflection of what the real world represents. Herring (1993) Summarises gender characteristics in online communities by the differences in the languages used by both. He ends his report by stating that there won't exist equal representation between females and males as the gender languages are very differentiated and so equal play is impossible, (Figure 5.1)

For many decades society has taught individuals the distinction between females and males. The differences can be clearly seen in television, radio and jobs etc. 'Dolls' and 'Action Figures' have been invented to represent females and males. Now at present there are technological differences in the way of computer games. The representation within online computer games are very much gendered, and to back this statement many researchers have tried to prove the various gendered

representation within gaming, Braun and Giroux (1989). In a paper on written on gender wars, Ansbergs (1997) talks about how males and females view the computer, (Figure 6.1). This point again reinforces the difference in attitudes of females and males.

Some researchers evidently argue that the key differences between boys and girls are the simple fact that 'girls seek relationships and exploration' while 'boys seek skill building exercises'. The Barbie Doll culture was highly represented and aimed at girls and so the online gaming world is aimed at men, Allouway and Gilbert (1995). To try to make sense and understand the issues represented in the online gaming community one has to identify the characters in the games and in which women are represented.

A large section of the population has been excluded from the growth of games. It is obvious why the gaming industry has now begun to notice the lack of female consumers. Girls are predominantly seen to be the biggest spenders in the market. The gender gap in online games could be blamed on the industry, which aims at the male market in most instances. The home environment is also a large contributor to the problem, in the sense that boys had around 50 percent of boys had access to computers compared to 22 percent of girls, (ACM, 2002).

Inequities also exist in the qualitative as well as the quantitative use of technologies. Within the home, the males are more likely to make decisions regarding the computer, such as which one to buy. The females in the home are less inclined to use the computer, and mothers are likely to feel estranged from the rest of the family on technological issues, Giacquinta, Bauer and Levin (1993). The actual consumer market for games for girls, then, may be fathers and brothers, and not the girls themselves. Since girls are frequently not choosing which games they play, producers cannot easily market games for them. If brothers choose the games, the product must appeal more to the boys than to the girls. If fathers choose the game for the girl, again the game must appeal to the fathers. Though girls may be the potential game-playing market, brothers and fathers appear to be the potential buying market for games for girls. As a result, it may be necessary to package games as education (to appeal to the fathers) or as adventure (to appeal to the brothers) in order to sell the games girls would want to play once they own them.

2.6.1 Content of Online Games

Developers and distributors understand that games for females need to be packaged very differently from similar packages for males. Online gaming has different game genres: action, strategy, simulation and adventure games. In computer shops, these genres are always stored together. Generally, across the store on different shelves one can find educational software, a completely separate genre altogether. These packages have an educational goal rather than a purely entertainment-based goal.

Strategy software often get marketed as and placed on shelves with other ‘fun’ genres, while the educational software is stored on a separate ‘good for you’ shelf? This means that activities for girls get shelved in education, reinforcing the idea that computers are tools, while boy-games get placed on the fun shelves. It also means that if a girl does want a game, she may only see male-targeted activities because the games, which, would interest her are on the education shelf.

The distinction between strategy and education appears to be intentional. Marketers seem to believe that girls will only want games, which, are educational and would not choose fun games, as boys like. It appears that producers actually design girls' software differently from boys'. Huff and Cooper (1987) asked 43 educators with programming experience to design games for either boys, girls or students and found that the boys' and general students' games were similar and game-like whereas the games for girls were classifiable as "learning tools".

Their finding reinforces two major points. First of all, it demonstrates a mind-set that games for boys are games for anyone and vice versa, and that designing software for the general market will exclude half of the population. Their findings also demonstrate a mentality that education is for girls while fun is for boys clearly reinforcing girls' attitudes of technology as a tool and boy's attitudes of technology as a means for fun. Perhaps if more purely entertaining games were targeted towards girls, the girls would be more prone to explore the computer and to see it as a fun toy and not a necessary evil.

Although a large number of females are playing online games it is still technically seen as a male area, Sunnen (2002). Statistics show that 80 percent of games, are played by 9-15 year old boys, Subrahmanyam and Greenfield (1998).

It is very relatively easy to see why games are perceived to be masculine. Even if games are aimed at females the correct market has not yet been targeted. Research shows that within online games, which have been popular with females (Barbie fashion designer) an understanding of what makes games appealing to males and females can be established. Research suggests that girls prefer less violence, different kinds of games and characters, but contrary reports which oppose this view as a biological influence instead say that these opposing and different views arise out of the way society is constructed, Cassel and Jenkins (1998).

Contrary to most of the above research and reports, a study conducted in America in 1995 found that girls are not always against violence or action but by repetition, Thomas (1996). But even so despite the hype that some females don't mind action type games, gaming developers have tried to attract them nevertheless. It is also possible that many games developed for females have not been heard of as they failed in the market." There are game characters now being designed for girls, who make up 40 % of players", Seligman (1999).

2.6.2 Branding of Online Games

How do Brands fit into online games? Brands are often produced, by small teams, large companies or manufacturers and, on average a game takes 12-24 months to produce, Poiterin (1998). Game developers have to sell their ideas to publishers who market and distribute the games. With technology advancements and constant change the economic opportunities have immensely increased and has thus brought about more competition.

In order to be able to compete in this environment developers often make a brand identity with games, such as a passive background to characters. This however has not been formed properly. In the industry developers have the communication resources to be able to pull it off, but alas publishers recently seek permission for trademarks but advertisers do not ask developers permission to produce brands, Andersson (1999).

The effectiveness of branding within online games has been researched according to recall, recognition and attitudes. Branding being the main goal for advertisers and

developers, the past research here has however been examined by the short-term effects and so the long-term branding effects is not known. A study conducted by; Nelson (2002), to identify brands used in games, recall and attitudes found that players came ton the conclusion that branded images added to game realism. The study also found that if brands were badly structured or did not match reality then it took away the gaming experience from players.

2.7 Analysis of Quake

It was felt that an analysis of Quake would be the most appropriate as it deals with the whole of gender representations within online games. The aim of Quake is to get through many levels and not die; and the strategy for this is to kill others who try to kill you.

Gender representation in Quake is all male characters without any female ones. The play style that Quake seems to follow is masculine paradigms. The importance is placed on power, violence, speed and autonomy. The entirety of the game is spent killing enemies, with violence as a main concept.

Quake is definitely not a feminine game and it is not intended to be one. The plot of Quake is general and what has made it so successful is that the graphics and controls of Quake are much better than other games (Figure 8.1). There are many female players but they are not representative as a whole population sample, and are indeed a minority.

2.8 Conclusion

This chapter has given an in-depth account to the theoretical research of online gaming and gender representation. It looked at the many aspects of online gaming from the different types of games created to the various negative and positive aspects associated with it. This extended the research into finding out whether there was a connection between gender representation and online gaming. Hence, this chapter aims to extend further into Chapter 3 by developing a questionnaire and means of testing the hypothesis.

CHAPTER 3 METHODOLOGY

3.1 Introduction

In order for a researcher to be able to carryout a piece of research effectively it is vitally important to apply a research method that will guide them accordingly and gather the necessary information. An additional criterion is that as the dissertations aims to research online gaming and gender representation, it is important that the research method applied will fulfil all the aims and objectives of the dissertation.

Based on the above, the methodology that was applied for the dissertation was abstracted from a book on Research Methods for Business, Sekaran (1992). Hence, Sekaran in her literature identified seven steps that are to be followed in the research process. These formed the initial guidelines for the dissertation. It followed a specific research process, which, is applicable to basic and applied research.

3.2 Methodology Outline

1. Observation- the broad area of interest of online gaming and gender representation was identified.
2. Preliminary data gathering- background information on online games, the market and gender representation was collected.
3. Literature survey- documentation of a comprehensive review of all published and unpublished work, from both primary and secondary sources, which, included using journals, past research, books, magazines, newspapers and online databases.
4. Problem Identification- after the initial literature review, the problem was narrowed down and the relevant issues were defined thoroughly.
5. Theoretical framework- here the variables were clearly identified, so that one could see where relationships exist to improve the understanding of a situation.

6. Generation of hypothesis- once the variables were identified the relationships between then were tested, through a hypothesis development; null and alternate hypothesis.
7. Research design- the issues involved in research design included looking at the purpose of the study, where the study was conducted and the type of investigation.
8. Data collection, analysis and interpretation- the data collected was analysed by means of using Microsoft Excel so that the data collected was illustrated in a presentable and understandable manner. The research hypothesis was tested using T-Test, so that one could be able to reject or accept the null/alternate statements and be able to draw a conclusion.
9. Deduction- the research finally focused on whether the original statement of aims and objectives at the beginning were met and if not what went wrong with the research.

