The Impact of Perceived Interactivity and Vividness of Video Games on Customer Buying Behavior

Yi-Lin Yu
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THE IMPACT OF PERCEIVED INTERACTIVITY AND VIVIDNESS OF VIDEO GAMES ON CUSTOMER BUYING BEHAVIOR

A DISSERTATION

Submitted to the Faculty of the Ross College of Education and Human Services of Lynn University in partial fulfillment of the requirements for the degree of Doctor of Philosophy in Corporate and Organizational Management with a Global Perspective

By

YI-LIN YU

May 2004
The Impact of Perceived Interactivity and Vividness of Video Games on Customer Buying Behavior

by Yi-Lin Yu, Ph. D.

Lynn University
2004

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ABSTRACT

The Impact of Perceived Interactivity and Vividness of Video Games on Customer Buying Behavior

By Yi-Lin, Yu

May, 2004

About 60 percent of Americans (145 million people) play video games, and the age of 61 percent of all game players is 18 and over (IDSA, 2001). As the competition to excel in the video game market increasingly becomes difficult for manufacturers, it is becoming more important for manufacturers and video game developers to understand what makes people play and buy games. The major challenge to the gaming industry is to figure out what features of games can catch the consumers’ attention. The purpose of this research was to examine what kinds of video games captivate consumers, determine whether more interactivity and vividness in games achieve more positive press, and evaluate how video games of the future should be developed.

A survey of 228 game players in U.S.A. was conducted; research results were generated through the use of descriptive analysis, correlation analysis, and multiple regression analysis. The results of this study showed that a video game’s creativity, challenge, control, sensory gratification, socialization, audio effect, visual effect, and storytelling have positive relevance to engage consumers’ minds and stimulate their imagination to play or purchase video games. The results also showed that gender differences can influence the individual types of video games purchased. Three age
groups (18 to 24, 25 to 34, and 35 to 56) had different patterns of purchasing video games.

The results showed that respondents’ buying behavior is significantly influenced by the characteristics of interactivity and vividness. This study contributed to developing the characteristics of video games by identifying to what extent consumers’ emotional responses and behaviors are directly affected by interactivity and vividness in gaming characteristics. The framework of this study can be used to analyze and evaluate customer buying behavior in various video games in the industry. To increase the video game marketplace, merging the features of interactivity and vividness may be a key to enhancing customers’ buying behavior and playing intentions.
I would like to take this opportunity to thank those who made this dissertation possible. First, I would like to thank my parents, parents-in-law, and my wife Tsai Shin Fong for supporting me and giving me the strength and ability to complete this dissertation.

I would like to express appreciation to my dissertation committee: Dr. Frederick L. Dembowski, Chair; Dr. Erika Grodzki; and Dr. Mary Ann Toroyan, for their guidance, assistance, patience, and wisdom, have been of immeasurable help. I thank Dr. Dembowski, my dissertation chair, for his guidance with the dissertation and my Ph.D. program. He provided unwavering encouragement throughout my Ph.D. studies, which was critical to my success in the program. He demonstrated a joy for research and knowledge discovery, which I hope to take with me for the rest of my career.

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CHAPTER I
INTRODUCTION

Chapter one introduces the study about the impact of perceived interactivity and vividness of video games on customer buying behavior. Included are the background of the study, a statement of the problem, purpose of the study, research questions, importance of the study, objectives of the study, research design rationale, limitations of the study, contribution of the study, and structure of the dissertation.

Background of the Study

Entertainment media affects our lives. Before 1950, comics, books, phonograph records, and radio programs, which included dramas and game shows, were the only media entertainment available to people. In the past 50 years, access to media has exploded, beginning with the introduction of television, which rapidly became an accessory in more than 98 percent of American homes (Dolf & Peter, 2000). The coming out of video games, designed initially for big consoles and then modified for use on home TV sets, dramatically changed people’s media environment. Video games have intrigued adults and children alike over 25 years. Video gaming is mass-market entertainment, offering a wide variety of titles for a diverse audience of players.

About 145 million people (60 percent of Americans) play video games, with 61 percent of all game players age 18 and over, and 43 percent are female (Interactive Digital Software Association, 2001). As journalist Ted Fishman stated in an article for
Worth Magazine, “For investors, for businesses and even for national economies, video games are not child’s play. They are becoming a dominant medium.” (p. 12).

Video games are mechanisms through which learning, critical thinking and interactive skills can occur subtly, unbeknownst to the game player (Drotner, 2001). Houser and Deloach (1998) explained that when game players play video games, they are transported to another world where the player may get lost or encounter surprises. Video games need to engage the participant and cause them to think creatively. Game players usually find this exploration exciting. People play video games for a wide variety of reasons. Basically, people playing video games are try to relieve stress, players believe video games are a good entertainment value for the money and video games are an interactive social experience that can be share with friends and family (IDSA, 2001).

Video games have rapidly become the largest segment of the entertainment industry, taking in 6.3 to 8.8 billion U.S. dollars in 1998, compared with 5.2 billion in Hollywood box office receipts (IDSA, 2000). With 181 million computer video games sold in 1998, on average, each home has two video games (Grodal, 2000). Growth in this market is robust. Between 1997 and 2000, the retail sales of game software grew at average annual rate of 11 percent. In this day and age, more people are playing video games, and the numbers of purchases video games are making each year may increase. These are a huge market and rapidly grow in the video games industry.

As the competition to excel in the video game market increasingly becomes difficult for manufacturers, it is becoming more important for manufacturers and video game developers to understand what makes people buy games and seek out new challenges. Players primarily rely on the visual and audio impact of video games design.
Thus, game developers need to have brilliant game design strategies to persuade consumers to play and purchase their video games. To fully understand the impact video gaming has on consumers, it is important to examine the effects of interactivity and vividness on video game characteristics.

**Statement of the Problem**

Video games without game players are like a car without a steering wheel, unlikely to get much attention. The entertainment business has the opportunity to acquire new revenue through cooperation with the video game industry. Clearly, the entertainment business in general must learn to see new possibilities for combining their traditional business with the video gaming industry (Sheff, 1999). The major challenge to the gaming industry is that game developers have to figure out what kind the features of game can catch the consumers’ attention. The game players may not be able to explain what exactly they like or dislike about a particular game, but they surely recognize when they are having a good time, whether they are being appropriately challenged, or if a video game excited them.

If video games cannot attract players to play and purchase it, it will not sell well; it is a simple case of free-market economics (James, 2002). Game developers can realize incredible profits from consumers. In other words, if game players detect that a video game is not easy to handle and play, they will not play it. Undoubtedly, the entertainment business must learn to see new possibilities for combining their traditional business with the video gaming industry. However, in 2002, only about 4% of the video games companies received high praise from game reviewers and earned benefit from
consumers (James, 2002). It is obvious that most games are not financially successful based on production quality alone. For example, *Grand Theft Auto III* has sold more than eight million units worldwide, making it one of the best selling games of all time. In contrast, *Shenmue*, which offers players similar freedom through the lens of a linear (and law-abiding) story line, sold a paltry 500,000 copies in the US, making it a financial failure (Chris, 2003).

Better technology has created video games that more effectively simulate reality, widening their appeal, said industry veteran Sid Meier, chairman of *Firaxis Games* (2001). Meier further indicated that the market is driven by more than just technology (IDSA, 2001). Most games primarily sell based on the strength of the graphic system they engage, but if it is not easy to understand and control, a game is torn to shreds by reviewers. One recent study by James (2002) affirmed that, “The market has made it clear that gamers have little patience for poorly-executed game designs, and the top-selling games are typically exceptionally well-implemented.” (P. 5).

Game industry growth is radically accelerating and changing market conditions demand evolution. As risks increase, game developers must adopt new methodologies and characteristic of game, as well as anticipate and meet skyrocketing consumer expectations (Rafaeli, 1988). Unfortunately, there is a lack of empirical research on the effect of interactivity and vividness characteristics on video games (Reeves & Nass, 1996). Therefore, this study has been developed to help understand the effects of these two factors (vividness and interactivity) on consumers’ buying behavior.

To date there has been very little serious study related to the effects of video games on consumers buying behavior, including research regarding the role game playing
has in people’s lives, and what the experience of video game playing is like. Video game developers and social theorists have done little to uncover what drives people to video gaming (Smith, 1995). This research study was focused on the continuous development of video games. The aim of developing video games is to change players by motivating them to play and purchase it. Video game developers have to deliver what the customer wants; they have to offer the complete package by delving into the subject matter through market research and making their products as appealing as possible to various demographic groups.

**Purpose of the Study**

The purpose of this study was to examine the relationship between the characteristics of vividness, interactivity, and the game player’s behavior, and to analyze the characteristics of interactivity and vividness that will increase or decrease consumers’ buying behavior. Video games are popular channels for consumers to release emotions and stimulate many centers of the mind. The rapid increase in popularity of video games demonstrates a huge potential for growth. The characteristic of interactivity not only stimulates the player’s imaginations, but also provides a virtual reality space for the player. Players can utilize this virtual space to escape from everyday routines and stresses presented by work, friends, and society (Richard, 2001). As young as this interactive entertainment medium is, it is clearly still in an evolutionary phase in terms of characteristics and content (Herold, 2000).

Interactivity and vividness are tools which developers use to stimulate players’ minds. When players purchase video games, they are frequently looking for games
having the most appealing graphics and potential for interactive play. The intense artistry and vividness in video games engages the visual cortex of the human brain and results in greater retained interest by game players. Touch, sound, and vision are the primary senses engaged in the interactive video games. In addition, video games give people a greater level of control than they experience in real life, as the characters on the TV screen respond to their every command. Thus, increased interactivity results in active engagement of all the senses (Turkle, 1984). Each player may progress to a higher skill level to satisfy their quest for a satisfying game experience, since most video games provide a variety of skill levels (Richard, 2001). If the player makes the right decision, the game will return immediate rewards to the player.

As Provenzo (1992) pointed out, video game players are looking for vivid and interactive games. Consumers’ buying habits tend to reflect video game developers’ attention to these fine details. This research intended to highlight the importance of setting out from a game player’s perspective when designing video games. The researcher presented a framework which is based upon the game concept of interactivity and vividness. To provide a suggestion for game developers in order to examine the factors of game design can increase consumers’ buying behavior.

Research Questions

The aim of this research was to explore the characteristics of video games that may well illustrate the impact of perceived interactivity and vividness of video games on customer buying behavior. This research study investigated the possibility that the level of vividness and interactivity in video games provokes customers and profoundly affects
consumers' buying behavior. The major independent variables used in the study were (1) Interactivity, and (2) Vividness. The dependent variable was consumer buying behavior. The research questions to be addressed in this study were as follows:

1. What are the factors that affect the likelihood of a consumer's purchasing behavior for a video game?
   (1a.) Does vividness affect the likelihood of a consumer's purchasing behavior for a video game?
   (1b.) Does interactivity affect the likelihood of a consumer's purchasing behavior for a video game?

2. What type of video games do consumers purchase?
   (2a.) Does gender influence the types of video games that are purchased?
   (2b.) Do age groups have an effect on the different types of video games that are purchased?

3. What is the demographical make-up of the sample?
   (3a.) What is the age and gender of the survey sample?
   (3b.) What is the general purchasing behavior of the survey sample?
   (3c.) What is the general game playing behavior of the survey sample?

**Importance of the Study**

Video games are popular channels for consumers to release emotions and stimulate many centers of the mind. Video games are mechanisms through which learning, critical thinking and development of interactive skills can occur subtly, unbeknownst to the game player (Drotner, 2001). Today's society is primarily visually
stimulated, as evidenced by youths and adults increasing reliance on television and video games to engage and keep their attention. More and more companies are involved in the game industry. Recently, the market for video game applications has been growing at a steady pace. In 2002 alone, video game software sales grew eight percent, in an economy where many other forms of entertainment are failing (ISDA, 2002). A report by a leading investment banker, the Jefferies Company, forecasted that the video game market, including PC games, would reach sales of $21.4 billion in North America alone by 2005, up nearly 300% from $8.3 billion in 2000, with the bulk of the increased revenue coming from sales of software. One might conclude that most video games are purchased by and/or for young children; however, the average users are in their mid-twenties (ISDA, 2002).

Consumers are currently being provided with the most up-to-date technology. The problem is how can game developers keep a person’s attention and cause him or her to continue to purchase more video games? People tend to thrive in environments that engage the senses. People will continue to seek out new challenges and thrills as time progresses, and video game developers must find new ways to keep up with this demand. Video games give consumers the freedom to choose their favorite game content from among a wide selection of available titles (Sheff, 1999). In other words, consumers can and will follow their own needs, tastes, and preferences in purchasing games. For example, when consumers want more interactivity and vividness in video games, they influence the video game manufactures to communicate with game developers, who then create more vivid and interactive video games to meet consumer demands. Information about consumers’ desires such as product choices, product qualities, service requirements,
and market changes are communicated to the manufacturer so production can be adjusted to consumer desires.

Marketing is defined, for purposes of this study, as the performance of business activities relative to the flow of goods and services from producer to consumer in order to satisfy consumers and achieve the firm’s objectives (Walters, 1978). Walters (1978) stated, “Consumer influence in the market increases with this freedom of choice, and businesses increasingly must cater to the consumer’s wants.” (p. 12). The video game placement in the marketplace brings the player into constant contact with both producers and consumers, and marketing acts to bring these two groups together so consumer needs are met.

Early video games had poor graphics and offered little intellectual stimulation (Braun & Giroux, 1989). However, modern technological advances are currently making possible more interactive tools as well as extraordinary graphics capabilities. Video games can quickly captivate their audiences if they are interactive and vivid. Consumers want to be visually, mentally and perhaps even physically stimulated when playing video games (Houser & DeLoach, 2002). For example, when a video game developer finds consumers do not like to play a particular kind of game, if they tried to get benefit from consumers, they have to change it as soon as possible to match consumers’ needs or desires. In today’s fast-paced economies, the marketing task is becoming increasingly more complex. Marketing departments must keep satisfying its customers. Product research, as well as market research, is given high priority in the video gaming companies so products can be more nearly fitted to changing consumer needs (Bettman, 2001; Matthews, 1964).
Many research studies on characteristics of video games issues have focused on the negative effects of video games, especially violent games. Some researchers focus on the long-term or short-term effects of video game playing on aggressive behavior (Anderson & Ford, 1986; Cooper & Mackie, 1986; Graybill, Kirsch, & Esselman, 1985; Kappers & Thompson, 1985). The fact is that youth violence has dramatically declined in American during the past decade, precisely the period in which video game players has skyrocketed (IDSA, 2001). However, the most objective and methodologically sound studies have found no causation between playing video game and violent activity. The key issue is that the video game industry has implemented significant self-regulatory measures to help ensure that games not made for certain players are not played by them. The game developers have to utilize the feature of video game and to incite players’ positive feelings, such as enjoyment, happiness, exhilaration, relaxation and challenge, with playing video games (Sheff, 1999).

The primary importance of this study is that it employed the theory of video game based upon the perspective of consumer. Although the video game technology becomes increasingly advanced, and people still seek out increased challenges and stimulation, it is critical for video game developers to follow trends to entice customers to purchase more video games. Video game developers must find new avenues with which to stimulate and intrigue a diverse audience. Currently there exists a lack of interactivity and vividness in some video games created for general consumption and this problem may eventually lead to a decrease in sales and lack of interest on the part of consumers and this trend may bring devastating to the video game business (Grodal, 2000). Aimed at filling this gap, this study analyzed the connections between the feature of interactivity
and vividness of video games designing, and the effectiveness of games in attracting consumers to do business with game companies.

**Objectives of the Study**

This research expected to uncover the fact that vividness and interactive video games motivate customers profoundly, affecting buying behaviors. The study intended to prove that consumers want to be challenged and excited when they purchase and play video games. However, video games of the future may have the potential to not only simply stimulate consumers, but also to provide unique educational opportunities and mechanisms with which consumers may increase their critical thinking and reasoning skills. Video games provide something which for most human history was not available, namely, and interactive complex entity that is accessible at low cost and zero risk (Robb, McCarthy & Sheridan, 1997).