The methodology for this study is based on a quantitative and qualitative approach to assessing online gaming and gender representation. This design focuses on the responses of a large subject population and determines the perspectives of gaming developers.

3.3 Data collection methods

The study used quantitative and qualitative methods for collecting and gathering information on online gaming and gender representation. The questionnaire was the quantitative methodology as it was felt that a questionnaire is an efficient data collection mechanism, where the researcher knows exactly what is required and how to measure the variables of interest (Figure 9.1). The questionnaire is designed in such a way so that it focuses on the responses of a large subject population and determines the perspectives of gaming developers. A total of 110 questionnaires were sent to games developing companies. Games developers were found by going to an official games developers site on the Internet, which, contained all the games developers within the UK, (Figure 7.1). It is suggested that the advantage of electronic questionnaire administration is that it will increase in the next decade, Sekaran (1992).

The data collection process occurred over the course of four months between June 2002 and the beginning of September 2002. The data collection process continued until enough subjects were evaluated to provide a solid subject population for the study. Roscoe (1975) suggests that sample sizes larger than 30 and less than 500 are appropriate for most research studies. The questionnaire was built taking into consideration the advancement of technology and the effect of this on online games.

A qualitative analysis was also undertaken with an online games developing company. This enabled me to ask open-ended questions and gain more information in detail as to their opinion and views on the gaming market, as well as covering the limitations that quantitative research carries. Preparation of this study also involved in-depth study and critical analysis of published data from a variety of sources.

The reason that the questionnaire was geared towards games developing companies is that one can get a more accurate picture of the gaming world from their perspective, the type of market targeted etc. Aiming the questionnaire towards the users of games will be pointless as there are currently too many studies on the perspective of games users and therefore the same research will be repeated.

3.4 Hypothesis Formulation

The results gathered from the questionnaire were exploited by testing it with a specific hypothesis generated. The reason for the hypothesis testing is so that we are in a better position to explain the different variations in which online gaming is marketed towards the different gender categories. After the gathering of the questionnaire data, it is presented in a graphical format by bar charts and graphs, using Microsoft Excel.

The hypothesis is tested using inferential statistics i.e.; they are statistical results that let us draw inferences from a sample of population. A standard deviation was also obtained, as it is useful to characterise a series of observations in a meaningful way. To justify the reasons into the different genders targeted by developers, the paper addressed 1 main hypothesis:

The first question is:

To what extent does the type of games developed encourage different genders to participate in online gaming in the opinion of games developers?

The motivation for addressing this question comes from a research article, which, states that anonymity, arousal, sensory overload and a reduction in self-focus lead to de-individuation, which in turn leads to dis-inhibited, hostile and violent behaviour and all this occurs as a result of interaction on the Internet, Zimbardo (1969).

H_0 *.a- In the opinion of games developers, men prefer playing action games compared to any other type of game.*

H_1 *.b- In the opinion of games developers, men have no preference in the type of games played.*

3.5 Conclusion

This Chapter has given an insight into the type of methodology used for the study, as well as the hypothesis and testing methods. The reason for choosing a quantitative study was also stated as an effective way to gather information on online gaming and gender representation and information on specific issues.

The next chapter stems forward in discussing the results of the data gathered by analysing it with appropriate methods.

CHAPTER 4 DATA ANALYSIS

4.1 Introduction

This chapter analyses the results from the findings of the questionnaire as well as testing the hypothesis generated by statistical tests. It further discusses, evaluates and draws a conclusion to the findings of the survey.

4.2 Characteristics of Respondents

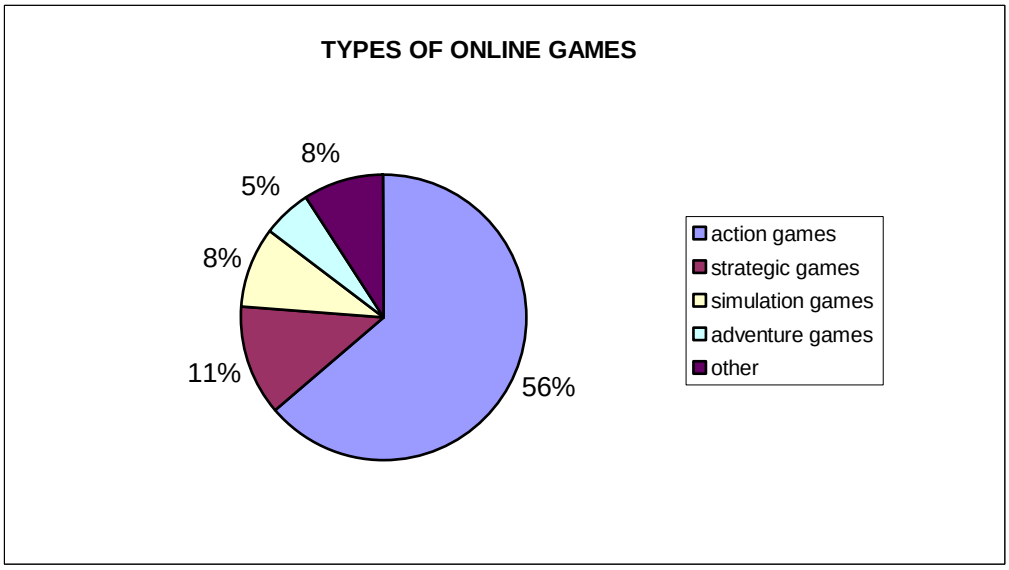
As a means of analysing the data from the questionnaire, Microsoft Excel program was used. Refer to the Appendix 9 and 10 for the questionnaire and details of the coding. In analysing data Sekaran (1992) claims that there are three main objectives:

- Getting a feel for the data- This will give preliminary ideas of how good the scales are and how well the coding of data has been done. This can be done, by testing the central tendency, the mean, standard deviation and range.
- Testing the goodness of data- This can be done, by submitting the data for factor analysis.
- Hypothesis testing- The results of the hypothesis testing will determine whether or not the hypotheses are substantiated.

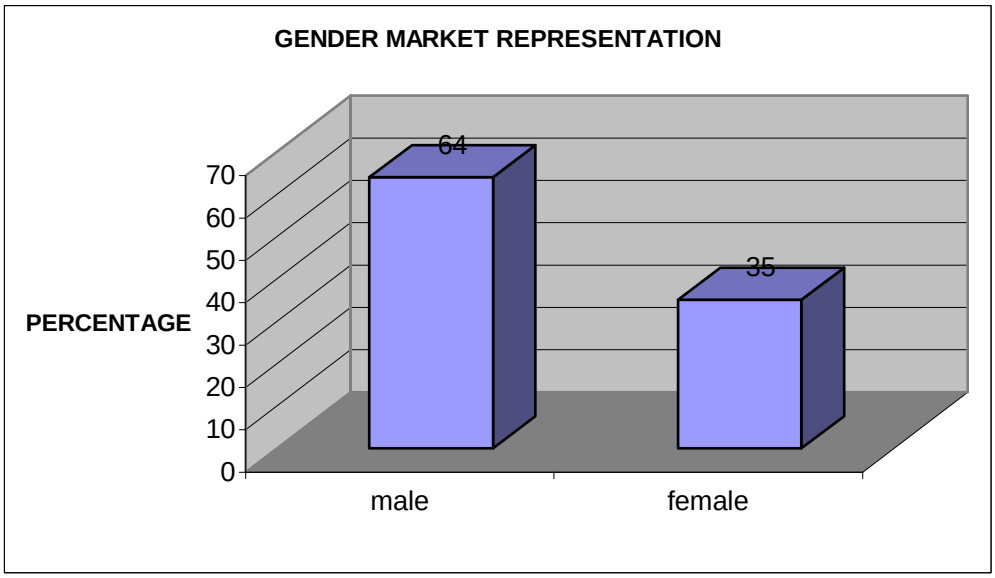
In this research 110 questionnaires were sent out to online gaming companies. They were selected from a list of gaming developers on the Internet. (Refer to Figure 7.1) Of the questionnaires sent, 70 were returned by electronic e-mail. As a percentage the response rate was 63%.

The following is a graphical analysis of the data gathered from the questionnaires relating to each question.

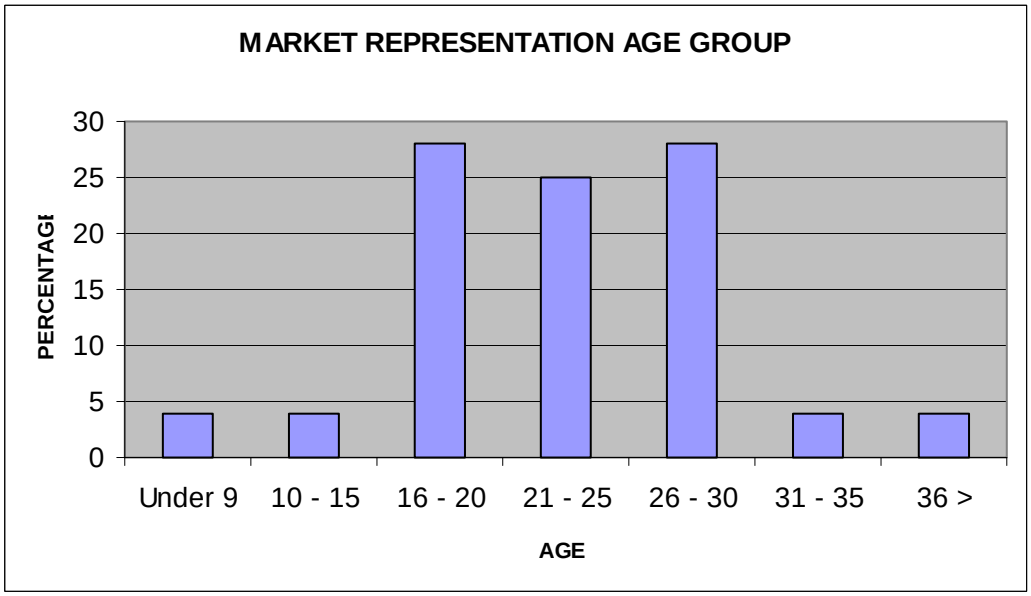
- The diagram below depicts the question answered by respondents, which asked them what types of Online Games they developed. Of the 70 developers, which, answered, 56% of developers create action games, 8% of developers created simulation games. Simulation games researchers say focuses on single goals, and there is decreased competition, Roberts (1976). This is followed by 11% who create strategic games and the least developing was adventure games.



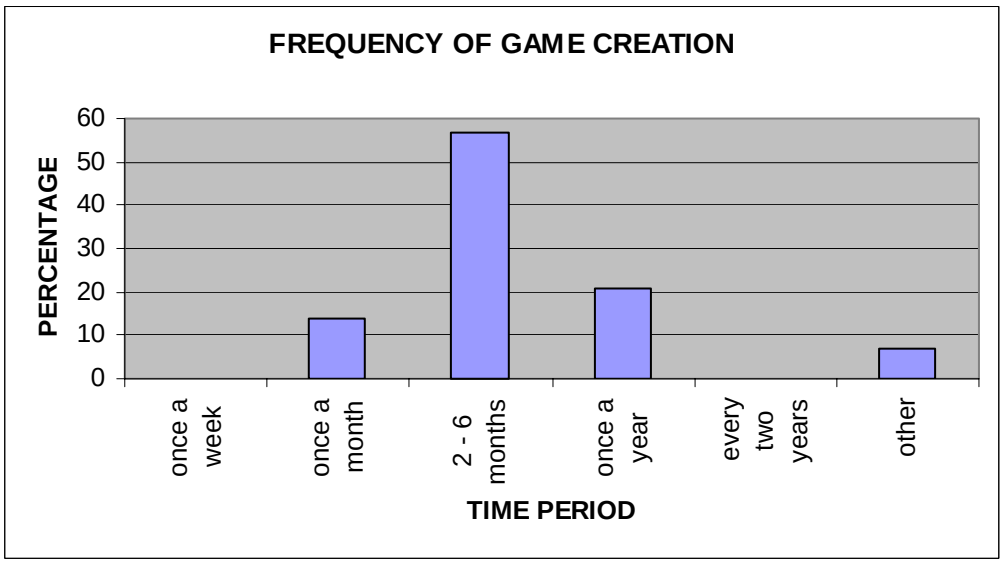
- Question two, dealt with whom the developers targeted in terms of gender and age group. It can be clearly seen that in comparison there is a large difference between the number of males and females targeted. 64% of developers say that they aim their games at males while only 35% of developers say that they aim their games at females. This result again shows that there is a large gap between the two genders even though studies show that the female gaming market is growing, and it could be attributed with the fact that most games are not developed with females in mind.



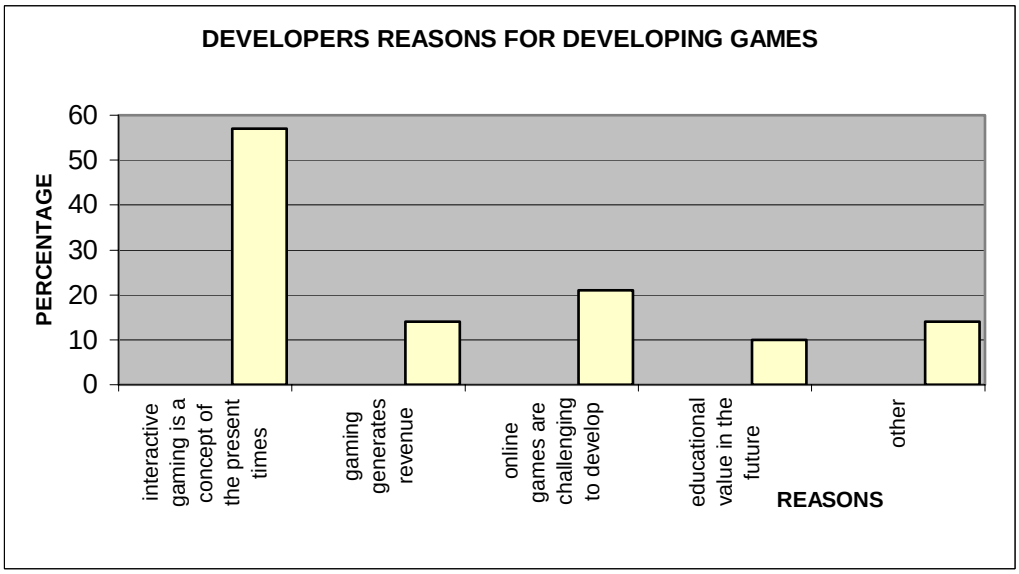
- Question two also asked the respondents, which age group they targeted. The table below shows that 28% of developers aimed their games at the 16 – 20 age group category. This is followed 26 – 30 group, which, stands at 28% and 21 – 25 at 25%. The data also shows that only 4% of developers aim their games specifically at the 31 – 35 and over 36 market.



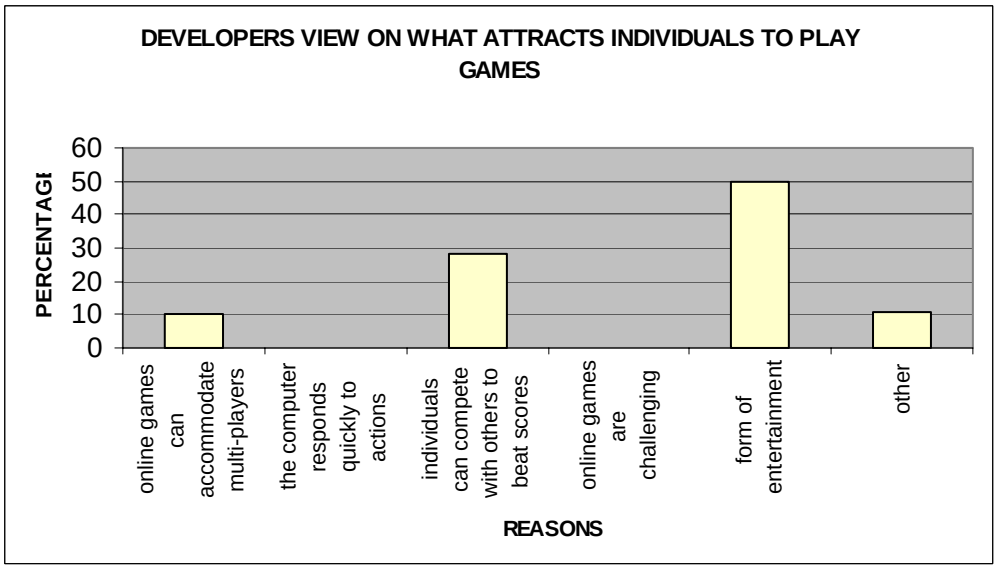
The next question addressed the frequency of game development. The following illustration shows that 57% of game developers develop games every, 2- 6 months. This is a very large percentage in comparison to only 14% of developers who develop games once a month and 10% who develop once a year.