Previous research has not focused on the consumer’s point of view. How can video games captivate their audiences? How do video game characteristics affect consumers’ buying behaviors? Why do people like to play video games? Why is the market for video game applications thriving? Why is interactivity exceptionally important in influencing consumer buying behavior? Why is vividness in video gaming important in influencing consumer-buying behavior? Given the lack of an empirically funded study of interactivity and vividness in video games, the present study offered theoretical and empirical insights relating to the interactivity and vividness features from a consumer’s point of view.
The object of this study expected that increased levels of interactivity and vividness lead to more positive attitudes toward video games, stronger motivation to play video games, and a greater attitude-behavior consistency. However, it is necessary to deeply understand how interactivity and vividness were influence the choice of video game development strategies. Such understanding also influences strategic marketing decisions for video game developers. Players are good at judging whether a video game they are playing is any fun or not. To succeed, game developers need to learn from game players and the characteristics of games. This study provided a suggestion to video game developers for creating more effective video games in order to meet customer demands and get more benefits from game market.

**Research Design Rationale**

This research was conducted using video game theory established through the review literature of applicable research including Aarseth in 2001; pointed out interactive and vivid video games have social implications, as participants gain or sharpen social skills when utilizing the multi-player scenarios. Anderson and Dill (2000) provided a framework that incorporates several bodies of research relevant to the study of media’s impact on game player. It brings together not only Steuer’s concept of virtual reality (Steuer, 1992), but also Reeves’s theory of telepresence (Reeves, 1991). As such it is well suited to interpret all currently available evidence on video games and directing future studies of relevant causal mechanisms and outcomes.

These theories include two major dimensions across which characteristics of video games vary are discussed here as determinants of telepresence. The first,
interactivity, refers to the degree to which players of a medium can influence the form or content of the mediated environment. Second, vividness, refers to the ability of a technology to produce a sensorially rich mediated environment (Aarseth, 2001; Steuer, 1995). Besides, the virtual reality resides in an individual’s consciousness; therefore, the relative contribution of each of these dimensions to creating a sense of environmental presence will vary across individuals (Coates, 1992).

This study intended to extend Aarseth and Steuer’s game theories by using a quantitative research method to further measure game players’ experience of buying behavior; therefore, the dependent variable is consumer buying behavior. To answer the research questions in this study, the investigation focused on ten independent variables and one dependent variable. The two main independent variables are linked to Aarseth and Steuer’s concept of games. These variables are interactivity and vividness. The variable of interactivity included five other independent variables that are aspects of video games: creativity, challenge, control, sensory gratification, and socialization. The variable of vividness included three independent variables that are aspects of games: audio effect, visual effect, and storytelling. In addition, two demographic variables are age and gender.

The dependent variable is consumer buying behavior, which is a measure of consumers’ buying pattern and motivations in purchasing the specific video games. Buying behavior will directly relate to the interactivity and vividness of the video game selected by consumers. This study can be related to the desire for positive outcomes, entertainment, and physical or emotional pleasure. The amount and types of games that consumers purchase was depend largely upon the variables studied. This study drawn on
consumer intention data collected through a Web survey to offer many important contributions for game developers as well as the academic community in the area of video games industry.

**Limitations of the Study**

There were some limitations in this study. These potential limitations were both internal and external. Internal limitations included some facts such as time, money, and manpower. Limitations on research study time are an important element, due to the frequent changes in the video consumers’ buying inclinations. External limitations included some facts such as the research environment and response rate. It is also possible that some participants may not be willing to fill out a questionnaire asking personal information such as age and gender. Such reluctance may cause some amount of impedance in achieving a large statistical sampling or in obtaining a wide-ranging view of the population. The researcher was using a convenience sample; therefore, the result of the study may not be generalized to any large population. Additionally, the results of this research can not be precisely transferable to other industries.

**Contribution of the Study**

This study contributed to developing the characteristics of video games by identifying to what extent consumer emotional responses and behaviors are directly affected by interactivity and vividness in gaming characteristic. Modern theory supports increased interactivity and vividness in gaming characteristics. Some research describes the alternative environment that video games provide as “a world generated by computers
in which time and space are compressed and have no real meaning.” (Tambyah, 1996; Shih, 1998). Through the use of increased interactivity and vividness, video games provide emotional ties to consumers that directly correlate to buying patterns.

Theory regarding interactivity and vividness supports the idea that users more directly perceive that they are physically present in the computer-mediated environment. (Schloerb, 1995; Shih, 1998). The degree to which consumers want to buy video games, or the idea of purchasing emotions, is generated by the ability of a game to engage the consumers’ senses (vividness) and respond to consumer input (interactivity).

Consumers perceive the video game environment as more realistic when vividness and interactivity are directly utilized to stimulate payers. Consumers seek out interactivity and vividness in video games to engage the imagination and increased pleasure and entertainment (Hirschman, 1982). This study examined what kinds of games captivate consumers, determine whether more interactive games achieve more positive press, and evaluate how video games of the future should be developed.

Not nearly enough research has been conducted regarding characteristics of video games. The researcher proposed an analytical framework in this study. It pointed out that interactivity and vividness not only can engage users, but also stimulate increased buying behaviors and increase emotional output and sensory perception. This dissertation was to investigate empirically-based principle that game developers can utilize to improve the likelihood that consumers feel pleasant to play and purchase video games. Thus, the framework of this study can be used to analyze and evaluate customer buying behavior and completely in various video games industry.
Structure of the Dissertation

This dissertation has the following organization:

Chapter one, Introduction, introduces the motivation for this research, discusses the background of the study, statement of the problem, purpose of the study, research questions, importance of the study, objectives of the study, research design rationale, limitations of the study, contribution of the study, and structure of the dissertation.

In chapter two, review of the literature, the researcher reviewed literature and some recent relevant studies that described various aspects of video games. Chapter two begins with a brief history of video game, the status of the video games industry, video game is a new entertainment medium, the theory of vividness, the theory of interactivity, definitions of variables, the relationship between vividness and interactivity, different aspects of video games research, consumer buying behavior theory and discussion statistical analysis are presented.

Chapter three, research methodology, describes a detailed description of methodology and analysis about the study. The major gap is the limited empirical-based data investigating the impact of perceived interactivity and vividness of video games on customers’ buying behavior. Chapter three includes the explanation of research question, research design, instrumentation, population, sample, data collection, data analysis, reliability and validity, and ethics.

Chapter four, results, presents the results of the statistical analysis of the survey instrument. All findings relevant to this study are described in appropriate tables and figures.
Chapter five, findings, conclusions, implications, and recommendations for further research, summarizes the research findings. Theoretical and practical consequences of the results are discussed. This chapter also provides the limitations of the study and suggestions for future research. Appendices present the e-mail invitation letter, the information and informed consent statement for video game participants, the consumer buying behavior questionnaire, and institutional review board approval.

Summary

This study examined the potential effects of increased interactivity and vividness in gaming development. Video gaming, unlike reading a novel or watching a TV program, not only actively engages the thought processes through interaction, but also provides entertainment and a channel for leisure activities. Video games intrigue children, young adults and adults alike. Each seeks out a thrilling and challenging experience when buying a video game.

The purpose of this study was to examine the relationship between the characteristics of vividness, interactivity, and the game player’s behavior, and to analyze whether the characteristics of interactivity and vividness will increase or decrease consumers’ buying behavior. This researcher would like to uncover the fact that the level of vividness and interactivity in video games, which provokes customers’ and profoundly affects consumers buying behavior. Therefore, one questionnaire was developed to assess consumers’ buying patterns and purchasing purpose of a specific game.

Consumers seek to feel that they are interacting with a medium in a realistic and positive manner (Houser & DeLoach, 1998). The manner in which people experience a
video game environment was a central issue for the researcher. The issue will be pivotal, not only to those considering the interactivity and vividness characteristics of the video game, but also to those interested in how humans interact with these video games.

The theory behind this proposal is that increased interactivity and vividness will not only promote greater reasoning and logical thinking among video game users, but also increase the purchase and sales of video. This study investigated what kinds of games captivate consumers, determined whether more interactive games achieve more positive press, and evaluate how video games of the future should be developed.
CHAPTER II
REVIEW OF THE LITERATURE

Overview

In chapter two, the researcher reviewed related literature and described the theory of video games as follows: the brief history of video game, the status of the video game industry, the newness of video games as an new entertainment medium, the theory of vividness, the theory of interactivity, definitions of variables, the relationship between vividness and interactivity, different aspects of video games research, and consumer buying behavior theory. The manner in which people experience a video game environment was a central issue for this study. The issue was pivotal not only to those considering the interactivity and vividness characteristics of the video game, but also to those interested in how humans interact with these video games.

The Brief History of Video Games

Video games are a young media outlet, but their quick rise to popularity demonstrates a huge potential for growth. Video games are popular channels for consumers to release emotions and stimulate many centers of the mind. Lowenstein (2001), president of the IDSA association, stated that, "Video games have become a leading form of mass market entertainment as the core user has aged from teens into adulthood, and millions more casual gamers join those hard core gamers to drive market growth and expansion." (p. 1). In the beginning, video games purported to entertain home users. Video games provide several qualities to attract players and draw the
attention of consumers. Two of the most critical aspects or characteristics of video games are interactivity and vividness.

The characteristic of interactivity not only stimulates the players' imaginations, but also provides a virtual reality space for the player. The attribute of vividness inherent in many games is “the representational richness of a mediated environment as defined by its formal features, that is, the way in which an environment presents information to the senses” (Steuer, 1995, p. 80). Therefore, players can utilize this virtual space to escape from everyday routines and stresses presented by work, friends, and society.

In addition, video games give people a greater level of control than they experience in real life, as the characters on the TV screen respond to their every command (Vorderer, 1999). Each player may progress to a higher skill level to satisfy his or her quest for a satisfying game experience, since most video games provide a variety of skill levels (Richard, 2001). If the player makes the right decision, the game will return immediate rewards to the player.

From the late 1960's, people have been designing video games. Advances in game designs became common and economically important in parallel with the development of video games in the 1980’s (Kent, 2002). The first video game was designed for adults, adult are capable of deciding what video games they should buy and play, and players often played these early games in a setting similar to that in which pinball was played. Herz (1997) described the initial research of video games: “Nolan Bushnell, inventor of the first two commercial video games, Spacewar and Pong, did all of his initial usability testing in bars.” (p.28). In 1976 the first adventure game was born
and later in the 1980’s strategy games became popular following in the wake of success of such games as “Pirates” (Microprose, 1987) and “SimCity” (Maxis, 1987).

In the 1980’s, the sales of the interactive gaming entertainment industry competed with those of the film industry. However, video games have never been afforded the same reputation and general cultural interest of other entertainment forms, such as movies, TV, or books. Different video game genres began to appear around 1980 and players could for the first time choose different types of games to meet their needs and games to stimulate their imagination. Different game consoles or platforms such as the currently popular Playstation 2, Xbox, and GameCube now offer new ways for players to enjoy video games. In the early 1980s, video game marketers continued to produce games for adults, while early video game research focused on the negative impact of video gaming on adults.

Scientific research of video games at the time also focused on adults, investigating issues like health risks and player motivation (Herz, 1997; Funk, 1993). Studies stated that video games were causing behavior problems for parents, not their children. In the 1990’s there was an explosion of proportions (Smith, 1995). In the last half of the decade the console market was dominated by Nintendo and Sony’s machines, while the CD-Rom and DVD-Rom format made development of better special effects possible, such as 3D models, fantasy graphics, storytelling and special audio effects without the constrictions of limited storage media (Bandura, 1994).

Over the years video games have become bigger and more “photo realistic” (Kent, 2002). Kent (2002) indicated that, “For a while video game producers drew huge inspiration from movies, but this inclination seems to have faded away by itself.” (p. 125).
To date, video game developers utilize internet technologies for video games. Players not only can play video games on networks, but also have the opportunity to meet other players through the network (Coates, 1992). Video gaming provides a more unpredictable and exciting game experience.

An understanding of the history of video gaming is important to an understanding of this industry. The history of video games not only reminds people of the past, but also promotes innovative thinking that changes the future (Clark, 1993; Kahrmadji, 1999). The following time frame illustrates the history of video games (IDSA Association, gamespot.com, and Maria, 2002):

1961- Nolan Bushnell, inventor of the first two commercial video games, Spacewar and Pong, did all of his initial usability testing in bars.

1966- Ralph Baer begins researching interactive TV games. In the meantime, Sega Enterprises Ltd. releases an electronic shooting gallery game.

1968- Baer’s interactive TV game is patented.

1971- Magnavox begins manufacturing Baer’s TV game system, which it calls the Odyssey.

1974- Atari creates Home Pong, launching the video game industry. They call the game Pong for two reasons: first, “Pong” is the sound the game makes, and second, the name Ping-Pong is already copyrighted.


1978- Nintendo of Japan releases an arcade game.

1980- Namco releases Pac-Man, the most popular arcade game of all time.
1981- Arnie Katz and Bill Kunkel established the first video game magazine, “Electronic Games.”

1983- Apple Computer released the first personal computer to use a Graphical User Interface (GUI). Cinematronics, Inc. releases the first arcade game to feature laser-disc technology.

1985- Russian programmer Alex Palitnov designs “Tetris,” a simple but addictive puzzle game that can be played on a personal computer.

Nintendo test markets its Nintendo Entertainment System (NES) in New York.

1989- Sega Enterprises of Japan releases Genesis in the U.S.

Nintendo releases the Game Boy, the first portable, hand-held game system.

1990- Nintendo releases Super Mario 3, the all-time best-selling video game cartridge for the Super NES. Sega produces video games to further trade on arcade games successes.

1991- The Super Nintendo Entertainment System (Super NES) is released. Atari announces development of the Panther, a new 32-bit system to compete against Sega and Nintendo.

1992- 3DO, a new company started by Electronic Arts, announces a new 32-bit gaming console. 3DO contracted with major multimedia companies Panasonic, Time Warner, and MCA.

1993- Panasonic is the first company to market 3DO hardware. Nintendo and Sega announce their next-generation systems.

1994- The Entertainment Software Rating Board (ESRB) is established to rate video games. Sega Saturn and Sony PlayStation are launched in Japan.
1995- Annual entertainment software sales reach $3.2 billion. Sony releases PlayStation in the U.S. Sega abandons support for the Sega CD and 32X.

1996- Sega releases video game “Virtual Fighter 3” in Japan and the United States. The first Barbie game, Barbie Fashion Designer, is released on CD-ROM, a major step in the girls’ game market. Videotopia, a traveling museum exhibit focusing on the history of video games, opens at Pittsburgh’s Carnegie Science Center.

1997- Entertainment software sales for this year top $4.4 billion. PlayStation is the most popular gaming console in the world.

1998- Nintendo releases The Legend of Zelda Ocarina in time for the N64 on November 23. The IDSA announces that 1998 was a banner year for the electronic entertainment industry.

1999- Sega releases Dreamcast, the first 128-bit console. Nintendo announce the Game Boy Advance, a 32-bit handheld system. Sony announces the Play Station 2 in September.

2000- Bill Gates announces the Xbox, a new console system, to the world. Sony releases PlayStation 2 in Japan on March 4. In two days, Sony sells 1 million consoles. Nintendo announces the future release of a new console system, GameCube. Sega starts Internet service for Dreamcast.

2001- Sega of America releases the first online-compatible RPG. Sony of Japan releases the 40 GB hard drive peripheral for the PS2 in July. A Linux-based application called Xbox Gateway is released that allows unofficial player vs. player use of Xbox LAN games over a broadband connection.
The Status of Video Games Industry

The Entertainment Business

If leisure means "A time of opportunity wherein the individual has the freedom to perceive and select experiences which are either worthwhile or simply gratifying, we certainly have seen a tremendous increase of leisure time over the past few decades." (Shivers, 1979, p. 15). Most leisure time is spent in entertainment activities, both with multimedia and without it (Arseth, 1997; Zillmann, & Bryant, 1994). Video games have opportunity become a mass market entertainment, resulting in a substantial market for casual games like puzzle, board, and card games, in addition to staple products like basketball, football, racing and other action games.