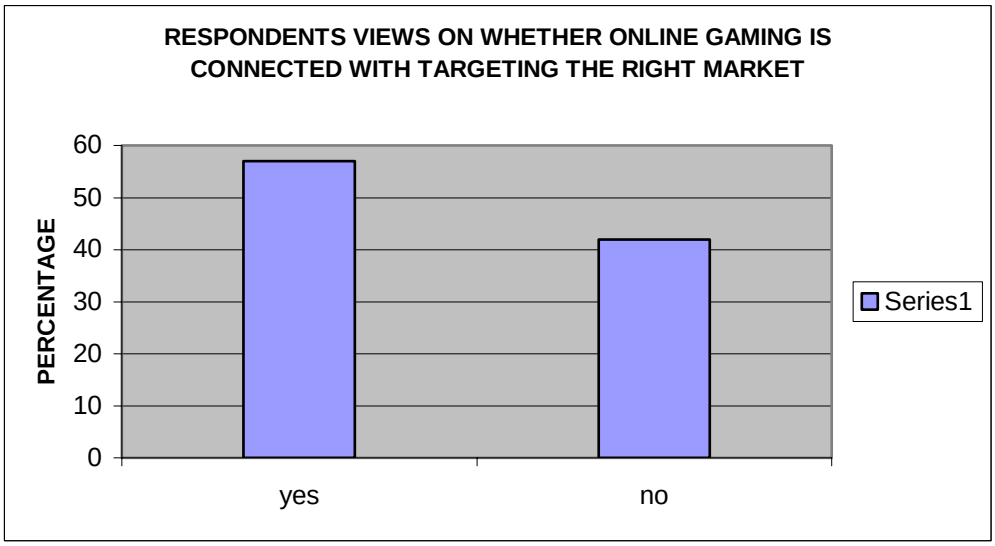
- The respondents were also asked the reason why they liked to develop online games. 57% of developers said that they developed online games because online gaming is a concept of the present times, compared to 21% who said that online games are challenging to develop, while 14% said, it was because gaming generated revenue and 10% opted for the fact that games will have an educational value in the future.



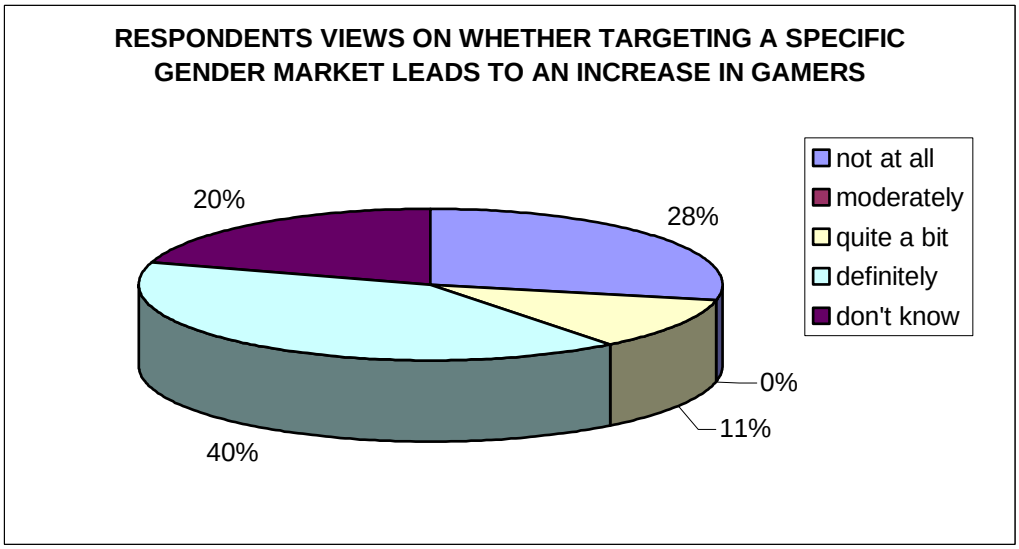
- Question five dealt with trying to find out for what reasons the developers thought individuals played online games. 50% of developers thought that consumers viewed games as a form of entertainment, and 28% said that they believed individuals felt they had the chance to compete with others to get higher scores and 10% felt that consumers felt they could play with more than one player



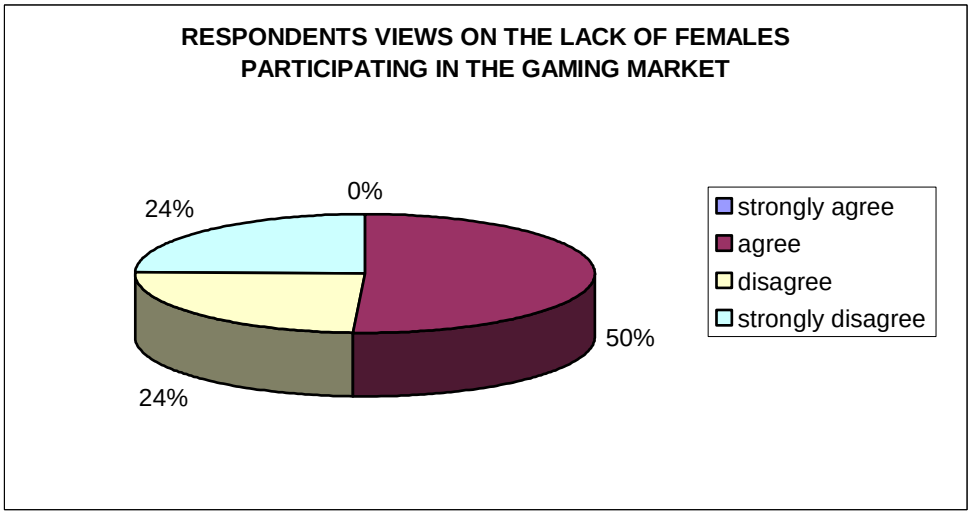
- Question six asked the respondents whether they believed that the growth of online gaming is associated with targeting the correct market. The percentage of developers who said Yes is 57%, compared to 42% who said No.



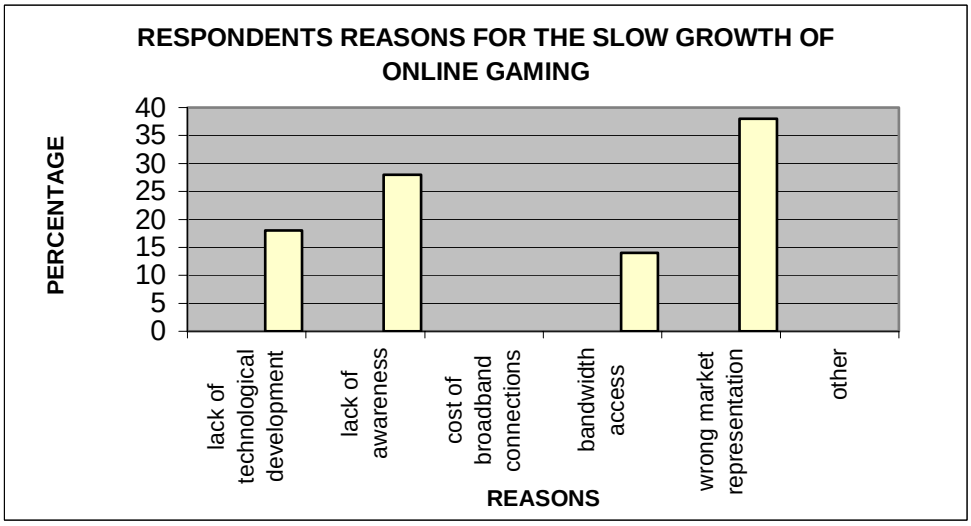
The diagram below shows that a large number of respondents 40%, thought that they definitely believed that targeting a specific gender market leads to an increase in the number of online gamers, compared to a close 28% who believed that it has no effect at all.



- This question addresses the point of whether the developers thought that there was a lack of females participating in the gaming field. Of the 70 respondents, 50% agreed with the above statement, while 24% strongly disagreed and 24% disagreed.



- The ninth question, addressed the reasons for the slower growth in online gaming of the UK compared to other countries. 38% felt that it was because of the wrong market representation, which also included cultural differences. 18% felt that it was the lack of technological development, while 28% felt that many individuals, especially the older generation were very much unaware of these online games and 14% gave bandwidth access as a reason.