The entertainment business as such has the opportunity to acquire new revenue through cooperation with the video game industry (Pastore, 2002). Clearly, the entertainment business must learn to see new possibilities for combining their traditional business with the video gaming industry to attract players pay attention on the games. In this way game industry can realize incredible profits from consumers. With or without such a union, "The video game industry is venturing into new territory. "Better technology has created video games that more effectively simulate reality, widening their appeal, said industry veteran Sid Meier, chairman of Firaxis Games." (IDSA, 2001. p. 1). Meier further indicated the game market is driven by more than just technology, but interactivity and vividness. (IDSA, 2001).

Interactive entertainment has graduated to mass medium status, according to game industry executives illustrated at the Electronic Entertainment Expo (E3 show) in Atlanta, 1998. Other businesses could reap tremendous advantages if they could develop
new ideas in cooperation with the game industry (Bryant & Love, 1996; Sheff, 1999). The IDSA survey report found 36 percent of console game players are 18 to 36 years old, and 20 percent are older (Figure 1).

Figure 1

*The Age Percentage of Most Frequent Video Game Players (Source from IDSA, 2002).*

Video game consumers are not only children but also adults. A 2000 survey by Peter D. Hart Research Associated, Inc. found that over 60 percent of all Americans, or about 145 million people, purchase, play, and collect video games. The average age for the video game consumer is 28 years, and consumers over the age of 18 purchases over 90% of all video games (Figure 2). Adult, not kids, purchase nine out of ten video games sold in the U.S. thus refuting the idea that video games are just for children (PHRA, 2000).

The video game industry got a big boost from three new gaming systems in 2001: Nintendo’s GameCube and Game Boy Advance and Microsoft Xbox. The new systems
led to a 39 percent increase in hardware unit sale over 2000 (Nielsen, 2002). According to an ISDA study, “the computer and video game industry generates jobs for 220,000 people and nearly $ nine billion in wages and federal and state personal income tax revenues.” (P. 4). Other economic data and a U.S. government survey in 2000 revealed that game software sales grew at a rate of ten percent per year, more than double the rate of growth of the U.S. economy.

Figure 2
The Age Percentage of Video Game Buyers (Source from PHRA, 2000).

Additionally, in 2000, the ISDA reported, “overall demand for computer and video games created a $10.5 billion dollar market for game software publishing in wholesale and retail marketing including transportation. The study took some, but not nearly all, complementary game hardware into account.” (p. 4).

FRI research reported,

Directly and indirectly, the demand for computer and video games generated employment for 219,600 people who earned $ 7.2 billion in wages and paid $1.7 billion in federal and state personal
income taxes. The total direct effect was an increase of 43,000 jobs. These employees earn $2.7 billion in wages and paid $650 million in federal and state personal income taxes. Total indirect effects were 176,600 jobs, $4.5 billion in wages, and $1.1 billion in federal and state personal income taxes (Forrester Research, 2000, p. 3).

Interactive entertainment has definitely arrived. Vorderer (2000) indicated that, "TV and cinema are no longer the only media for entertainment- the Internet, computers and video games have clearly joined these older passive forms of entertainment at the center of popular culture today." (p. 22). People today enjoy entertainment they can control and experiences in which they are fully involved (Berkowitz, 1993; Houser, DeLoach, 2002). In fact, video games have been delivering just this type of entertainment to consumers for more than 25 years, and with today's new technologies, the possibilities for interactivity are never-ending. IDSA (2002) survey data also find "56 percent of the most avid computer and video game players have been playing games for six or more years and 60 percent expect to be playing games as much as or more than ten years from now." (p. 1).

People enjoy playing games throughout their lives because interactivity and vividness are fun and challenging, and the games can be played with friends and family. IDSA survey found that 42 percent of most frequent game players play with other family members, while 25 percent play video game with one or both parents (IDSA, 2001). In video games, there are sound effects, visual effects, scorekeeping, a joystick or keypad in players' hand (Moore & Holmes, 1995). The IDSA survey data revealed that video game players' favorite games included driving or racing games (39 percent); action games (38 percent); sports games (38 percent); and RPG or adventure games (31 percent) (IDSA,
2002). Actually, in a global sense, video games have the potential to become the dominant form of personal entertainment in the 21st century.

**Marketing Perspective**

Video game marketing is uniquely placed in the economic system between production and consumption. Video games were predicted by frequent users to be a close second behind the Internet as the most popular form of entertainment in ten years (IDSA, 2001). In 2002 alone video game software sales grew 10 percent, in an economy where many other forms of entertainment were and still are failing (ISDA, 2003) (Figure 3).

Figure 3


A report by a leading investment banker, the Jefferies Company, forecast that, “the video game market, including PC games, would reach $21.4 billion in the U.S.
alone by 2005, up nearly 300 percent from $8.3 billion in 2000, with the bulk of the increased revenue coming from sales of the software.” (p. 2). The competition between console gaming companies Sony, Nintendo, and Microsoft is really driving technology in the video game business.

The video game placement in the marketplace brings it into constant contact with both producers and consumers, and marketing acts to bring these two groups together so consumer needs are met. Marketing is defined, for this study, as the performance of business activities relative to the flow of goods and services from producer to consumer in order to satisfy consumers and achieve the firm’s objectives (Walters, 1978). Walters (1978) declared that, “Consumer influence in the market increases with this freedom of choice, and businesses increasingly must cater to the consumer’s wants.” (p. 12). He also acknowledged the concept of consumer orientation among businessmen: “Consumer orientation has increased among business leaders, yet all too few managers have grasped the full impact of the concept.” (p. 36).

The video game industry is a competitive one would be an understatement. Graser (2000) revealed that game developers are flooding the marketplace with so many titles at one time; the shelf lives of new releases are mere two weeks. The video games life cycle is so short. The key issue is how rapidly to capture the players’ attention. For example, Microsoft have plan to spend 500 million U.S. dollars to throw and sell its Xbox video game consol, the most money the software giant has ever spent to launch a new product (Chris, 2003). On the other hand, the audience for games has also changed over time. Children who grew up playing games have now become game-playing adults, and the games themselves have matured to meet their audience (Graser, 2000). Part of
the driving force behind the game industry is innovation not only in computer technology but also in characteristic of video games.

In particular, real time three dimensional graphics generation has become a prime selling point for game hardware makers (Chris, 2003). Chris also stated that, “The games stated thus far contain all of the core requisites for a hit: they all have high-quality graphics, simple and responsive controls, entertaining game mechanics, and are free of bugs and glitches.” (p. 2). However, today game systems are powerful computers, and the creation of game content has become far more difficult.

**Consumer Orientation**

Consumer orientation leads a company to seek innovation and change (Matthews, 1964). This video game marketing philosophy requires that the management view its product marketing as an effort to achieve customer satisfaction rather than physical goods (Bettman, 2001). To follow the consumers’ demands seem to be a good guideline for video game developers. Marketing departments must keep satisfying its customers. Product research, as well as market research, is given high priority in the company so products can be more nearly fitted to changing consumer needs (Bettman, 2001; Matthews, 1964). For example, when game product does not satisfy with consumers, there is no hesitation in dropping it from the line. Consumers are not willing to pay for mediocre products, if the industry does not actively pursue innovative game designs that appeal to a wide audience, the game developers may not gain very well benefit from consumer (Burke, 2001). Therefore, when a video game developer finds consumers do
not like to play a particular kind of game, they have to change it as soon as possible to match consumers' needs or desires.

Today's fast-paced economies, the marketing task is becoming increasingly more complex. Gore and Dyson (1964) affirmed that, "Increased productivity brings forth a greater variety of products, and the number of firms offering different assortments of services and prices in combination with these products also multiply." (p. 31). In video games market, ideally, as consumer income rises with productivity, individuals have the means to choose from the improved offerings of businesses (Bettman, Luce, & Payne, 2001). Not only do consumers buy more games but they also may exercise greater discretion over how they spend their income.

**Video Game Marketing Communication**

Video game marketing communication has three types: communication back to the game producer, communication forward to consumers, and horizontal communication (Gore & Dyson, 1964; McCullough, 1961; Morawski & Zachary, 1992). For example, when consumers want more interactivity and vividness in video games they influence the firms to communicate with game developers, who then create more vivid and interactive video games to meet consumer demands, and such information about consumers' desires such as product choices, product qualities, service requirements, and market changes are communicated to the manufacturer so production can be adjusted to consumer desires. Figure 4 shows consumer demand affects industries directly and indirectly (NPD Fun World, 2001).
Video games, on the other hand, are typically considered a popular cultural medium. Gaming is getting serious. Game developers and publishers have to solving complex issues amid a proving ground for game technologies that can solve real-world problems, making advancements in collaboration, peer-to-peer networking, and data delivery (McCarthy, 2002). Gamers demand speedy data delivery, complex and realistic graphics, and interactive computing, all delivered seamlessly and via a variety of channels for a variety of platforms (Desjardins, 2002). Game players similarly use their controller to make decisions and make their game playing experience as entertaining as possible.
Video game marketers must actively aid consumers by anticipating wants, shaping desires, and pointing the way to possible solutions. For example, it is inefficient and costly for salespeople to “push” poorly designed or unwanted products. Instead, game marketers have to collect and employ consumer knowledge or information to help video game producers design customer satisfaction into the product or to develop entirely new products to match consumer demand.

An important factor in the great success of video games is the expanding variety of games available to stimulate the interests of a broad audience. To retain consumer interest, it is extremely important that game developers measure and account for the importance of interactivity and vividness in video games of the future (Heeter, 1989; McLuhan, 1964; Pavlik, 1996; Tambyah, 1996). It is necessary to deeply understand how interactivity and vividness will influence the choice of video game development strategies. Such understanding also influences strategic marketing decisions for video game developers.

Improving interactivity and vividness are becoming a most important guideline for future video games development (Robb et al, 1997). It is because interactivity and vividness are important in helping players actively engage in the communication process and thus building solid and ongoing relationships between game developers and players (Desjardins, 2002). This is closely related to the perception of relationship marketing, where marketers make an effort to build the relationship with consumers so that it final results in more sales.
Video Game is a New Entertainment Medium

Interactive Entertainment

Video games are an extraordinary medium for supplying entertainment. Grodal (2000) stated that, “Video games import and convert many different forms of entertainment, from games related to chess simulations, to games related to novels, or action films.” (p. 197). Video games also provide a unique learning environment (Bandura, 1973, 1986). They provide something which for most human history was not available, namely, and interactive complex entity that is accessible at low cost and zero risk (McCarthy, 2002). This kind of new medium provides strong or exaggerated experiences. In other words, video games are much like candy, comic books, and cartoons. Whether they use sugar, scream points, or animated explosions, the goal is the same, to provide extreme experiences (James, 2002). Adults and children appreciate video game activities because their innovation value is still strong.

According to Vorderer and Zillmann (1999), “Western media consumers have apparently adjusted quickly to the abundance of entertainment offerings.” (p. 33). In prosperous industrial societies, the citizens’ pursuit of happiness seems to entail an entitlement to being well entertained, especially by the media (Reeves & Nass, 1996; Zillmann, 1996). More and better entertainment is expected, if not demanded, and if not provided, companies will disappear from the entertainment marketplace (Brooks, 1992). For instance, most game players are looking forward to the new generation video game console, which can bring them more exciting entertainment and fulfill their gaming interests; however, if gaming companies cannot satisfy consumer needs, they will lose their market share.
The games industry is barely beginning to grow out of its roots, so nothing drastic is going to happen in the near future (Zillmann, 1999). In fact the industry is predicted to go from strength to strength and continue to grow. According to the USA Today magazine (2002) described adult participation in playing video games by stating, “American adults are increasingly playing computer and video games, the trade group representing U.S. computer and video game publishers.” (p. 24). Forty-six percent of video game players are female and fifty-four percent of video game players are male (IDSA, 2002) (Figure 5).

Figure 5

Figure 5: Male and Female Percentage of Video Game Players (Source: IDSA, 2002).

Good video games incorporate the principle of expertise. They tend to encourage players to achieve total mastery of one level, only to challenge and undo that mastery in the next, forcing kids to adapt and evolve (James, 2002). James also illustrated that, “This carefully choreographed dialectic has been identified by learning theorists as the best way to achieve expertise in any field.” (p. 1). Video games are
produced with computers and used as interactive entertainment (Murray, 1997; Provenzo, 1992; Scott, 1995). There are complexity and diversity to compare between video games and other entertainments media such as, book, movie, and television, which provide audience access to almost every aspect of human culture and knowledge, but they are not interactive (Murray, 1997). Watching television and movie remain passive activities, and reading and other forms of imaginative play remain distinct from everyday life.

The interactive media appear to describe this state of affairs and have already been used synonymously with the terms new media and digital media, causing some confusion as to its meaning (McCarthy, 2002). Virtually, in video games, there are include sound effects, visual attraction, storyline, a keypad in players’ hand, and often playmates commenting on their performance, which simple involves streaming pixels at imaginary creatures on a two-dimensional screen (Witmer & Singer, 1998).

The research carried out by Grodal (2000) showed that there are several differences between video games and television, including the methods used to motivate the end user. Some researchers demonstrated that television is often used in an interactive fashion, but television programs are not generally designed for interaction in the future (Masuda, Kishimoto & Shimai, 1990; Sheridan, 1992). However, TV will be designed not only for passive viewing of TV programs, but also for interactive use.

Video games are potentially sophisticated enough to compete with traditional means of escape space such as movies, books, and music. Grodal (2000) indicated that, "video games provide simulations of a series of aspects of reality, like racing, flying, or playing soccer, or simulations of complex social developments, from urban development
to the evolution of civilization.” (p. 204). Video gamers may, instead of merely watching a movie, reading a book, or listening to music, become actively involved in the game.

Vorderer (2000) suggested that, “Interactivity is often used to describe a technological feature of the media as much as it is used to characterize a way of using the media.” (p. 22). In computer science, the term interaction has been extended and applied to processes taking place between humans and machines, primarily computers (Schulz, 1997; Witmer & Singer, 1998). From this point of view, the most interactive medium always allows communication with consumers. This kind of medium utilizes simulation as a natural way to further conversation between individuals.

Video games are designed to motivate the player to continue playing the games again and again. Video games are entertainment since they adjust themselves to almost everyone. Game viewers can and will follow their own needs, tastes, and preferences, in view of the diversity of offerings, from fan and taste cultures perpetuating and possibly even increasing the complexity of social stratification (Rosenberg, 1957; Stater, Martin & Steed, 1994; Stald, 1996; Wolf & Mark, 2002). However, “video gaming enhances the capability of new communication systems to ‘talk’ to the user, almost like an individual participating in a conversation.” (Rogers, 1986, p. 34). The reciprocity of the media has been of central relevance to the understanding of interactivity within communications. Video game entertainment will evolve into new forms and these new forms attract specific groups with specific interests (Gaudiosi, 2002). In other words, video games are a form of play, are a voluntary activity which player can stop or start as they choose and players enter, in the spirit of play.
The Popularity of Video Games

IDSA President Douglas Lowenstein points out that “the popularity of video games with baby boomers reflects the increasing variety and sophistication of available games and the appeal of a type of entertainment that users can interact with and control.” (IDSA, 2000). When a player operates a video game, it is quite impossible to do so with passive fantasies. We want to control the game and not be controlled. Theoretically, video games provide none of the open-endedness of regular play. As educator Eugene F. Provenzo Jr. noted, dialogue with the video game is “defined primarily by the computer and the way it has been programmed”, not by the player’s imagination (Natalie, 2002). Rice (1984) indicated that everybody agrees that a successful video game is a good game, and that the motivation for video game playing has something to do with the player’s interaction with the game. Game Players like to play video games because they want to be entertained and challenged (Mundorf, & Westin, 1996; Natalie, 2002). Basically, video games are designed to encourage the player to continue playing.

Schulz (1997) revealed that, “The growth and diversification of entertainment programs have been especially beneficial to those audience members who in the past have been underprivileged (i.e., older people, adolescents, and children).” (p. 5). It may well be that the growth of such programs has reached its highest point, unless future interactive entertainment contributions are structurally different from the entertainment offerings of the past. In either case it is clear that the future of interactive entertainment is one in which computer and video games play an increasingly important role in our society in the 21st century.
One investigator (Zillmann, 1999) found that video games will change the way people live, work and play. Video games will soon provide consumers the ability to touch, feel, and even smell real life human sensations while playing. Video games are beneficial in an information age, teaching new literacy and skills and providing auxiliary physical benefits (Desjardins, 2002). Video games give consumers the freedom to choose their favorite game content from among a wide selection of available titles (Graser, 2000). In other words, players can and will follow their own needs, tastes, and preferences in purchasing games.

From a marketing perspective, the interactive characteristics of video games provide fun and entertainment that affect and possibly will increase the frequency of consumer purchasing behavior (Gans, 1966; Scott & Thomas, 1973; Zillmann & Gan, 1997; Zillmann & Paulus, 1993). However, “video gaming is the capability of new communication systems (usually containing a computer as one component) to ‘talk’ to the user, almost like an individual participating in a conversation.” (Rogers, 1986, p. 34).

About 90 percent of United States households with children have rented or own a video game, 49 percent of players have a video game player on which to play the games in their own bedroom, and 46 percent of players would choose, in preference to any other form of media, to take a video game player to a desert island (Badinand, Bureau & Hirsch, 1998). Indeed, there are several reasons for people to play video games. An IDSA 2001 consumer survey showed that more than half of respondents like to play video games because they want to relieve stress, and roughly half the respondents believe that video games are a good entertainment value for the money. Additionally, more than a third of
the respondents describe video games as an interactive social experience that can be shared with friends and family.

**The Difference between Video Games and Computer Games**

According to Louis Castle, cofounder and General Manager of Electronic Arts' Westwood studios, video games are more kinetic, allowing players to actually play the controller (Castle, 2002). Castle (2002) stated that,

> When players are moving the buttons and dials on the controller, they are immediately getting audio and visual feedback and success with moving the buttons, dials gives players a different type of audio-visual feedback where the reward is biomechanical, and that video games develop a different type of experience. On the other hand, in computer games, players image the experience. Players are fulfilling a fantasy, and the mouse and keyboard are merely an interface to an alternative world (Castle, 2002. p. 20).

Essentially, computer games are played on a personal computer (PC) monitor. The player has to use a mouse and keyboard to operate the game. Video games are played on a TV screen to stimulate the mind in a different way, changing the reality of the game. When playing on various consoles such as, Nintendo- GameCube, Sony-PlayStation 2, and Microsoft- Xbox, the player can utilize different kind controllers to operate or play games. Video game companies also provide effects such as vibration of the controller so the player can feel the real thing when they play video games.

Software structure and platforms differ, depending on the type of game being played. A computer game can be played on any personal computer (PC), while video games can only be played on specialized consoles with different systems having different platforms. In computer games and video games, the visual feedback is different, but the game is the same (Castle, 2002).
Theory of Vividness

The Definition of the Vividness

Steuer (1992) claimed that, "the interactivity and vividness found in a medium help to evoke telepresence, and that identifying these attributes in different media will allow us to predict the type of telepresence users will experience." (p. 81). Held and Durlach (1993) stated that, "Telepresence can be thought of as the extent to which a user feels present in a mediated environment." (p. 235).

Vividness can be defined as “the representational richness of a mediated environment as defined by its formal features, that is, the way in which an environment presents information to the senses.” (Steuer, 1995, p. 81). The formal features of vividness are breadth and depth. Sensory breadth refers to the number of senses simultaneously impacted. Sensory depth refers to the detail or quality of each sense experienced (Schloerb, 1995). Vividness is a measure of the completeness of environment presented (Held & Durlach, 1993). According to Gibson (1966) defined essentially five perceptual systems, there are included the orientation system, the auditory system, the visual system, the tactile (haptic) system and smell-taste system.

While impacting more than one of these systems at a time can result in information redundancy; the more of these systems that are corralled, the greater the vividness of the artificial environment (Steuer, 1995). For example, what are the sensations experienced when play racing game in the twisty road? First, player might see the surroundings and follow the road as the car follows it. Second, player might hear the engine rise and fall as the driver accelerates and shifts. This scenario impacts the visual system and the auditory system. Each piece of information serves to enrich the sensory
impact and add to the completeness of the picture of one playing down a twisty road. Sensory input of the artificial environment needs to be more than the natural environment (Schloerb, 1995).

Stating it a little differently, Steuer (1992) stated that, “Vividness refers to technology’s ability to produce a rich sensory environment, and interactivity refers to the technology’s capacity to enable the player to influence the form and content of a game environment.” (p. 83). The study by Dolf and Peter (2000) found that vividness is the manner in which video games successfully stimulate the player’s mind. In other words, the vividness of an environment is defined by the manner in which information is presented to the senses. The researcher based on Steuer’s definition of vividness to conduct this study.

The Vividness Theory Approach

In fact, video games increase the player’s motivation. The vividness of a game changes brain wave patterns in players as they play video games (Howe & Sharkey, 1998). Most players can use different kinds of external equipment to create greater motivation as they play the video game (Slater, Martin & Steed, 1994; Spalte, 1999; Turkle, 1984), for example, racing games with steering wheels or shooting games with guns. The use of external equipment provides a natural merging of skill with real life behavior.

Most people think that video games are visual media, but the main challenge in the evolution of video games resides in improving the characteristics of their visual presentation (Poole, 2000). When players look at a picture on the game screen, they can
pretend to be a game designer. As a video games designer is able to render more and more polygons (A polygon is defined as a closed plane figure enclosed by lines that from many angles. A polygon is composed of lines that create edges and that indicate either a 3D or a 2D representation of an object.), they also can draw more accurate details about an object in the game in order to create more natural self-expression and make more vivid characters possible (Frasca, 2001). The vividness inherent in a game stimulates imagination and involves players to a greater extent in the world of video gaming.

The vividness of video games can be expected to influence the game players' experience when they become involved in the game world. Thus, video games appear to be better suited to generating a realistic and interactive experience than other media. However, the vividness within a mediated environment and a first-person relationship within the medium are also important factors of generating such experiences.

The characteristic of vividness inherent in video gaming provides rich audio and visual information, which creates the digital space explored by the interactive player. The attribute of vividness provided by video gaming entertainment is better than that provided by any other medium. Mayers (1991) indicated that video games need to be primarily visual, which makes sense for the video game designer looking to shape the future and for critics wanting to explain present games to concentrate on the visual expressivities of this young medium. Most video games provide a great range of vividness. Vividness engages the visual and audio abilities of the player (Frasca, 2001). When a video game can utilize the characteristic of vividness to attract the player's attention, the player will purchase video games in the future.
The characteristics of vividness can be combined with audio effects, visual effects, and storytelling. Most theorists have communicated about gaming as though it is something that should be considered in the context of a narrative. Most theorists believed in the premise that the purpose of a video game is to merely tell a story (Robb et al, 1997). Successful narratives include popular novels and show what one might see at the Cineplex. Many games are following a narrative pattern and tell a fantasy-like story wherein the hero of the game is the player (Flynn, 2001). Video game technologies provide these three factors to increase the ability of video games to persuade players to purchase it and play the game.

The player can also cognitively enjoy the advantage of the technology of video games. In other words, the characteristic of vividness will stimulate the visual cortex and increase the intensity of information provided to players (Zillmann, 2002). Welch (1996) placed a same emphasis on this issue, he commented that, "when people watch a TV program, one's visual sensory center is more demonstrably engaged than when people are simply listening to a lecture, since the viewer does not have to fill in mental pictures of the scene being described." (p. 265). Players are going to play video games because video games provide more vividness and stimulate the sensory receptors of the brain in order to increase players' gaming intentions.

Video games utilize quality pictures and a lot of information in their presentation, and try to motivate game players to purchase and play video games. Video games directly connect with the consumers' desires, and players can have new experiences while playing the games (USA Today, 2003). Another important element used to attract consumers' attention is that video games immediately respond to the player's input and
stimulate the player’s emotions. The characteristics of the player as well as those of
different media technology interact to determine the manner in which player experience
presence in different environments (Frasca, 2001). This kind of response is referred to as
interactivity.

In this study, the elements of video games and their importance were described.
Interactivity is the most common element used to capture and meet the player’s intent to
purchase or play a particular game (Welch, 1996). The interactivity of a game
dramatically increases the impact of video games on the consumers’ purchasing behavior
and intention to play a particular game.

**Theory of Interactivity**

*The Definition of the Interactivity*

Interactivity has been defined in several different ways. According to Steuer
(1992), “Interactivity refers to the technology’s capacity to enable the user to influence
the form and content of an environment.” (p. 83). Rogers (1986) illustrated that, “The
interactivity of video games can be described as the ability of a game to talk back to the
user, almost like an individual engaging in a conversation.” (p. 4). For example, when a
video game designer converses with the game, he or she also converses with the player.
Moreover, when a player interacts with the video game, he also connects with the game’s
designers. Grodal (2000) stated that,

the interaction with such possible audio-visual worlds provides
the player with an experience of being immersed in a “virtual reality,”
because peoples’ experience of reality is linked not only to the possible
salience of what we see and hear, but is also centrally linked to whether
we are able to interact with such perceptions. (Grodal, 2000, p. 199).
Vorderer (1999) identified that, “a key to explaining why video games have become very popular forms of entertainment is to explore the player’s gratification which is linked to the interactive form.” (p. 36).

Rafaeli (1988) defined interactivity as:

Interactivity is a variable characteristic of communication settings. Formally stated, interactivity is an expression of the extent that in a given series of communication exchanges, and a third (or later) transmission (or message) is related to the degree to which previous exchanges referred to even earlier transmissions. (Rafaeli, 1988, p. 111).

Rafaeli’s notion is based on traditional concepts of the communications channel. Steuer (1995) expand the definition of interactivity by affirmed that, “Interactivity is the extent to which users can participate in modifying the form and content of a mediated environment in real time.” (p. 67). Steuer’s belief is based upon the concept of mediated environment. However, interactivity is the ability of a video game to provide feedback to players. While playing video games, the player can use the controller buttons and make choices. Interactive features of the game will immediately respond to the player’s input. Shin (1998) advocated that, “Important aspects of interactivity include the rapidity with which games respond to the consumers input.” (p. 658). This kind of feature is like high speed broadband, which enables Internet users to download information in a moment’s time.

Interactivity is important in helping players actively engage in the communication process and thus building solid and ongoing relationships between game developers and players (Richard, 2001). Consumers seek to purchase games with speedy reactivity and interactivity. Once a player inputs his/her reactive information, he or she always expects the game to respond instantaneously in results and reaction to user
commands. The interactivity of a video game directly corresponds to consumer satisfaction and the emotional buying of a game. Richard (2001) stated that good video games developer will guess what players are going to attempt to do and make the game respond well to the player's actions.

The meaning of interactivity is even more multi layered, with words such as creativity, challenging, control, sensory gratification and socialization being used to come up with a working definition. Not surprisingly, it has been referred to as "a widely used term with intuitive appeal, but it is an under defined concept" (Rafaeli, 1988, p. 110). As pointed out by Steuer (1992), "interactivity is often used to describe a technological feature of a specific media as much as it is used to characterize a way of using the media." (p. 80).

Video games are widely considered a phenomenon because the entertainment industry particularly focuses on capturing and holding the attention of its audience. Also, video games "are the only form of fictional interactive media which has captured a mainstream market" (Plowman, 1996, p. 44). Interactivity is a key point for video games developers. Louis Castle (2002), a cofounder and General Manager of Electronic Arts' Westwood Studios stated, "video game players who like to find new interactivity things want to discover searching things, and they want to share it with other people." In most video games the only reward is the sense of communicating their discovery to other people.

People like adventures and exploring. People want to nurture their life experiences, grow up in their real life and create a totally different world when they play video games (Richard, 2001). To the video game industry, improving the characteristic
of interactivity is becoming an important guideline for development of any new video
game. Interactivity is important in helping players actively engage in the communication
process, thus building solid and ongoing relationships between games and consumers.

The Interactivity Theory Approach

Many theorists have used the terms 'interactive media' and 'media'
synonymously, or they have defined what is new in media with reference to interactivity.
"New technologies are characterized by interactivity, and by the ability to interact with
others through communication channels created by the technological devices involved."
(Brody, 1990. p. 103). Thus, the word interactivity is used to describe the specific
capability of the media or of media users that are related to what in sociology has been
called interaction (Vorderer, 1999). Vorderer and Zillmann (2000) also suggested that,

Human beings, or any entity which seeks to function within an
environment and influence reactions with other entities in that
environment, can be said to interact. In the broadest sense the theory of
interactivity needs to be considered the basis of scientific investigation
(Vorderer & Zillmann, 2000, p. 28).

Studies of video games have generally focused on how communication
processes affect the way humans interact with games and how increased interactivity
motivates the consumer's purchasing behavior. On the other hand, as Rafaeli (1988)
pointed out, the unifying characteristics of interactive media exemplars includes expert
systems, hypermedia, computer/video games, and interactive TV. It is a relatively high
level of responsiveness on the part of an information source, as solicited by queries or
other input from the consumer. Full interactivity, according to Rafaeli (1988), only
occurs when communication roles are convertible among all real or proxy participants.
However, interactivity found in a medium help to evoke telepresence, that identifying this attributes in different media will allow researchers to predict the type of telepresence players will experience (Steuer, 1992).

Today, the growth and diversification of entertainment programs have been particularly beneficial to those audience members who have been underprivileged in the past (i.e., older people, adolescents, and children (Schulz, 1997). Vorderer (1998) indicated that, “Whether this process has already reached its peak, or whether interactive entertainment offerings in the future will be structurally different from entertainment offering of the past, remains to be discussed.” (p. 23). In other words, the individual keeps in mind that interactivity will affect people who can perceive others or who perceives himself. As such, interaction is a specific phenomenon of social action; a phenomenon that is guided by the presence of others; even this presence promotes the player’s imagination (Esser, 1993; Jaeckel, 1995; Krappmann, 1989; Weber, 1984).

An interactive video game has the potential ability to respond to the consumer’s reaction about general situational factors. It will help consumers see the nature of these interactive games. Heeter (1989) explained that, “Regardless of the interactive processing functions of interactive media, any possible cognitive influence is directly dependent on whether a consumer actually uses the interactive capabilities afforded by the media application.” (p. 233).

From the computer science point of view, the term “interaction” has been extended and applied to processes that take place between humans and machines, especially computers (Vorderer, 1992). On the other hand, from a communications’ point of view, discussions of terminology have described what in the late 1980s and early
1990s appeared to be new media and the ways they may be used. Some researchers stated that we generally define new media as those communication technologies, typically involving computer capabilities (microprocessor or mainframe), that facilitate interactivity among users or between users and information (Rice, Bair, Chen, Dimmick, Jotier, Jacob, McDaniel, & Williams, 1984). According to this concept, the medium that seems to be the most interactive will provide a degree of communication that most closely creates a natural communication between individuals (Mast, 1986; Rogers, 1986); however, the individual is no longer only a recipient, but rather a receiver sometimes and a sender at other times.

Similarly, Heeter (1989) considered media to be most interactive when they are responsive to the needs and characteristics of the user. In his view, “Humanlike responsiveness is the highest level of sophistication.” (p. 223). Others have attempted to establish criteria more explicitly. In this study, the researcher assumed that the interactivity of media is easy to understand to the extent that the player is capable of influencing his or her media use.