4.3 Hypothesis Testing

The hypothesis was tested using information from the questionnaire:

H_0 .a- *Men prefer playing action games compared to any other type of game, which indicates that the violent elements are the attraction.*

H_1 .b- *Men have no preference in the type of games played and so it has no relation to violence.*

There were 70 respondents for the questionnaire. The above hypothesis was tested using the first question from the questionnaire.

Q. What types of games do you think that men prefer playing?

A. (A) Action games - 40 (D) Adventure games -3

(B) Strategic games -7 (E) Other -5

(C) Stimulation games - 5

60 respondents have been grouped into groups of 10 respondents per group, making 6 groups.

Respondents

Group	A	B	C	D	E
1	7	1	1	0	1
2	7	1	0	1	1
3	6	2	1	0	0
4	6	1	1	1	2
5	8	0	0	1	0
6	6	2	2	0	1

40	7	5	3	5	=	60

(Refer to Appendix 11 for the formulas)

4.3.1 Normal Distribution Curves

The normal distribution occupies an important place in the field of probability. In addition to portraying the distribution of many types of natural and physical phenomenon, it also serves as a convenient approximation of many other distributions, which, are less tractable. Importantly, it describes the manner in which certain estimators of population characteristics vary from sample to sample and, thereby, serves as the foundation upon which much statistical inference from a random sample to population are made, McCabe (1999).

Normal Distribution curves, which, have a bell-shaped appearance are very important in statistical analysis. In any normal distribution is observations are distributed symmetrically around the mean, 68% of all values under the curve lie within one standard deviation of the mean and 95% lie within two standard deviations.

The following are the most important reasons for its popularity:

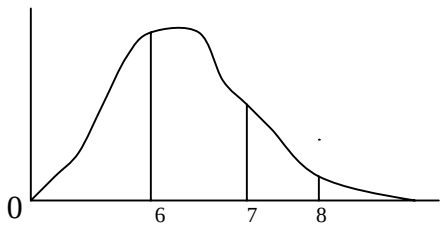
- One reason the normal distribution is important is that a wide variety of naturally occurring random variables such as height and weight are distributed evenly around a central value, average.
- When there are many, factors influencing the outcome of a random outcome, then the underlying distribution is approximately normal.

Response A

As the distribution is bell shaped, it can be modelled by normal distribution.

Mean = 6.667

Standard Deviation = 0.8165

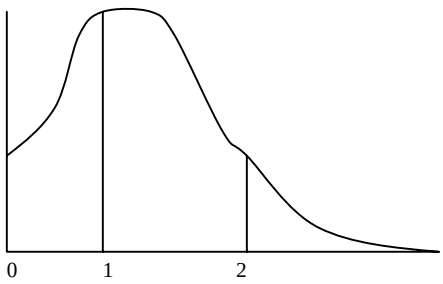


Response B

The distribution is bell shaped and so can be modelled by normal distribution

Mean = 1.167

Standard Deviation = 0.7528

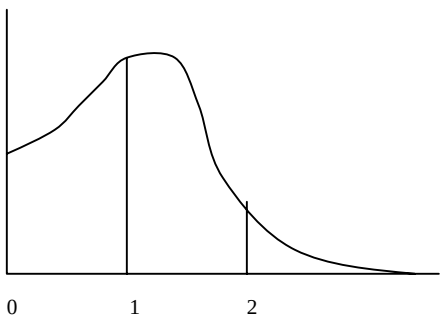


Response C

The graph is again bell shaped and so can be modelled by normal distribution.

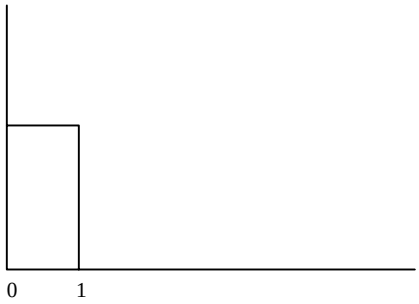
Mean = 0.8333

Standard Deviation = 0.7528



Response D

The graph below is not bell shaped and so cannot be modelled by normal distribution

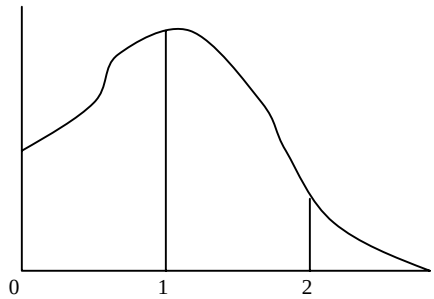


Response E

The graph below can be modelled by normal distribution.

Mean = 0.8333

Standard Deviation = 0.758



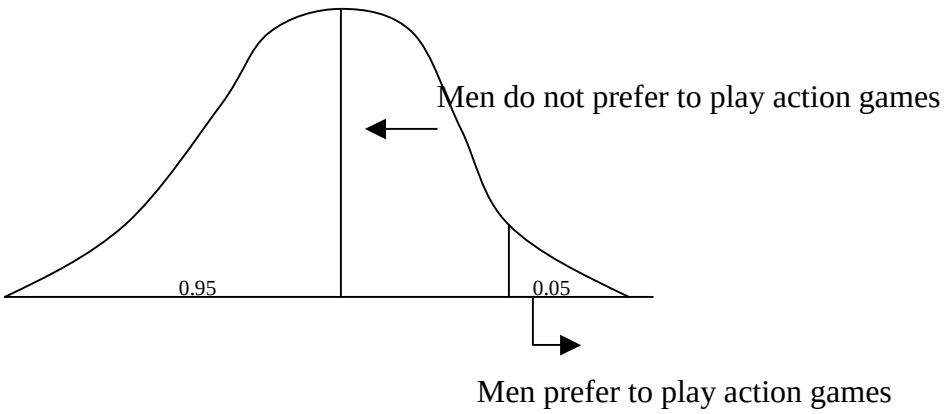
The bell shaped graphs of responses, a, b, c and e, when standardised have an area equal to 1. This area can thus be stimulated as being equivalent to the probability.

A further 10 results will be obtained. Theses results in conjunction with the distribution derived earlier, will be used to determine which hypothesis will be assumed. These results will be standardised and it is this standardised value that will be compared to the pre-determined critical value the null hypothesis will be accepted, if the standardised value is less than the critical value the alternative hypothesis will be accepted.

The hypothesis of ‘no effect’ and ‘no difference’ will be assigned a probability of 0.95 occurring and the hypothesis of significance will be assigned a 0.05 chance of occurring.

Since there were 10 companies per group, and as stated above the boundary point is 0.95/0.05 by using the student T-Tables, the critical value will be 3.250.

Of the 10 new results obtained the number of times A is selected will be used to test the hypothesis.



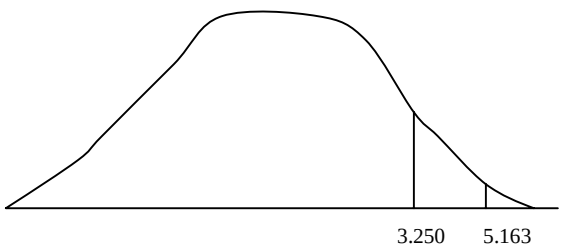
The 10 new results:

	A	B	C	D	E
Group (7)	8	1	0	0	1

Standardising results: (Refer to Appendix J for standardising formula)

Response A

$$Z = \frac{B - 6.667}{0.8165/\sqrt{10}} = 5.162665 = 5.163 \text{ (3.dp)}$$



Z > 3.250 (critical value) Therefore in the opinion of the games developers men prefer to play more action games than any other type of games and so the null hypothesis is accepted and alternative hypothesis is rejected.

4.4 Conclusion

This chapter discussed the data analysis conducted in this study, both the quantitative and qualitative analysis. Furthermore, it also illustrated the data using Excel, and showed the hypothesis testing method.

The next chapter leads to a discussion of the results and what it means in relation to the aims and objectives set out at the beginning.

CHAPTER 5 DISCUSSION

5.1 Introduction

The following two chapters aim to give a summary of the findings by relating it to the original statement of problem. This includes:

- Summary of Dissertation
- Discussion of results
- Summary of conclusions
- Difficulties experienced
- Further recommendations
- Future work

5.2 Summary of Dissertation

As indicated in Chapter 1, the main aim of this study was to investigate gender representation within online gaming from the developers' perspective, and in doing so to offer a different insight into the target market. This was also done by, analysing the games market, gender representation and the various positive and negative notions associated with gaming.

Based on the analysis, it leads to investigating the research problem. The proposed research methodology, and the selected hypotheses are stated in chapter 3.

The development of the hypotheses and research methodology form the basis of the analysis process. In chapter 4, analysis of the data from the questionnaire was carried out. Furthermore, testing of the hypothesis were also carried out to see if there existed a relationship between (the two variables) violent content and gender representation.

5.3 Discussion of Results

The analysis showed that 57% of developers created games every 2-6 months. There was a need to address this question, as it is vital to know the factors taken into consideration when developing games. This finding is contrary to many studies, which, indicate that developers create games once a year. However other research by scholars predict that with the current technological advancement and the fast pace of change, the software industry has to be able to rapidly re-engineer itself and be susceptible to change, (ACM 2001).

The results from the fourth query, show that the reasons for the development of online games may not be for company personal reasons. Even though many studies such as the one by Carr and Goldstein, (undated) indicate that games will have an educational value in the future, only 10% of developers of this study agreed with this statement. This finding could be further backed by the argument that developers actually create games and they ultimately determine the type of content in the games. If they aim to create a game, which, is more entertaining then that is what will happen. In comparison to this, 57% said they created games' as it was a concept of the present times. Hence this further indicates that there is great potential for the growth of online games.

The findings clearly indicate that 64% of developers target males in comparison to only 35% targeting females. This finding contradicts many analysts, which, predict that as the market for online gaming changes, they expect females to spend more money on online access and other technological tools that have traditionally targeted male consumers. (SRI Consulting 2002) estimated that if developers provide compelling and interesting game content, the games market would account for more than 20% of online games. Therefore it could be concluded that, there isn't a market aimed specifically at females at the moment hence if there was, a large market, developers would naturally cater for them.

Results show that developers mostly target the 21-25, 16-20 followed by 26-30 age group the most. This shows that there is great potential for the teenage market. A survey by (Her Interactive 2001) found that 10-15 year old females contribute £25 billion by spending on software products among other things. Research also shows that females are keen on information technology, but maybe not for entertainment purposes. Again this is due to the fact that games only address male issues and interests. Females prefer adventure games, but present findings indicate that only 5% of such games are created. What this means is that games are not considered to be for the same audience.

Interestingly, the >35 are less aimed at especially as they would seem to have the financial resources to have online access and no restrictions like the teenage market. Computer based options for consumers of the under 15 are also lacking when gender differences become more pronounced.

A theoretically interesting result from this study was that 57% of developers thought that the growth of online gaming was associated with targeting the correct market, but not the same amount of individuals thought that it had anything to do with targeting a specific gender market. There is little theoretical rationale to explain this, but one possibility could be that the content of games are vitally important. Evidence suggests that the content of games is what attracts individuals to games, regardless of gender, (Electronic Games for Education 2000).

As expected, 50% of developers felt the number of females in the market was relatively low compared to 24%, which, strongly disagreed. An explanation for this could be that there isn't a large sufficient market for females', alternatively what significant evidence is there for developers to say that there is a lack of female gamers? Another explanation is towards the content of games; 56% of developers create action games, which, inevitable contains violent elements, which, many females dislike. Research shows that females prefer collaboration to competition; enjoy non-closure and exploration; like puzzle solving games, (Her Interactive 2000).

Many females may actually play 'male games' but be reluctant to admit that fact. This does point to a methodological weakness of the study, in that there was no way to identify individual users, or what type of games they played.

A second methodological quantitative approach was also used. An online game developing company, was asked about the negative aspects associated with online gaming, the answers are illustrated below:

- Internet connections are slow and unreliable
- Exploitation of underage youth
- Games are unproductive
- Prevents individuals from socialising with others

The company was also asked the names given to online games, as illustrated below:

- Xenoglossy
- Loop
- Bomserman Online
- Blockout
- JetSetWally
- OneFunnyBunny
- OneOnOne

  Doom

The information above shows that games are very much aimed at the male market, especially with names such as the ones above and there is a significant relationship between the content of games and the type of consumers. The results of the present research show that gender differences in online communities tend to disfavour females, through the content of games and type of games created towards females.

Conducting a statistical analysis on the hypothesis generated using a T-Test, has found that the null hypothesis was accepted '*In the opinion of games developers, men prefer playing action games compared to any other type of game,* and the alternative hypothesis *'In the opinion of games developers, men have no preference in the type of games played'* was rejected.

What this implies is that action games are very much popular with males and there is a large market area for males as this research has proved. There is also a lack of females participating in this field, and past research has shown that females dislike violent elements in games and this is a discouraging factor. Furthermore, research has proved that action games contain a large amount of violent elements, loud noise and distasteful language. Hence, one could draw to a conclusion that there is a significant relationship between gender representation in online games and violent elements contained in such games.

These findings in actual fact back claims by many researchers and analysts that many of the games developed are action games. Violence is one of the most prominent features in games, Kafai (2001), and action games are contained with violence.

CHAPTER 6 CONCLUSION

6.1 Conclusion

The findings summarised above have practical implications for female participation within online gaming. I have argued in this study that conventional gender styles interact with the online games community to create a climate that is generally less hospitable to females than males. This argument is supported by the patterns in Internet usage: in a two year study, when provided with unlimited free internet access female use declined gradually compared to that of men, (CPSR, 2000).

How can developers penetrate and interest the female games market. Developers must first address issues in understanding girls' low participation in order to create good games while at the same time understand the context of use and attitudes. This interpretation is supported by studies, which, indicate that females low participation does not reflect a lack of interest but rather a lack of compelling content.

This research has led me to conclude that cultural context is very significant. It has come to the point where females are absent from the games market and so they must be receiving that message that game are not meant for females. This research has shown that statistics are varied.

Gender representation in games, are also mostly male, but it is impossible to say that a game with no female characters is not enjoyable to females.

Violence is a large factor in determining who plays an online game. Evidence suggests that non-violence games are very successful. The online gaming industry is very flexible and rapidly changing with technological innovations and so developers' creativity has taken games to other realms. Online game playing need not be reduced to a question of gender alone.

6.2 Limitations of Study

Limitations of the research might exist in that, as online gaming is a relatively new topic it was difficult to get good academic published journals.

Furthermore, it was also difficult to identify and extract the correct and relevant pieces of information, as it was easy to overlap into another related topic of online gaming and gender representation, but with the help of supervisor I was able to overcome this problem.

Another problem that I underwent was that it was difficult to contact games developers and receive quick responses from them regarding the questionnaire, but with persistence they eventually replied.

Limitations in terms of the research included the fact that it was difficult to know when to stop gathering information for the literature review. As well as this, during the course of the research it was easy to write too much information, and knowing that what had to be written had to be detailed.

6.3 Recommendations

The decisive goal of this study is to make further recommendations for future work to enable an analysis of the future growth of online gaming and how gender will be represented in games. Findings from the study indicate a number of recommendations:

- Game developers should not ignore the strong evidence that girls under 17 represent a different market from that of boys. They have to understand those differences, which, in turn can create competitive advantage. To overcome these different attitudes towards males and females, there should be innovative marketing strategies.

- Titles of games should not be aimed only at females or males but be a common name, which is attractive to both genders.

- Personalization of computers is also likely to appeal to females. Current technology allows users to add voice recognition and graphics. The more human computers become, the more individual they are.

For years, the online game markets have been dominated by men and for boys. Only a small number of educational software was available especially for females. Now the idea of profit earning market has convinced some companies to try to break the tradition of male domination in online gaming. The new question arises, then, as to what developers will create. Developers could generate games, which, build on stereotypical notions of what girls want, based on similar-type products in other entertainment genres, or create games, which, suggest other gender roles.

Technological innovations are rapidly increasing at a fast rate, yet social research is years behind. The potential social impact of new technologies is tremendous; the possibilities for research are almost as great.

The online gaming industry is very flexible and adaptive so the future will not evolve around gender but, be a society where games could, be enjoyed by everyone regardless of specific genres.

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10 APPENDIX

Appendix 1

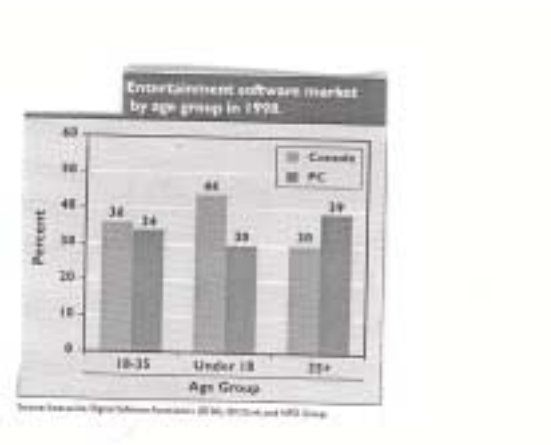

Figure 1.1
The diagram above shows the software industry, which, is focused on males divided into three age groups: over 35, 18-35 and under 18.