Vorderer (1999) provided an example to indicate the interactive concept. He declared that, “A highly interactive contribution is provided by video games, at least when the user is able to select the level of difficulty, the presentation, and the outcome of the game.” (p. 24). Interactivity stimulates interaction between consumers and game developers and between consumers and video games. Interactivity yields more intensive and active information processing (Pavlik, 1996). Eventually, this active information processing through interactivity will result in more favorable and desirable consumer attitudes and actions.
Definitions of Independent Variables

There are ten independent variables in this study. Major independent variables are interactivity, vividness, age, and gender.

Gender was divided into two groups: male and female.

Age was divided into four groups: 18 - 24 years, 25 - 34 years, and 35 - 56 years.

Interactivity

The study utilized Steuer’s (1992) definition of interactivity as “technology’s capacity to enable the user to influence the form and content of an environment.” (p. 80). Interactivity can expand the ability of a medium to respond to user input. In this research, “Interactivity” was used to examine the relationship between video games’ characteristics and players. For example, players like to play video games because they want creativity, challenge, control, sensory gratification, and socialization.

Vividness

Vividness is defined as the extent to which the senses are engaged when interacting with a medium (Steuer, 1995). In this research, the attribute of “Vividness” in video games was examined and whether or not such features influence consumers’ buying behavior or intentions to play a particular game. For example, consumers will buy the video games because of a good audio-visual effect and storytelling.

Sub-Independent Variables:

1. Interactivity: Five independent variables under interactivity. They are creativity, challenge, control, sensory gratification, and socialization.
Creativity

Creativity is the extent to which a video game will utilize various intellectual stimulants to engage the user (Steuer 1994). For example, the uses of multiple function playing keys that direct movement and sound directly relate to creativity. Richard (2001) indicated that, “the factors of creativity also can relate to fantasies since many people experience these works to ‘get away’ from their own mundane lives and escape to an altogether different world.” (p. 7). When a player is going to play a video game, he or she likes to engage in exciting, interesting activities, travel to unusual locales, and explore an entirely different world than in their life experience. Thus, a video game can create a fantasy life experience without the boring details.

Richard (2001) also confirmed that, “Most importantly, the level of creativity immersion is heightened from that of other medium forms because of the interactive nature of gaming.” (p. 7). The quality of creativity in video games provides a good way for players to explore sides of their personality that they keep submerged in their daily lives (Houser & Deloach, 1998; Kerlow, 1996). A good video game can offer players with an otherwise unavailable chance to look at a different world through someone else’s eyes.

Generally speaking, good games are about letting the players do what they want to do. For instance, players want to create their own success stories, their own methods for defeating the game, something that is uniquely them. In this study, the researcher measured the attribute of creativity that may or may not influence the player’s intentions in order to motivate the consumer to buy video games.
**Challenges**

Challenges can be defined as the ability of the medium, in these instance video games, to engage the logical thought processing abilities of the mind (Crawford, 1997; Richard, 2001). Video games present players with challenges as a means of increasing playing enjoyment. Whether or not the game is challenging directly relates to the degree to which the consumer perceives the game as difficult (Rogers, 1986). The level of challenge presented provides one of the primary motivating factors for single or multiple players in purchasing or playing a particular game.

A versatile game will provide different levels of gaming difficulty, allowing the player to choose the level most suitable for him. The famous game developer Richard (2001) declared that, “games can entertain players over time, differently each time they play, while engaging their minds in an entirely different way than a book, movie, or other form of medium.” (p. 25). However, video games also stimulate players to think differently, to try out many different solutions to a given problem, and to understand how to manipulate the game through the use of skill. In this study, the researcher measured the attributes of game difficulties or challenges and whether or not the difficulty of such challenges stimulates the player’s play intention to purchase video games.

**Control**

Control can define the level of power the player has when engaging in interactive play. The tolerance, to which a player can control input, and the amount of output, directly corresponds to the control variable (Crawford, 1997). Control is
the ability to modify the causal relation between a person’s intentions or perceptions and the corresponding events in the world (Schloerb, 1995; Shih, 1998). Especially in multi-player gaming, players play games to win respect and totally control the whole game.

Control is another common motivation to play video games. Control can be mental or physical or some combination of both; the game is an entertaining way to stay in shape (Horton & Wohl, 1956). Some game players like to control their cognitive skills, while others prefer the use of intuition. Some game players like to control their athletic skills. Players need to control their skills at an appropriate level in the video game world. When evaluating interactivity, it is also critical to evaluate the extent to which the medium, in this scenario a video game, allows the user control (Wolfe & Mark, 2002).

The greater a user’s ability to control the flow of activity for a given medium, the more interactive the medium will be perceived to be (Shih, 1998). Rather than purchasing a medium such as a video game, users seek out increased control and mobility, which is generally afforded by increased interactivity. By increasing the interactivity or control a user has over the medium, a game presents a new experience (Shih, 1998).

The aim of a video game is not that the player is a passive spectator, but that the player is an active participant (Crawford, 1997). When a player points at objects on the screen, the game makes the player feel in control. The game is intended to proceed as the player clicks on the objects. This gives the player the feeling that he/she is controlling all actions in the game with his or her own actions. This study

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examined one of the sub-variables to ascertain whether it can stimulate consumer-purchasing behavior.

*Sensory Gratification*

Sensory gratification can define the amount of perceived pleasure the user receives from interacting with the game. In other words, the level of entertainment and imagination that the user perceives and engages in are defined as sensory gratification (Crawford, 1997). Sensory gratification is another important factor in stimulating a player to play video games. Clearly, any video game that does not deliver the experiences implied by the motivating factor will not be enjoyed (Crawford, 1997; Richard, 2001). For instance, if a player is motivated to play a game for physical exercise, that player will probably prefer those games that provide better physical exercise than do other games.

Kubey and Larson (1990) illustrated that, "a game couldn't be fun if its primary elements do not satisfy the motivations of the player." (p. 36). Consequently, people want to feel something when they interact with game, and are seeking some form of emotional payoff when they play a video game. A good game designer would be wise to concentrate on expanding the emotional experience beyond excitement and accomplishment, into more unexplored and uncharted emotional territory (Biocca & Levy, 1995). The more people focus, the more involved they become. An identical phenomenon occurs with video games where we experience the same type of emotions by feeling for and feeling with the characters (Laurel, 1991). However, the experience is heightened by the fact that in the context of the video game, often we
are one of those characters.

Socialization

Socialization can define the enjoyment that multiple users receive from interacting with a game. Some reasons users play video games is to have a social experience with their friends or family (Crawford, 1997; Kerlinger, 1973; Richard, 2001). The interactivity of video games not only connects with one person but also connects with their friends. Usually, play activities are associated with children, while games are thought to be more adult activities (Howe & Sharkey, 1998). The reason is that games have a strong social component, and people need to be socialized in order to perform those kinds of activities.

Clearly, games stimulate a communal activity originating many millennia ago out of a desire to have a challenging activity in which a group of friends and family could engage. Video game developers need to remember that the roots of gaming, and an important part of its appeal, are in its social nature (Kahrmadji, 1999). The 2001 consumer survey found that 43 percent of the most frequent game players play with other family members (IDSA, 2001). Richard (2001) stated that, “people like to play video games because they like being with their friends and want to engage in a shared activity that is more social than going to a movie or watching TV.” (p. 3). In other words, multi-player video games have the greatest appeal because they transform games into truly social experiences, which is one of the largest motivating factors for playing games.
2. Vividness: Three independent variables under vividness. They are audio effects, visual effects, and storytelling.

Audio Effects

Audio effects influence how receptors in the brain stimulate the sound processing centers of the brain through audio (Fontaine, 1992; Jaeckel, 1995). Audio effects are an important component, which cause players to become caught up in the gaming world. A player will seldom play a video game without sound. Sound effects also activate a player's motivation to be involved in the world of gaming (Adorno, 1950, 1962 & 1963). Video games not only present information to visual and audio sensory systems, but they also engage the senses of touch and in the future even smell. For example, some video games stimulate the basic physical feelings. High-fidelity audio makes video segments more enjoyable and realistic (Griffith & Hunt, 1998; Grodal, 2000). Clearly, Video games can attract players' attention through flashy sounds and images.

Visual Effects

Visual effects can be defined as the way receptors in the brain relate to the manner in which a specific medium stimulates the visual processing centers primarily through color (Crawford, 1997). Grodal (2000) pointed out that people always pay more attention to moving images than to still images. There are several critical differences between playing video games and other media activities. Video games have other visual effect qualities. For instance, the resolution of the images and size
of the screen make video games like film, thus engrossing the player in the game environment (Heijden, 1992; Held & Durlach, 1993). In a video game, users are required to pay attention to the game environment in order to note its objects and landmarks for future reference. Therefore, players have to coordinate eye-hand attention with motor behavior (Anderson & Morrow, 1995; Richard, 2001).

People always pay more attention to moving images than to still images. Players know that unexpected motion, formal features, and novelty draw attention. The game proceeds only through the player’s motivation to continue play (Crawford, 1997). Van der Heijden (1992) explained that, “The theories of visual attention should take into account both a bottom-up, world-driven approach and a top-down, subject-driven approach by acknowledging exogenous as well as endogenous factors impacting on visual attention.” (p. 67). Based on afore stated, we realize that visual effects are important factors in video games.

Storytelling

Storytelling is the ability of a game to produce a narrative tale in which the user can participate (Crawford, 1997; Richard, 2001). Video games can provide a narrative to simulate a fictitious environment. In the classical narratological framework, narrative has two distinct kinds of time, the story time, indicating the time of the events told, such as in their chronological order, and the discourse time, demonstrating the time of the telling of events (Fontaine, 1992; Herold, 2000; Juul, 2002). For example, to read a book or watch a TV is to a large extent about reconstructing a story on the basis of the discourse presented (Bordwell, 1985). Story
lines and themes guide the development of games from concept art to a final product that contains extensive plot and character development.

The story can make video games stronger such as the games ‘Tomb Raider’, ‘Myst’, ‘Final Fantasy’, and the ‘Ultima’ series which have made the story such an integral part of the game that one can hardly imagine them otherwise (Juul, 2002; Natalie, 2002). A good interactive storytelling video game, the development is merged with the game’s story and the player’s mental imagery. Therefore, the player can have a real impact on the story while the story retains its dramatic qualities.

**Definitions of Dependent Variable**

The dependent variable is the consumers/customers’ buying behavior in this study. Buying behavior directly relates to the interactivity and vividness of the video game selected. Walters (1978) stated that, “Consumer behavior is a subdivision of human behavior and the understanding of the one depends on clarification of the other. Human behavior refers to the total process whereby the individual interacts with the environment.” (p. 8). For instance, consumers constantly wish companies would produce the necessary goods to satisfy their wishes and desires. When the consumer discovers such a product he will buy it to satisfy a personal or family need or want.

Buying behavior and the intention to play also correspond to thought processes regarding perceived reality (Guilford, 1959; McClelland, 1961; Robert & Venkatesan, 1971). The amount and types of games that consumers purchase will depend largely upon the variables studied. Consumers like to feel that they are interacting with a medium in a realistic and positive manner (Houser & DeLoach, 1998; Rom, 1974). In
this research, a questionnaire was developed to assess consumers’ buying patterns and motivations in purchasing a specific game or games. This study can be related to the desire for positive outcomes, entertainment, and physical or emotional pleasure.

**The Relationship between Vividness and Interactivity**

From a historical point of view, vividness and interactivity actually correspond to each other in polar ways. Shih (1998) stated that, “The more vivid a game is, the less likely it is to generate a speedy response. This is due largely to the fact that increased vividness requires increased data output.” (p. 658). For instance, when an Internet user downloads a large file from the Internet, it is likely to slow down the computer’s overall processing speed.

A video game that is very vivid takes more time to process each screen and the longer it takes to transmit an image, the more likely the game is to be less interactive (Held & Durlach, 1993). Today, the player can take advantage of high technology to enjoy both vividness and interactivity in video gaming. Thus, it is reasonable to assume that although vividness and interactivity are equally important, there are probably consumers who are more attracted to one variable versus another.

Video games can provide simulations of a series of aspects of reality, like racing, flying, playing soccer, basketball and football, or simulations of complex social developments, from urban development to the evolution of civilization (Sutherland & Sylvester, 2000). Consumers seeking to actively engage the logical processing centers of the mind are more likely to purchase games with increased activity. Likewise, those individuals seeking greater depth of sensory stimulation will purchase more vivid video
games (Mast, 1986; Rafaeli, 1988; Simon, 1971). Each variable however, is equally important when considering the emotions of consumer buying behaviors.

The importance of interactivity and the vividness of most video games is that they transform these traditional forms of entertainment into an interactive form that enables the player to actively participate in shaping the games (Squire, 1999). For example, films or videos enable their audiences to interact only passively, by following the story and predicting possible outcomes, whereas video games provide the player with an interactive means to change the course of the narrative. The player needs to pay more attention in order to control perceptions, including the point of view. The player needs to make mental maps of the game space as if it were a real three-dimensional world (Richard, 2001). For instance, when they play video games, players need to notice landmarks, significant causal relations, etc.

The emotional significance and labeling of a certain event-induced inspiration are linked to the player’s own ability to cope with a given problem. The game processes are driven by the player’s motivation for playing, and success and failure are partly attributed to the player, not to the game world. The length of the home video game relates to the player’s motivation for playing (Reeves & Nass, 1996; Shapiro & McDonald, 1992; Turkle, 1984). Scholars Kubey and Larson (1990) pointed out that video games are much more focused on the relationship between input and output, and the relationships between perception, attention, emotion, and motor control, than films.

A video game provides an interactive interface, which enables the player to control actions and often also perceptions by an ability to control the point of view, that is, to control the point of how the game world is represented (Aarseth, 2003; Braun &
Giroux, 1989; Burton, Moore & Holmes, 1995). For example, our experience of reality is linked not only to the possible salience of what we see and hear, but is also centrally linked to whether we are able to interact with such perceptions.

When a player decides to play a video game, it is done from the inside as a temporal fusion with a given world, with game-defined perception capabilities and action capabilities. It is well documented that the interactions between persons and computers and with computers as platforms for video games are experienced as an involvement on a first-person level (Brewer, 1996; Calvert & Tan, 1994; Bordwell, 1985).

The interactivity of video games provides the player an experience of being immersed in a virtual reality environment with such possible audio-visual worlds. Immersion is determined by the environment’s ability to isolate the people from other stimulate available in their surroundings (Squire, 1999). Immersion is characterized by the sense of being enveloped by, and interacting with an environment. Video game environments create immersion to the extent that player can insulate individuals from their physical environment (Witmer & Singer, 1998). In other words, it created the sensation that players are inside the environment instead of an outside observer. Game developer utilized this kind of sense to evoke player takes part in a virtual reality simulation of a possible real world (Bednar, 2001). Witmer and Singer (1998) suggested that while involvement can occur in almost any type of environment, immersion is much more likely to occur in some environments than other. Under these circumstances, the game developers have to focus on consider individual differences in preferences for what occurs in different mediated worlds and how this is represented.
Video games are structured according to a principle of uses and gratifications similar to that of real life. The video game enables the player to control his/her perceptual, emotional, and enactional activation (Brody, 1990; Drotner, 2001; Zillmann, 1999). The feelings of the player can be used to customize one’s control over the relationship between the challenges in the game and personal control. Seen from another perspective, video games are ways in which players learn to master certain facets of a computer. Basically, video games are played many times and many events can be altered by the player’s interactions.

As pointed out in several studies (Greenfield, Branno & Lohr, 1994; Greenfield, Camaioni, et al. 1994), video games are important playful tools for learning to interact with the computer medium and its graphic interface, just as the games enhance spatial skills and eye-hand coordination. Consequently, interactive media like video games create a further complexity of media consumption by enabling consumers to switch between the passive control of their emotional and cognitive states (by selecting one-way media) and an active control of these states (by choosing interactive media). The idea is that interaction with the video games environment could generate a better experience than the correspondent real-world experience.