Appendix 2

Table 3. Overview of games.

Company	Game	Concept	Market Segment	Platform	Market Focus
Mattel Media www.mattel media.com/barbie/ index.html	Barbie Fashion Designer and accessories, including Barbie Storymaker, Barbie Fashion Designer/Print/ Story Bundle, Barbie Fashion Magic Fairy Tales, Barbie Print 'n Play, Media's Barbie Cool, Adventures with Barbie: Ocean Discovery	Design unique fashions for Barbie by choosing styles, patterns, and colors onscreen; make clothes with special paper-backed fabric that prints on an inkjet or laser printer; use color markers, fabric paint, and other materials to enhance designs.	Preteen	CD-ROM	Creativity and productivity tools
	Barbie Photo Designer Digital Camera and CD-ROM	Photo-editing program, and electronic scrapbook	Preteen and teen	CD-ROM	
Purple Moon www.purple-moon.com/ (bought by Mattel, March 1999)	Rockett's New School	Create the narrative, and determine what events and issues will drive the plot.	Preteen	CD-ROM	Communication channel, tool for community building and creativity
	Secret Paths in the Forest				
	Starfire Soccer Challenge	Sports for girls	Teen	CD-ROM	Entertainment
Her Interactive www.herinter active.com/	McKenzie & Co.	Interact with friends, focusing on shopping, boys, and makeovers.	Teen	CD-ROM	Traditional game for girls and boys; a role-playing social adventure game
	Nancy Drew: Secrets Can Kill	Solve problem, puzzles and brainteasers using interactive mysteries based on the classic book.	Teen		Educational games
	Vampire Diaries	Build on a popular book series for girls.	Teen	CD-ROM	Entertainment
Girl Games, Inc. www.girlgames.com/	Let's Talk About Me	Encourage teenage girls' self-exploration by posing questions about friends, family, school, and boyfriends and presenting biographies of role-model characters.	Preteen and teen	Online	Informational product, tool for boosting self-esteem
	www.PlanetGirl.com/	Encourage girls to meet other girls online and communicate by email	Preteen and teen	Online	Communication channel and community building
	The Tiara Club Lounge	Off-line and Online subscription to the private section of the PlanetGirl.com site. Provides a private place on-line with chess, pen pals, software downloads and so on.			
The Learning Company www. learningco.com/ (bought by Mattel, December 1998)	The American Girls Premiere	Write and direct plays.	Preteen	CD-ROM	Creativity tool
	The Baby Sitters Club Series "Clubhouse Activity Center"	Calendar, journal and stationary kit. Encourage preteens to manage personal information	Preteen	CD-ROM	Educational
Mindscape Publishing	Zero Zero	Encourage girls to learn French and Spanish while exploring magical adventures	Preteen	CD-ROM	Educational and recreational
	Smarty	Encourage girls to play educational games and solve puzzles	Preteen	CD-ROM	Educational
Creative Wonders www.creative wonders.com/ (a division of The Learning Company)	Madeline Series	Conduct four adventures with a French girl on a train trip across Europe, building up French and Spanish vocabulary; do skill-building games.	Preteen	CD-ROM	Educational
LIZZY's	Web site	Helps girls with emotional issues	Teens	Online	Communication channel and community building
Girls Tech	Web site	Offers lessons and information about girls development	Teens	Online	Educational
Simon and Schuster	Sabrina: The Teenage Witch: Spellbound	Adventures by Sabrina the TV show	Teens and preteens	CD-ROM	Entertainment
IBM	Crayola's Paint 'n Play Pony and First Ladies	Encourage girls to learn about history and culture through costumes.	Preteens	CD-ROM	Entertainment and educational
Broderbund www. broderbund.com/ (previously bought by The Learning Company; now part of Mattel)	Carmen Sandiego series, including Where in the World; Where in the USA; Where in America's Past; Where in Space; Where in Time, Carmen Sandiego Math Detective, Carmen Sandiego Word Detective.	Chase Carmen Sandiego and her gang around the world, through history and into space, learning about geography and cultures. The new additions reinforce the students' knowledge of grammar and mathematics.	Girls and boys	CD-ROM	Educational

Source: SRI International, Menlo Park, Calif.

Figure 2.1 shows an overview of games, which are currently marketed towards females.

Appendix 3

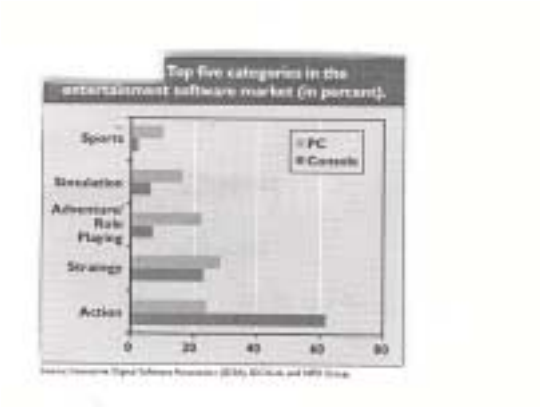

Figure 3.1 represents the top five categories in the gaming market (in percentage)

Appendix 4

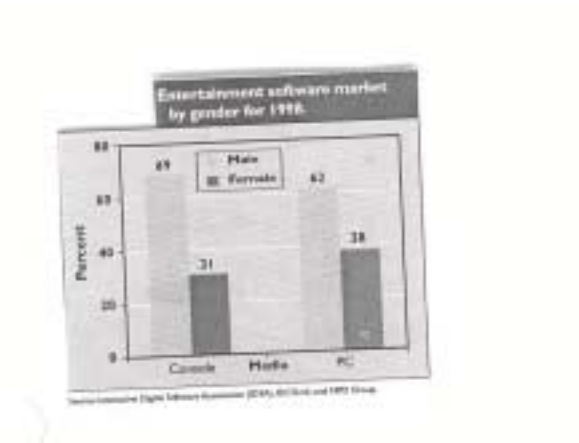

Figure 4.1 shows online gaming market representation by gender

Appendix 5

Women's language	Men's language
Attenuated assertions	**Strong assertions**
Apologies	**Self-promotion**
Explicit justifications	**Presuppositions**
Questions	**Rhetorical questions**
Personal orientation	**Authoritative**
Supports others	**Challenges others**

Figure 5.1 illustrates the differences in gender languages of females and males

Appendix 6

Females	Males
Medium	Product
Tool	Weapon
Communicating	Control
Creating	Power
Expressive	Instrumental
Flexibility	Speed
Effectiveness	Efficiency
Sharing	Autonomy
Integrating	Consuming
Exploring	Exploitation
Empowering	transcending

Figure 6.1 shows the differences between male and female perceptions in viewing computers

Appendix 7

Robotduck	Somerset		United Kingdom
Codemasters	Southam	Warwickshire	United Kingdom
Battleaxe Studios	Tiverton	Devon	United Kingdom
Digital Animations	Bellshill	Lanarkshire	United Kingdom
Intelligent Games	London		United Kingdom
Microids UK	Milton Keynes		United Kingdom
Virgin Interactive Entertainment (London)	London		United Kingdom
VIS Entertainment, plc	Dunfermline	Fife	United Kingdom
Particle Systems, Ltd.	Sheffield	South Yorks	United Kingdom
Elixir Studios, Ltd.	London		United Kingdom
Lionhead Studios	Guildford	Surrey	United Kingdom
SCi (Sales Curve Interactive) Entertainment Group Plc	London		United Kingdom
Warthog	Cheadle	Cheshire	United Kingdom
Rare	Twycross	Warks	United Kingdom
Rockstar North (formerly DMA Design)	Dundee	Scotland	United Kingdom
:) Smilie Ltd.	Harrogate	North Yorkshire	United Kingdom
Mythos Games	Harlow	Essex	United Kingdom
Attention to Detail, Ltd.	Hatton	Warwickshire	United Kingdom
Eurocom Entertainment Software	Derby		United Kingdom
The Bitmap Brothers	London		United Kingdom
Zed Two Limited	Manchester		United Kingdom
Awesome Developments	Oxfordshire		United Kingdom
Krisalis Software	Rotherham		United Kingdom
Revolution Entertainment	York		United Kingdom
Smoking Gun Productions	Southhampton		United Kingdom
Covert Operations Ltd	London		United Kingdom
Aqua Pacific Ltd.	Leamington Spas	Warwickshire	United Kingdom
Digital Integration Ltd.	Camberley	Surrey	United Kingdom
Games Kitchen, The	Livingston		United Kingdom
Shortt Interactive Developments	Manchester		United Kingdom
Coyote Developments Ltd	Croydon	Surrey	United Kingdom
Morpheme	London	London	United Kingdom
Virtucraft Limited	Bolton	Lancashire	United Kingdom
Pitbull Syndicate, The	Stanley	County Durham	United Kingdom
Think Tank Studios Ltd.	London		United Kingdom