The Impact of Interactivity and Vividness in video games

Interactivity and vividness of video games will be increasingly important considerations affecting consumers’ buying behaviors in the future as well (Hawkins, 1995). In January of 2003, KRC research, working with ISDA, conducted a poll that revealed that 56% of Americans age 45 and less intended to purchase at least one video
game during the year, and of people aged 45+ between 26 - 37% of the population intended on purchasing a game for their home/family (ISDA, 2003). Video games succeed by engaging the visual cortexes of the brain in new and challenging ways, using modern technological advances (Elisa & Jung, 2001). Increased control, reflective of interactivity, is a quality that attracts consumers to action and strategy games. Most action and strategy games engage the user by responding to their input and generating appropriately responsive output.

Gonzalo Frasca, a popular video game reviewer, comments that most fantasy-based games, such as Tolkien, used for entertainment purposes alone are in fact an attempt to bring human characteristics and life situations to videogames (Frasca, 2001). In this regard he stated, “I have always preferred stories about human affairs and social issues to magic spells and mean dragons.” (p. 10). His sentiment mirrors that of consumers looking for action and strategy games.

People do not seek out video games merely for entertainment; they can visit the local Cineplex for that. Video games should be developed as interactive strategic mechanisms to stimulate thought and encourage intrigue (Greenfield, Brannon & Lohr, 1994; Grodal, 2000; King, 2002). The interaction with such possible audio-visual worlds provides the player with an experience of being immersed in a “virtual reality,” because our experience of reality is linked not only to the possible salience of what we see and hear, but is also centrally linked to whether we are able to interact with such perceptions.

Espen Aarseth, Associate Professor in Humanistic Informatics at the University of Bergen, may be considered a pioneer in gaming research and theory. He described video games as an aesthetic and social combination of theatres, TV, movies, popular
shows and novels (Aarseth, 2001). In other words, a video game begins as a creative concept in the minds of game developers and is brought to life by teams of artists. The greatest innovation, according to Aarseth, is games such as MUD1, Ultima Online and Quake Arena, that combine the aesthetic and the social, causing greater interactivity. New technology, as pointed out by Aarseth (2001), has the ability to instigate new ways of thought and communication.

Games have the ability, unlike static forms of entertainment, to simulate reality and offer complexity and logical rules (Aarseth, 2003). Aarseth pointed out that video games are not read or watched, but rather have to be played, and this creative involvement is what drives people to continue gaming. Many skills often have to be utilized in games that are interactive, in multi-player video games; social skills are invariably needed or as Aarseth emphasized, developed in the process. Historically many developers have attempted to put together games that read like a narrative, defeating the purpose of interactivity.

Video games are totally different than traditional games because video games are learning processes that develop a series of thinking skills. Video games improve the ability to operate computers (Greenfield, Camaioni, Ercolani, Weiss, Lauber & Perucchini, 1994). Additionally, playing a video game is an individual experience, which can be better than going to a movie or watching TV. Funk and Buchman (1996) indicated that video games also allow greater variation in a player’s ability than other entertainment media, while providing an objective evaluation of performance not provided by other entertainment media.
Gender vs. Video Game

Studies have shown that video games provide an easy lead-in to computer literacy, and so those people who are not playing games at young ages are at a disadvantage (Greenfield, Camaioni, Ercolani, Weiss, Lauber & Perucchini, 1994). Video games can provide a virtual environment of action, fantasy and sports games alike. Such portrayals range from highly realistic to cartoon like or funny. In this study, differences in male and female buying patterns in the purchasing of video games were examined. According to an IDSA survey report, “Forty-six percent of video game players are female and fifty-four percent of video game players are male.” (IDSA, 2002, p. 2). Vanous, Llewelyn, and Croft noted that, “Putting a female in a video game once meant adding red lips and slapping on a bow. But recently, female leads have become the new trend to meet a games market no longer dominated by male gamers.” (p. 1).

Traditionally, boys are more likely than girls to choose to play with video game, and people of both sexes consider video games to be males' toys.

This research tried to ascertain why males and females purchase video games based on gender stereotypes. The gender bias issue is an important and continuing debate of considerable proportions in the creation and marketing of video games. Games about sports, driving or shooting are typical themes in male-oriented video games (Schutte, Malouff, Gorden & Rodesta, 1988). In these games, the male always plays the role of hero in order to rescue the female or defeat an evil enemy, while female characters are usually portrayed as victims or objects of sexual desire (Klasen, 1998). Klasen (1998) described that,

The typical female video game character rarely initiates action and is often scantily dressed. Some have argued that the predominantly
male themes and passive, sexual female characters will help perpetuate male dominance in everyday life as well as in technology-related industries. There has been a move in recent years to create more games that will appeal to girls as well as to create more gender-neutral games like the popular “Mario” and “Sonic” titles (Klasen, 1998, p. 2).

Traditionally, males make up the majority of video game consumers and some evidence shows that video game designers design sports or “first person shooter” formats based on male-oriented stereotypes (Tracy, 1998). For example, sports games allow a player to choose a team or particular athlete and practice skill to improve a sport such as basketball, football or car racing. The player must use the skills and knowledge of the sport in order to win the game. Shooting games provide several different levels and players can choose single or multiple characters or barriers to overcome until the player eradicates the evil enemy in the end.

Women usually prefer to play video games that involve mysteries and storytelling (Barnett, 1990; Cesarone, 1994; Herz, 1997). Typically, males like to play video games which have repetitive sequences. They prefer characters who have varying physical skills as opposed to well-developed personalities, and games with fiercely competitive objectives (Broby, 1990). Males like to play games depicting fighting or martial arts; such games usually end with a character or group of characters either incapacitated or dead. On the other hand, females favor games that tend to focus on fashion or physical appearance (Kafai, 1996). Fielder (1999) indicated that, “Women would prefer a character that represents them. Characters that are too perfect are one of the factors that cause females reluctance to play certain games.” (p. 21). By contrast, the research found that females prefer to receive strong visual images emphasizing unachievable beauty.
Based on the literature reviewed, young women favor games that tend to star engaging characters, and they like to play games that have a complicated plot and have a final decision, as opposed to games where the only objective is to destroy others (James & Patricia, 1997). Therefore, females prefer games that employ problem-solving and allied play such as 'Myst,' an adventure game by Broderbund, or games that provide puzzles or spatial relationships such as 'Tetris.' According to other literature, more women game players preferred non-violent games and games that provide positive feedback for players (James, 2002). For instance, when players submitted an incorrect answer, he or she would have to return to the beginning of the game or would lose their accumulated powers, but received encouragement to continue.

Electronic Arts and Mattel, Inc. have produced a report that females like to play several types of video games including racing games, games that present a challenge or mystery, and games that depict an adventure or winning cooperatively. They look for games that offer decision-making controls and that require strategy. The report also finds that females are willing to play games that appeal to both males and females. (http://www.castilleja.org). Filder (1999) stated that female gamers are “more prone to games that involve critical thinking and mental stimulation.” (http://videogames.gamespot.com/features/universal/hurryup/pg5.html). Video game marketing efforts are primarily conducted through print or TV and identify only males as gamers, which simply reinforces the stereotype that gaming is a male’s hobby and ultimately further alienates female players (Steve, 1997). For example, if game advertising were to show females and males playing the same game and competing side
by side, females would not only have a feeling of inclusion, such advertising would also provide reassurance to guys that this game is not too “girlie” (Walsh, 1999).

When examining gaming statistics, approximately 75-80 percent of the sales revenue generated by the $10 billion game industry is derived from male game industry. The extensive success of video games with males resulted in almost total market penetration (IDSA, 2001). About 80 percent of American boys play video games on a regular basis. This saturation has occurred at the same time that Sony Playstation, Microsoft Xbox, and Nintendo have entered a phase of heightened competition (Parker, 2001). These data show that females and males purchase games in almost equal numbers, and further shows that the female gaming market is growing and maturing. This requires some means of expanding the market, of reaching new consumer groups, particularly if all the three major players hope to enjoy continued economic growth rather than stagnation, and this has turned the attention to the long dismissed girl market (Kafai, 1996; Walsh, 1999).

The games industry is currently growing faster than the target market. To keep the industry strong and growing, game developers must start looking at expanding their market, which means designing titles that are accessible to the female audience (Parker, 2001). Clearly, if the video game industry is going to reach any kind of critical mass, it needs to produce more games with content and play patterns that appeal to females. This study assumed that video game companies must be committed to reaching out to the female consumer market, just as they have successfully done for the male market, they would like to have more consumer sales in the video game marketing.
The Genre of Video Game

Several studies attempted to categorize video game genres, but failed to relate to the players’ experiences. For example, Hilf (1996) distinguished “interactive narrative” from linear narratives, categorizing video games according to the degree of interactivity and story line. He separated games into episodic narratives, branched narratives and object-oriented narratives.

Griffiths (1999) sorted games into categories such as sports simulations, racing, adventures, puzzles, weird games, and so on. Buchman and Funk (1996) categorized games into general entertainment, educational, fantasy, violent, etc. This study made use of the Gamasutra, Gamebiz.net, and Game Studies.com definitions of video game genres to examine consumer purchasing habits, since these three organizations’ game categories are based on the players’ personal experiences. Below present a range of definitions for ease of communication and discussion across the field.

**Sports** - The theme in this kind of the game is always depicted in a very realistic fashion. It takes ingenuity under time pressure to accomplish the game’s goals. For example, the play agents are, as a rule, human beings, forming teams that are not directed from an ego perspective such as FIFA 99 or NHL Hockey 99.

**Action/Adventure** - This kind of the game combines elements of combat, platform game formats, problem solving and exploration. Good examples are Tomb Raider or Soul Reaver. Action games require fast reflexes and coordination to be successful.

**Strategy/RPG** - In strategy games, the player will normally command groups of units
and gather resources to fund further expansion, such as Command or Conquer, Sudden Strike, and Stronghold. In Role Playing Games (RPG), the player controls a single character or group of characters. There may be fighting elements, but there are often many ways around each situation, as exemplified in Fallout, or Baldur's Gate.

**Racing/Driving** - These kinds of the games can vary from brief simulations of rallies using real map data, to arcade-style racers, where realism is sacrificed to provide a greater sense of speed and feats of driving impossible in real life such as Grand Turismo 3, Wip3out, or Grand Prix 3.

**Fighting/Shooting** - These kinds of video games are most popular when played on consoles. Play is based on two or more opponents attempting to knock the other out such as Tekken 3 or WWF. The shooting game environment is seen from the point of view of the player's character, and the play usually involves shooting adversaries. The content is often aimed at older audiences. Examples of such games are Red Faction or 007-Agent Under Fire.

**Simulation** - This kind of game attempts to convey a completely concrete experience, making realism the most important goal. These games must look like the real thing such as IL2 Sturmovik, Train Simulator, Fight Unlimited or SimCity.

Video games capture the absorbed attention of millions of children and adults. An important cause for the tremendous success of video games is the expanding variety of games available to meet the interests of a broad audience (Zillmann, 2000). Video
gaming is a young entertainment medium, and is clearly still in an evolutionary phase in terms of technology and content. Video game genres will go through cycles of popularity. When players are choosing video games, they choose things that they think will produce in themselves appealing levels of stimulation or distraction or involvement (Buchman & Funk, 1996). In other words, players can choose things that they think will suit themselves at the moment. In this study, the researcher examined what genre of video games can have an influence on consumers’ purchasing, and whether different age groups would or would not have a significant impact on the purchases of the various genres of video games and how male and female purchasing patterns of video games may differ.

**Video Games Research**

*The Negative Impacts of Video Games*

Video games, the new form of media entertainment, have attracted research attention from social scientists. Many different perspectives exist in video games issues. Most research studies of video games have focused on the possible negative effects of video games, especially violent games. Some researchers (e.g., Anderson & Ford, 1986; Cooper & Mackie, 1986; Graybill, Kirsch, & Esselman, 1985; Kappers & Thompson, 1985) focused on the short-term effects of video game playing on aggressive behavior. One of the main complaints constantly raised against video and computers games is that most of the games feature aggressive content. This has led some people to believe that children become more aggressive after playing such games (e.g., Koop, 1982; Zimbardo, 1982).
Scott (1995) conducted a study on university students and found no differences in aggressive tendencies after the subjects had played video games. In his study the questionnaire scores on the Buss-Durkee Hostility Inventory (Buss & Durkee, 1957) and the Eysenck Personality Questionnaire (Eysenck, 1975), testing across varying levels of video game violence, revealed no differences in aggressive tendencies after playing video games. However, this study probably does relate to either the video gaming experiences of the game players or to customers' buying behavior.

The primarily negative impacts of electronic games such as violence habituation and aggression (e.g., Anderson & Morrow, 1995; Anderson & Dill, 2000; Griffith, 1999; Scott, 1994), reinforcement of gender roles (Cassel & Jenkins, 1999; Dietz, 1998; Jantzen & Jensen, 1993), and social isolation and dependence (Griffiths & Humt, 1998; Roe & Muijs, 1998) are widely suspected, but not proven. However, the favorable effects of video games, for instance learning (Rasmussen & Lucassen, 1996) and recreation (Pillay, Brownlee & Wilss, 1999) have also been noted. Some researchers still do not understand that video games provide simulations of serial reality, like racing, flying, or playing soccer, or simulations of complex social developments, from urban development to the evolution of civilization (Grodal, 2000). A number of researchers do not illustrate or take into account the characteristics of video games and fail to see such games from the customer's perspective.

**The Positive Impacts of Video Games**

Greenfield (1984) pointed out that children prefer video games over television because there is greater control. He declared, "Some adults believe that video games
offer benefits over the passive medium of television.” (p. 35). Some educational professionals, while admitting that video games permit children to engage in a somewhat creative dialogue, maintain that this engagement is highly constrained compared to other activities, such as creative writing (Provenzo, 1992). A key to explaining why video games have become very popular forms of entertainment is to explore those gratifications that are linked to the interactive form. For example, Heeter (1989) considered the media to be most interactive when responding to the needs and characteristics of the user. In his view, “humanlike responsiveness is the highest level of sophistication.” (p. 223).

Others have attempted to establish criteria more explicitly. Steuer (1995), for example, used “vividness” and “interactivity” as two orthogonal dimensions to place different media into a two-dimensional space. In this context, for instance, 3-D films are considered to be highly vivid although low on interactivity, whereas Multi User Dungeons (MUD) is highly interactive, although low on vividness. On the other hand, Steuer (1992) stated that, “Quite a bit of research on interactivity has been done in the field of human-video game interaction; little interactivity research has been done in the communication field.” (p. 90).

The goal of this study was to examine the relationship between the characteristics of vividness, interactivity, and the game player’s buying behavior, and to determine whether adjusting the characteristics of interactivity and vividness will increase or decrease consumers’ buying behavior. This researcher would like to ascertain whether the level of vividness and interactivity in video games motivates customers and profoundly affects consumers’ buying behavior.
Other Theories

Consumer Buying Behavior Theory

Consumer behavior means specific types of human behavior related to the marketplace, and to the individual. To buy or not to buy is a subjective decision (Jacoby 1975, 1976; Veblen, 1931). Jacoby further declared that, “Consumer behavior has been defined as the acquisition, consumption, disposition of products, services, time, and ideas by decision making units.” (p. 980). Based on this concept, buying behavior can be defined as the decision processes and acts of a consumer involved in buying and using products. The Association for Consumer Research (ACR) was founded in 1969, and the first consumer behavior textbooks and courses appeared in the late 1960s (e.g., Engel, et al. 1968; Kassarjian & Robertson, 1968).