Just Add Monsters Ltd.	Cambridge		United Kingdom
Synthetic Dimensions plc	Wolverhampton	West Midlands	United Kingdom
Alternatum Studios	London		United Kingdom
Sockmonsters	Cheltenham	Gloucestershire	United Kingdom
Criterion Software Ltd.	Guildford		United Kingdom
Climax Group	Fareham	Hampshire	United Kingdom
Big Blue Box Studios	Guildford		United Kingdom
Intrepid Computer Entertainment Ltd.	London		United Kingdom
OB Games	Peterborough	Northamptonshire	United Kingdom
Platinum Interactive Ltd.	Stockport	Cheshire	United Kingdom
Pixelogic Games Ltd	Sheffield	South Yorkshire	United Kingdom
M4 Limited	London		United Kingdom
nGame Ltd.	Cambridge		United Kingdom
Blue Flame Software			United Kingdom
Creature Labs	Cambridge	Cambs	United Kingdom
Vulcan Software Ltd.	Portsmouth	Hampshire	United Kingdom
Genepool	Cheadle	Cheshire	United Kingdom
Bubble Boy Limited	Cambridge	Cambs	United Kingdom
RedBedlam	Brighton & Hove		United Kingdom
GW7 - GAMEWORLD SEVEN LTD	Haverfordwest	Pembrokeshire	United Kingdom
Wide Games Ltd	Brighton	Sussex	United Kingdom
Distinctive Developments Ltd	Sheffield	S.Yorks	United Kingdom
Wired Realms Limited / Inc	London		United Kingdom
Escape Software Ltd.	Wembley	Middlesex	United Kingdom
Shaven Puppy Ltd	Reading	Berkshire	United Kingdom
The Code Monkeys	Leeds	West Yorkshire	United Kingdom
Hailstorm Entertainment Ltd.	London		United Kingdom
Shuriken Studios Ltd.	Banbury	Oxfordshire	United Kingdom
Tuna Technologies	Sheffield	S. Yorks	United Kingdom
Ugly Studios	Norwich	Norfolk	United Kingdom
Platinum Interactive Ltd	Manchster		United Kingdom
Prey Digital Studios	Thurton	Norfolk	United Kingdom
Heavy3d Ltd	London		United Kingdom
Atomic Planet Entertainment ltd.	Middlesbrough	Cleveland	United Kingdom
Cheeky Group Ltd.	Macclesfield	Cheshire	United Kingdom
Abundant Software Ltd	Bristol		United Kingdom
Blue Monkey Studios Limited	Huddersfield, West Yorkshire		United Kingdom
Swicked Softworks	Redruth	Cornwall	United Kingdom
Aqua Pacific Limited	Leamington Spa	Warks	United Kingdom
Addictive 247	Ormskirk		United Kingdom

Darkmonth Studios	Leamington Spa		United Kingdom
Creative Reality Videogames Ltd	Harrogate	North Yorkshire	United Kingdom
Runecraft Ltd	Dewsbury	West Yorkshire	United Kingdom
Evolvestudios	Stonehaven	Aberdeenshire	United Kingdom
Walrus Limited	Portsmouth	Hampshire	United Kingdom
Ideas Included	Frome		United Kingdom
Graphic State	Leamington Spa	Warwickshire	United Kingdom
Thalamus Interactive Ltd.	Stockton on Tees	Cleveland	United Kingdom
canDo Games	Randalstown	N. Ireland	United Kingdom
Criterion Games	Guildford	Surrey	United Kingdom

Figure 7.1 shows the list of gaming developers used in this research

Appendix 8

Figure 8.1 illustrates a picture of the online game Quake

Appendix 9

QUESTIONNAIRE

I am a Postgraduate Student currently undertaking research in the field of Internet Gaming. The purpose of this study is to provide an initial look at the current state of Online Gaming and Gender representation within the UK. It would be appreciated if you could kindly complete this questionnaire.
Please tick the appropriate boxes.

1. What types of games do you think men prefer playing?

1. Action games ☐
2. Strategic games ☐
3. Simulation games ☐
4. Adventure games ☐
5. Other (please specify) ☐

2. Who do you market your games towards, in terms of gender and age group?

1. Male ☐
2. Female ☐

Age Group:
1. Under 9 ☐
2. 10 – 15 ☐
3. 16 – 20 ☐
4. 21 – 25 ☐
5. 26 – 30 ☐
6. 31 – 35 ☐
7. 36 > ☐

3. How often does your company develop Online Games?

1. Once a Week ☐
2. Once a Month ☐
3. Two - Six Months ☐
4. Once a Year ☐
5. Every Two Years ☐
6. Other ☐

4. What attracts you to develop online games for the Internet?

1. Interactive gaming is a concept of the present times ☐
2. Gaming generates revenue ☐
3. Online Games are challenging to develop ☐
4. Games will have an educational value in the future ☐
5. Other- (please specify) ☐

5. What do you think attracts individuals to play online games?

1. Online Games can accommodate multi-players ☐
2. The computer responds quickly to actions ☐
3. Individuals can compete with others to beat scores ☐
4. Online Games are challenging ☐
5. Form of entertainment ☐
6. Other- (please specify) ☐

6. Do you think that the growth of online gaming is connected with targeting the correct market?

1. Yes ☐
2. No ☐

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7. Do you think that targeting a specific gender market such as males leads to an increase in the number of online gamers?

1. Not at all ☐
2. Moderately ☐
3. Quite a bit ☐
4. Definitely ☐
5. Don't Know ☐

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8. To what extent do you agree with the fact that there is a lack of females participating in the Online Gaming field?

1. Strongly agree ☐
2. Agree ☐
3. Disagree ☐
4. Strongly disagree ☐

9. Why do you think that the UK has a much slower growth in online gaming compared to other Asian Countries?

1. Lack of technological development ☐
2. Lack of awareness ☐
3. Cost of broadband connections ☐
4. Bandwidth Access ☐
5. Wrong market representation ☐
6. Other (Please Specify) ☐

Please tick the box if you would like the results of the study to be	Name of Company	Name of contact (optional)

sent to you.

THANK YOU VERY MUCH FOR YOUR PARTICIPATION IN THIS STUDY, YOUR INPUT IS VERY MUCH VALUED.

(Figure 9.1)

TWO OF THE QUESTIONS ASKED IN THE QUALITATIVE APPROACH, OF AN INTERVIEW:

1. What do you think are the negative aspects associated with Internet Games?

2. What are the name(s) of the Games that your company develops and what type of theme does it carry?

APPENDIX 10

Below is a list of the coding details of the questionnaire

1= Not at all

2= Moderately

3= Quite a bit

4= Definitely

5= Don't know

Appendix 11

Mean $= \frac{\varepsilon\chi}{\eta}$

(χ)

Standard Deviation $= (1 \quad \sum (X_1 - \overline{X})^2)^{1/2}$

$$(\sigma) \qquad \sqrt{\eta - \iota}$$

Response A formula = Mean = $\dfrac{\sum \chi_\iota}{\eta_\iota} = \dfrac{40}{6} = 6.667$

SD $= \left(\dfrac{1}{\eta - \iota} \sum (X_1 - X)^2\right)^{1/2}$

= 0.8165

Response B formula Mean = $\dfrac{\sum \chi_\iota}{\eta_\iota} = \dfrac{7}{6} = 1.167$

SD $= \left(\dfrac{1}{5} (2.8333)\right)^{1/2} = 0.7528$

Response C formula Mean = $\dfrac{\sum \chi_\iota}{\eta_\iota} = \dfrac{5}{6} = 0.8333$

SD = $\dfrac{1}{5} (2.8333))^{1/2} = 0.7528$

Response E formula **Mean =** $\frac{\sum \chi_{\iota}}{\eta_{\iota}} = \frac{5}{6} = 0.8333$

SD = $\left(\frac{1}{5} (2.8333)^{½}\right)$

Standardising Formula

X = number of times selected by group 7

M = Mean of respective distribution

SD = Standard deviation of respective distributions

N = Number of companies per group