Walters (1978) defined consumer as: “the individual(s) who exercise the right of acquisition and use over goods and services (products) offered for sale by marketing institutions.” (p. 6). Clearly, everyone can be a consumer and not necessarily purchase the same products. Consumers constantly wish companies would produce the necessary goods to satisfy their wishes and desires. When the consumer discovers such a product he will buy it to satisfy a personal or family need or want. Walters (1978) indicated that, “This concept includes consumption processes involving three interrelated activities: 1. Determining personal or group wants. 2. Seeking out and purchasing products. 3. Employing products to derive benefits.” (p. 6). Customers determine personal wants and then buy the products they need, and proceed to use those products or services.

In another aspect, what the consumer wants and what the consumer needs are two basic ways social psychologists like to examine consumer behavior. Buying
behavior relates to the decision process and acts of people involved in buying and using products. Based on this definition of the consumer behavior, if video game developers want to capture large audiences, they have to meet consumer demands. Consumers choose video games based on their prior experiences.

From the consumer's point of view, they are satisfied with some video games because those games help them grow or achieve a goal whether or not the goal is strictly game-related. Walters (1978) stated that, “Consumer behavior is a subdivision of human behavior and the understanding of the one depends on clarification of the other. Human behavior refers to the total process whereby the individual interacts with the environment.” (p. 8).

Scholars Mack and Peter (1989) defined customer satisfaction as: “the ultimate objective of every business not to supply, not to sell, not to service, but to satisfy the needs driving customers to do business.” (p. 56). A satisfied customer is the true bottom line. For example, if video game developers think of their goal as creating video games that satisfy customers, they will draw consumers to their business.

Video games can satisfy customers and they can also create profits for the companies making the games. Game developers should make consumers partners so that they can grow with the video games business. Video game developers have to understand they cannot be in business without a repetitive market.

Walters (1978) discovered that consumer-buying behavior has two aspects: mental decisions and physical actions, and consumers make decisions based on these two decision-making processes. He further stated, “Although some social scientists limit the use of “behavior” to observable actions, it is apparent reasons and decisions behind the
visible actions are involved in consumer behavior and are important in understanding the behavior as the actions themselves.” (p. 8). For instance, video game developers have to pay more attention to consumers’ buying behavior in order to understand such behavior and develop new products. They also ask themselves what consumers want. How do we meet these needs and create a repetitive market?

This researcher utilized consumer buying behavior theory from Walters (1978), who put forth the idea of four consumer variables controlling all internal thinking processes of an individual consumer’s purchasing behavior. Those variables are consumer’s needs, motives, personality, and awareness. This consumer’s purchasing behavior can be arranged around a wheel as in Figure 6.

Figure 6

*Consumer’s Purchasing Behavior. (Source from Walters, 1978)*

The detail of consumer’s purchasing behavior describe as follows:
1. Consumer’s need is defined as any physical or emotional requirement (Walters, 1978). For example, people like to purchase video games because video games can satisfy desires such as creativity, the need to be challenged, control and so on. Dr. Maslow (1954), a clinical psychologist, formulated a widely accepted theory of human motivation based on the notion of a universal hierarchy of human needs. Maslow’s theory theorized five basic levels of human needs, which rank in order of importance from lower level (biogenic) to higher-level (psychogenic) needs. He also stated, “It suggests individuals seek to satisfy lower-level needs before higher-level needs emerge.” (p. 56).

2. The consumer’s motive is “an impulse or feeling causing him to do something or act in a certain way.” (Walters, 1978, p. 14). Motives provide us a reason to purchase our needs (Scott & Thomas, 1973). For example, people like to purchase video games because they have fun playing video games. Schiffman and Kanuk (1994) stated that, “Motivation can be described as the driving force within individuals impelling them to action.” (p. 94). The specific process of actions consumers pursue and their specific goals are selected on the basis of their thinking and learning processes (i.e., cognition). For this reason, marketers have to understand motivational theory and try to utilize this theory in an attempt to influence the consumer’s decision processes and stimulate consumer-purchasing behavior.

3. A consumer’s personality is defined as the human characteristics or traits built into a person that make each person different from every other person (Walters, 1978, p. 14). For example, different video games players will buy different kinds of games to match what they need. Schiffman and Kanuk (1994) also declared that,
The stable nature of personality suggests it is unreasonable for marketers to attempt to change consumer’s personalities to conform to certain products. They may learn which personality characteristics influence specific consumer responses, and attempt to appeal to relevant traits inherent in their target group of consumers (p. 127).

4. Consumer awareness is a broad term. It is defined as having knowledge of something through the senses. Awareness most directly relates to the individual and his/her external environment. Walters further stated, “Whereas personality is inward looking at the consumer’s being, awareness is outward looking to interpret what the consumer sees, hears, feels, etc.” (Walters, 1978, p. 15). For example, most video games provide audio and visual effects to stimulate players’ sensory gratification.

According to Walters (1978), consumer awareness is subdivided into three variables: perception, attitudes, and learning. All three of these internal variables concern the consumer’s external environment.

1. Perception is defined as the particular interpretation one gives to objects or ideas observed or otherwise brought to the consumer’s attention through the senses (Francesco, 1966). Schiffman and Kanuk (1994) explained that, “Perception is the process by which individuals select, organize, and interpret stimuli into a meaningful and coherent picture of the word.” (p. 162). Perception has strategy implications for marketers, because consumers make decisions based on what they perceive, rather than on the basis of objective reality (Carmine, 1990). For example, game players perceive that a certain characteristic of a video game can stimulate their imagination and provide an escape from the real world thus providing a reason to buy and play video games.

2. Learning means any change in the consumer’s thoughts, responses, or behavior as
a result of practice, experience, or intuition (Walters, 1978, p. 15). Consumer learning is the process by which individuals acquire the purchase and consumption knowledge, and this experience applies to future related behavior (Burnkrant & Unnava, 1987). The role of learning experience does not represent only learning deliberately sought out. As Schiffman and Kanuk (1994) pointed out, “Much learning is intentional and is acquired as the result of a careful search for information, but a great deal of learning is also incidental, acquired accidentally or without much effort.” (p. 202). For instance, people like to play video games, but need to acquire skill and knowledge to win the game. The player can get more information from playing games and thus improve their playing abilities.

3. Attitude includes a broad group of innate human feelings and of points of view that influence behavior (Walters, 1978). Other researchers point out that attitude is a learned predisposition to behave in a consistently favorable or unfavorable way with respect to a given object, such as a product category, a brand, and a service (Icek & Martin, 1980).

Walters (1978) indicated that, “These consumers’ purchase decisions are placed in the center of the wheel because this variable is the focal point of consumer buying behavior. The object of consumer behavior is to make sound decisions to the satisfaction of the individual’s wants.” (p. 14). Burnkrant and Unnava (1987) declared that, “Consumer purchasing decisions are vital to consumer satisfaction because each decision is a specific commitment to a particular brand or store.” (p. 22). In other words, the making of effective consumer purchase decisions is the central issue of consumer buying.
behavior. For example, if a video game developer can create more interactivity and vividness in a particular game, the company may achieve consumer satisfaction and thus influence the consumer’s purchasing behavior. It is for this reason that consumer-purchasing decisions are placed at the center of the model.

Researchers Icek and Martin (1980) described three approaches to the study of consumer purchasing behavior: distributive, morphological, and analytical.

1. In the distributive approach, attention is focused on the outcome of consumer purchase behavior. It is concerned with what people did, where they bought, and what products were involved. For example, video game developers must understand what genre of video game can really meet the consumers’ demand.

2. The morphological approach is descriptive, and shows how a decision to purchase was made, for example, what factors persuaded a consumer to purchase a certain video game.

3. The analytical approach not only describes how a decision is made, but indicates the reasons for or causes of the decision. A player usually has a particular reason for purchasing a video game.

The decision on what to purchase is also directly related to product choices. Consumers seek satisfaction or benefits, but satisfaction can only be achieved through owning goods and services. So, if interactivity and vividness of a particular video game can satisfy the average consumers’ need, then consumers will purchase the game again and again. The video game industry must focus on developing different genres of games to induce consumers’ interest in playing video games and to continually support the concept of offering more choices to video game players and potential players.
Four Types of Consumer Purchasing Behavior

Video game marketers have to understand who potentially may purchase video games and who the target consumer is. The issue is to sell more games and earn more profit from marketing. The marketer has to understand that these issues help the company develop successful marketing strategies by taking the consumer into consideration. Walters (1978) stated that, “The attitude of American business has changed significantly since 1950.” (p. 33). Consumers are constantly changing what they want and what they need. In fact, consumers will be the primary issue in the marketplace for a long time.

The marketplace has recognized that satisfying the demands of consumers is the most important thing to the company. However, there is an ambiguous relationship between consumers and the marketplace. Sometimes consumers can influence the marketplace to match their need. At other times, the marketplace will require consumers to support their products. Basically, as Walters (1978) mentioned that, “Consumers do not possess absolute power in the market, but they do have a veto over product, price, and service decisions made by firms.” (p. 34). When video games are plentiful, consumers have greater freedom of choice and greater influence over businesses catering to consumers’ wishes.

According to Alex, who teaches consumer-buying behavior at UDEL (2003), there are four different characteristics of consumer behavior, which are set out and briefly discussed and applied to video game purchasing behavior as follows:

1. Routine response/Programmed behavior: “Buying low involves frequently purchased low cost items; need very little search and decision effort; purchased
almost automatically. Examples include soft drinks, snack foods, milk, etc.”

2. Limited decision-making: buying product occasionally. The consumer needs to obtain information about unfamiliar brands in a familiar product category. Requires a moderate amount of time for information gathering (Carmine, 1990). Examples include clothes, which is a known product. This type of consumer seeks out basic information about the game, reads reviews, asks people in the store for opinions, and rents the game before purchase.

3. Extensive decision-making: unfamiliar, expensive and/or infrequently bought products. High degree of risk including economic impact, performance issues, and psychological issues. Examples include cars, homes, computers, and education. The consumer spends a lot of time seeking information and deciding. Information from companies MM (Marketing Management), friends and relatives, store personnel, etc. (Carmine, 1990). Consumer seeks out basic information about the game, reads reviews, asks people in the store for opinions, rents the game before purchase, and shops around for the best price or waits for coupons and special or value added offers before purchasing the game.

4. Impulse buyer: no conscious planning. This type of consumer sees an interesting game and purchases it.

The different types of consumer buying behavior remind the marketer to pay attention to different consumer needs. The consumer affects and is affected by the type or kind of business (David & Glenn, 1969). For example, a video game affects the consumer directly by means of the game’s characteristic. When acting as a buyer,
individuals have just one goal in mind. The goal is the satisfaction of their desires by obtaining matching goods and services. The consumer must decide whether, what, when, where, and how to purchase. The basic decision is whether to purchase at all or to refrain from buying. This decision can be made before or after entering the marketplace. It may involve a careful or a superficial search and evaluation of the market.

However, the decision on what to purchase is directly related to product choices. Consumers seek satisfaction, or benefits, but satisfaction can only be achieved through owning goods and services (Gerald, Christian, & Reinhard, 1973). For example, if interactivity and vividness of video games can satisfy a consumer's need, then the consumer will purchase games of the same type again and again. The video game developer also has to understand what kind of consumer is their targeted buyer and then establish an appropriate marketing strategy to influence the consumer's purchasing decision.

**Business Influence on Consumers**

The consumer's environment is a part of the business. The consumer's purchasing behavior deals with the interactions between the individual consumer and the business (Westing & Albaum, 1975). Today, successful marketing is very complicated. Walters (1978) stated that, "Marketing strategy is typically defined as the overall plan put together to guide business activity and marketing strategy and consists of two major components." (p. 480). The two major components described as follows:

1. The target market: The target market consists of a specific group of consumers to be satisfied. For example, the video gaming business is a target market and if the
video game developer can satisfy the consumer's needs they will earn more
profits from their consumers.

2. The marketing mix: The marketing mix includes the coordinated product, place or
marketing channel, promotions and the pricing policies of the firm.

There are in fact two, rather than one, perspectives of marketing strategy, as well
as its development and its implementation. The consumer plays a different role with each
perspective (Winick, 1961). Business organizations are by nature designed to influence
consumers (Szybillo & Heslin, 1973). Exerting this influence is one of the principal
activities of business, for it is through influence on consumers that the objectives of the
firm are achieved (Glenn, 1972; Gore & Dyson, 1964). Other researchers described the
purposes of business influence as stimulating consumer motivation to purchase the
company's products and services. More specifically, business influence on consumer has
four purposes (John, George, Field & Lawrence, 1974).

First, such influence is used to establish and win acceptance for a new idea, as
with a new product or a new method of sale. In order to create a market for a video game,
the industry has to get across the idea that video games, even though less expensive, are
more interactive and vivid.

Second, proactive business influence is designed to change human behavior.
People tend to resist change, and it can take generations to build substantial markets
(Dirksen & Kroeger, 1973). For example, in traditional games people play a game on
paper or on a game board, but video games are played on a TV screen. Video game
companies changed the way games are played and generated more profit for gaming
companies.
Third, business influence is often designed to move consumers to specific action (Carmine, 1990; Chester, Frederick & David, 1968; Stald, 1996; Weber, 1984). For example, players like to learn how different games operate or learn the skills required to play different games.

Finally, business influence is used to change consumer attitudes. Video games change the use of leisure time. Business influence is defined as the effect a business has on consumers as a result of appeals made by advertising, personal selling, and other means of persuasion directed at the consumer’s reason or emotions in order to accomplish the firm’s objectives (Esser, 1993; Dirksen & Kroeger, 1973; Francesco, 1966). Walters (1978) pointed out that, “Business influence implies reasoning, urging, emotional appeals, and various other kinds of inducements that are used to evoke some response from the consumer favorable to the firm.” (p. 482). However, business influence is the result of persuasion and not the inducement itself. Business influence is the ability to motivate consumer response and can be measured by the results obtained (John, 1964; Johnson, 1988; Walters, 1978). For example, when game developers create a new game, they must entice the player to immerse himself in the game.

Businesses also have to figure out how much profit can be gained for the company, in order to prove the game successful in meeting consumer needs. Walters (1978) explained that, “Businesses use the persuasive forces of advertising, personal selling, brand name recognition, publicity, pricing, product quality, and so on, to gain influence over consumer attitudes and behavior.” (p. 483). However, the company is obliged to create a business image that will attract a large number of people to their
products. A successful video game developer must establish a clear image to attract the consumer’s attention.

Walters (1978) stated that, “Not everyone can be expected to accept the new image, but giving wide exposure to it and causing large numbers of people to take positions toward it will speed its acceptance.” (p. 491). If game companies want to build up a good business image, consumers will have to see the company’s values, products, service record and reputation and acknowledge that this company’s products can meet their needs. It is beneficial for a company to successfully create potential and real consumers and to develop successful business strategies.

**Discussion of the Statistical Analysis**

The statistical analysis presents evidence of the impact of perceived interactivity and vividness of video games on customer buying behavior. There were four different types of analysis methods (i.e., descriptive statistics, chi-square analysis, correlation analysis, and multiple regression analysis) were utilized in this research study.

*Descriptive statistics*

Baker (1999) defined descriptive statistics as: “summary numerical descriptions of large bodies of data, most commonly stating the central tendencies and variability of given variables or the relationship between variables.” (p. 57). Babbie (2001) similarly defined descriptive statistics as: “statistical computations describing either the characteristics of a sample or the relationship among variables in a sample.” (p. 436).
George and Mallery (2001) added that, “descriptive statistics are designed to give you information about the distributions of your variables.” (P. 84).

Babbie (2001) stated that, “a discrete variable is a variable whose attributes are separate from one another, or also can call discontinuous variable.” (p. 402). Babbie (2001) also indicated that the continuous variable is that “a variable whose attributes form a steady progression, such as age or income.” (p. 402). For example, in this study, the discrete variables are gender and the type of video games. The continuous variables are consumer buying behavior, interactivity, vividness, creativity, challenge, control, sensory gratification, socialization, audio effect, visual effect, storytelling, age, average hour spent playing video games per week, average video games the consumer’s purchase last year, how many video games the consumer’s own, and how much money the consumer’s spend to purchase video games last year.

Generally, there are two purposes of descriptive statistics in this study, one is performing data cleaning in order to make sure there is no data error on the SPSS software, and the other is providing more statistical descriptive information the researcher needs (such as Mean, Std. deviation, Media, Mode, Minimum, Maximum, Kurtosis, and Skewness).

*Chi Square Analysis*

Babbie (2001) stated that, “Chi square is a frequently used test of significance in social science.” (p. 459). George and Mallery (2001) declared that, “Chi-square analysis is a nonparametric test that makes comparisons (usually of cross tabulated data) between two or more samples on the observed frequency of values with the expected frequency of
values.” (p. 354). Generally, chi square allows us to determine whether or not two samples are significantly different in their relation to some variable. It is important to remember that chi square is a tool for interpreting data.

Gall et al. (1996) defined chi square as: “a nonparametric test of statistical significance that is used when the research data are in the form of frequency counts for two or more categories.” (p. 755). The purpose of chi square analysis is to determine whether or not two samples are significantly different in their relation to some variables.

In this study, chi square analysis were used to examine whether there are different preferences between gender and different age groups in the characteristic of interactivity and vividness of video game on consumer buying behavior.

**Correlation Analysis**

Larson and Farber (2000) described a correlation as a relationship between two variables. The data can be represented by the ordered pairs (x, y) where x is the independent variable and y is the dependent variable.” (p. 418). George and Mallery (2001) indicated that the correlation is “a measure of the strength and direction of association between two variables.” (p. 354).

Correlation analysis determines the relationship or estimating the relationship between variables and database. In order to conduct correlation analysis, the researcher will use the Pearson product moment correlation method. There are two purposes for correlation analysis: First, to determine the relationship between all continuous variables; and Second, to determine if they have a higher correlation coefficient. For example, if you have two variables (independent), the independent variable has to very highly
correlate with the other, so if the correlation coefficient is over .8 or higher, that means you do not have two variables, you have one variable and you must either kick one out or add it to become one variable.

**Multiple Regression Analysis**

George and Mallery (2001) defined multiple regression analysis as: “a statistical technique designed to predict values of a dependent variable from knowledge of the values of two or more independent variables.” (p. 358). Babbie (2001) stated that multiple regressions analysis is “a form of statistical analysis that seeks the equation representing the impact of two or more independent variables on a single dependent variable.” (p. 444). Baker (1999) explained that, “Multiple regression analysis is a statistical analysis which extends the linear regression model, relating one dependent variable to more than one independent variable.” (p. 237).

In the multiple regressions, the R square ($R^2$) is an important statistic used to interpret the relationship between dependent variables and independent variables. George and Mallery (2001) indicated that the R square can be defined as: “the proportion of variance in the dependent variable that is explained by the combined influence of two or more independent variables.” (p. 359). Multiple regressions analysis is a powerful statistic tool. Many analyses that can be done using T-test or ANOVA, can be done better in multiple regression analysis. There are two reasons for the researcher utilizing the multiple regression analysis in this study: one is to determine the effect of the dependent variables on a set of the independent variables; second is that the multiple
regression analysis will inform the researcher which variable is more important and which variable is less important.

The level of confidence for all analyses in this study was set at the \( p = < .05 \) level. Babbie (2001) stated that the confidence level is the estimated probability that the population parameter lies within a given confidence interval. It is expressed as a percentage and represents how often the true percentage of the population who would pick an answer lies within the confidence interval. The 95% confidence level means this research can be 95% certain; the 99% confidence level means this research can be 99% certain. Most researchers use the 95% confidence level.

**Summary**

This chapter provided a review of the literature of key concepts in this study. The aim of a video game is not that the player is a passive spectator, but that the player is an active participant. Video games are popular channels for consumers to release emotions and stimulate many centers of the mind. Therefore, a good game developer would be wise to concentrate on expanding the emotional experience beyond excitement and accomplishment, into more unexplored and uncharted emotional territory. The theoretical framework intensifying the characteristic of interactivity and vividness will not only influence the choice of video game development strategies but also influences marketing decisions for video game industry. The methodology used to answer the research questions was present in chapter three.
CHAPTER III
RESEARCH METHODOLOGY

Overview

This chapter describes the methodology for this study which focuses on the impact of perceived interactivity and vividness of video games on customers’ buying behavior. The purpose of this study is to evaluate video game players’ feelings about the interactivity and vividness of video games.

The method of research chosen was online survey research. An appropriate survey instrument and procedure had been developed by the researcher to measure the relationship between the independent and dependent variables. The Web survey was completely anonymous and voluntary. There is no way for the researcher to know who filled out the questionnaire and sent it back in this research study.

A quantitative research method with a 1 to 9 Likert scale close-ended questionnaire was utilized to conduct this study. Using a questionnaire is an effective method used to collect information regarding a sample’s characteristics, experiences, and opinions. By employing a 1 to 9 Likert scale, the researcher intended to make all of the variables continuous. The 1 to 9 scale research design can enhance the likelihood of wider variation of responses than traditional 1 to 3 or 1 to 5 Likert scale format. The survey contained 31 closed-ended questions on survey instruments. In addition, two open-ended questions were included in the questionnaire to ask participants’ comments or suggestions about this topic. The survey was distributed by the researcher to consumers who had previous experience playing video games and who purchased them in
the U.S. A convenience sampling method was employed. Data were previously collected from September to December of 2003. Two hundred and twenty-eight cases were analyzed for this study (N= 228). There was no compensation offered to participants. The data analysis methods included the descriptive statistic, chi-square analysis, correlation analysis, and multiple regression analysis. For this research study, the level of confidence indicating statistical significance was p = < .05.

This study endeavors to improve the lack of quantitative data, by focusing on realizing how video game players' buying behavior can be assured by the design factors of interactivity and vividness. The findings of this study add significantly to our understanding of the factors that affect consumers' buying behavior in video games.

**Research Questions**

The first goal of this study was to examine the relationship between the characteristics of vividness, interactivity, and the game player's behavior. The second goal of the study was to observe if the characteristics of interactivity and vividness have an effect on the consumers' buying behavior.

Specifically, this study was designed to investigate the following research questions:

1. What are the factors that affect the likelihood of a consumer's purchasing behavior for a video game?
   
   (1a.) Does vividness affect the likelihood of a consumer’s purchasing behavior for a video game?
(1b.) Does interactivity affect the likelihood of a consumer’s purchasing behavior for a video game?

2. What type of video games do consumers purchase?

   (2a.) Does gender influence the types of video games that are purchased?

   (2b.) Do age groups have an effect on the different types of video games that are purchased?

3. What is the demographical make-up of the sample?

   (3a.) What is the age and gender of the survey sample?

   (3b.) What is the general purchasing behavior of the survey sample?

   (3c.) What is the general game playing behavior of the survey sample?

**Research Design**

*Quantitative Method Approaches*

This research utilized a quantitative method approach to conduct this study, in order to generate numerical data to represent the factors of video games. Quantitative research typically involves large samples to represent the population, and tends to focus on answers to objectives (Fowler, 1993). Quantitative research uses methods adopted from the physical sciences that are designed to ensure objectivity, validity, and reliability (Alreck & Settle, 1985). In this type of research, participants are selected randomly from the study population in an unbiased manner, standardized questionnaires or interventions are needed, and statistical methods are used to test hypotheses regarding the relationships between specific variables (Babbie, 1990; Thomas, 1999). The researcher is considered
external to the actual research, and results are expected to be replicable no matter who conducts the research.

Quantitative research incorporates statistical elements designed to quantify the extent to which a target group (population) behaves in a certain way (Creswell, 1994). However, for reliable conclusions to be drawn from the research, the sample for quantitative research must be representative of the larger population or target group (in this study, the target group is current video game players).

Quantitative research can provide an opportunity for those customers to check off one or more reasons underlying that preference (Gay & Airasian, 1999). Quantitative research is an effective means of substantiating the insights and hypotheses of a qualitative study. However, the quantification allows these hypotheses to be translated into volumes, profiles, and mathematical contexts or structures (Gall & Borg, 1996 McCullough, 1997; Swanson, 1979). The study utilized the quantitative method to conduct this research because it can produce results with the necessary reliability and validity.

The Advantages and Disadvantages of Quantitative Research

Quantitative research concerns quantifying relationships between variables so that one can make predictions with a high degree of probability. Another reason is that quantitative research can describe customer's likes or dislikes of a certain feature in terms of percentage. Quantitative research also provides an opportunity for those customers to check off one or more reasons underlying that preference (Babbie, 1990; McCullough, 1997; Pamela & Robert, 1985; Robert, Mason & Paul, 1959).
According to Huysamen (1997), “descriptions of quantitative research typically discern a cycle of successive phases of hypothesis formulation, data collection, analysis and interpretation.” (p. 48). Using a deductive approach, quantitative research seeks to establish facts, make predictions, and test hypotheses that have been stated. A large part of the data analysis of quantitative research is statistical, striving to show that the world can be looked at in terms of one reality; this reality, when isolated in context, can be measured and understood, a perspective known as positivism (Gay & Airasian, 1999).

The disadvantage of quantitative research is that issues are only measured if participants are familiar with the issues prior to the beginning of the survey (and, therefore, have been incorporated into the questionnaire). Quantitative research is essentially evaluative, not generative, and is not appropriate as an initial learning phase, or as a method to develop creative ideas. The greatest weakness of the quantitative approach is that it analyzes human behavior in a way that removes the event from its real world setting and ignores the effects of variables that have not been included in the model (Hornby, 1987; Steckler, McLeroy, Goodman, Bird & McCormick, 1992).

**Rationale and Assumptions**

Research conducted by gaming intellectuals, including Aarseth in 2001; points out interactive and vivid video games have social implications, as participants gain or sharpen social skills when utilizing the multi-player scenarios (Aarseth, 2001). These games have the unique ability to assist gamers in learning mechanisms with which to interact with one another. The essence of the concept is that to some degree a person perceives that he or she is physically located in an environment that is spatially remote
(Schloerb, 1995). It is suggested that game features associated with interactivity and vividness heighten the player’s sense of involvement with and in immersion the actions of the game.

Central to this discussion is the fact that these features are inherent in video games, and are likely to increase dramatically the impact of video games on consumer buying behavior. It is also important to study what factors catch the attention of consumers to games in order to develop ways to make them more interactive, challenging and stimulating for future users. However, to stimulate and challenge consumers, developers were needed to change their thought processes and begin developing more interactive, complex, vivid and interactive games. Video gaming, unlike reading a book or watching a TV program, not only actively engages the thought processes through interaction, but also provides entertainment and a channel for leisure activities.

**Independent Variables and Dependent Variables**

Babbie (2001) proclaimed that, “An independent variable is presumed to cause or determine a dependent variable.” (p. 32). He also defined dependent variable as: “a variable assumed to depend on or be caused by another.” (p. 32).

There are a total of eleven variables used in this research study, which included one dependent variable and ten independent variables. The variables to be measured are listed below:

- Major independent variables:
1. Interactivity: Sub-variables for the independent variable “Interactivity” included Creativity, Challenge, Control, Sensory Gratification, and Socialization.


3. Gender: Sub-variables are Male and Female.

4. Age: Respondents were divided into three strata between 18 to 24, 25 to 34, and 35 to 56 years of age.

Dependent variable: Customers’ Buying Behavior.

**Definition of Independent Variables and Dependent Variable**

Independent variables: There are four major independent variables in this study (Interactivity, Vividness, Gender, and Age).

*Gender* was divided into two groups in this research study: Male and Female.

*Age* was divided into three groups in this research study: 18 to 24, 25 to 34, and 35 to 56 years of age.

*Interactivity*

Interactivity is defined as the ability of a medium (such as video games, computer games, the Internet, and interactive TV) to respond to user input (Steuer, 1995). In this research, the “Interactivity” was examined by way of the relationship between video games’ characteristics and the players’ buying behavior. For example, players like to play video games because they seek creativity, challenge, control, sensory gratification, and socialization.
There are five sub-variables under Interactivity (Creativity, Challenge, Control, Sensory gratification, and Socialization).

1. *Creativity* is the extent to which a video game will utilize various intellectual stimulants to engage the user (Steuer, 1995). For example, the use of multiple function playing keys that direct movement and sound directly relate to creativity.

2. *Challenge* is defined as the ability of the medium, in these instance video games, to engage the logical thought processing centers of the mind (Crawford, 1997 & Richard, 2001). Challenge directly relates to the degree to which the consumer perceives the game as difficult (Rogers, 1986).

3. *Control* is the level of power the user has when engaging in interactive play. The tolerances to which a user can control input and the amount of input directly correspond to the control variable (Crawford, 1997).

4. *Sensory gratification* is the amount of perceived pleasure the user receives from interacting with the game. The level of entertainment and imagination that the user perceives and engages in are defined as sensory gratification (Crawford, 1997).

5. *Socialization* is the enjoyment that multiple users receive from interacting with the game. Some users play video games so as to have a social experience with their friends or family (Crawford, 1997; Richard, 2001). The interactivity of video games allows one to connect not only with one person but also to connect with friends.

*Vividness*

Vividness can be defined as “the representational richness of a mediated environment as defined by its formal features, that is, the way in which an environment
presents information to the senses" (Steuer, 1995, p. 81). Stating it a little differently, Steuer (1992) stated that “Vividness refers to technology’s ability to produce a rich sensory environment, and interactivity refers to the technology’s capacity to enable the player to influence the form and content of a game environment.” (p. 83). This research utilized Steuer’s definition to conduct this study. For example, consumers are willing to buy the video games that have good audio-visual effects.

There are three major sub-variables under Vividness in this study (Audio Effect, Visual Effect, and Storytelling).

1. **Audio Effect** receptors relate to the manner in which the medium stimulates the audio processing centers, primarily through sound.

2. **Visual Effect** receptors relate to the manner in which the medium stimulates the visual processing centers, primarily through color (Crawford, 1997).

3. **Storytelling** is the ability of a game to produce a narrative tale in which the user can participate (Crawford, 1997; Richard, 2001). The extent to which video games produce realistic stories or fantasy-like stories, and the manner in which they entertain and produce satisfactory and positive input, correlate to their storytelling capacity (Richard, 2001).

Dependent variable

*Customers’ buying behaviors*

Buying behavior may directly relate to the interactivity and vividness of the video game selected by consumers. Buying behavior can be defined as the decision-making processes and acts of people involved in buying and using products. This study
can be related to the desire for positive outcomes with regard to entertainment and
physical or emotional pleasure.

Buying behavior and play intention also correspond to thought processes
regarding perceived reality. The amount and types of games that consumers purchase
will depend largely upon the variables studied. Consumers seek interaction with a
medium in a realistic and positive manner (Houser & DeLoach, 1998). One component
of the questionnaire was developed to assess consumers’ buying patterns and purchasing
purpose of a specific game. The researcher developed an appropriate closed-end 1 to 9
Likert scale of survey questionnaire to evaluate the relationship among variables. These
variables were measured on The Consumer Buying Behavior Questionnaire (See
Appendix B).

Procedure

For this study, the researcher defined the research questions to be answered, and
then designed an appropriate questionnaire to measure all of the variables. The
questionnaire employed 1 to 9 closed-ended Likert-scale formats. The selection of
participants depended on their previous video game purchasing or playing experience to
answer the questionnaire. An online survey was used to conduct the study. The
researcher built a Web site in which a questionnaire regarding interactivity and vividness
of video games were made available to video games consumers. Since the final goal of
many video game developers is the consumer purchase, insight into how the impact of
perceived interactivity and vividness of video games on customers’ buying behavior
could be of great value. This study utilized the following procedures to conduct this investigation:

1. The researcher employed closed-ended questions with 1 to 9 Likert scale response to design the questionnaire. Participants needed to follow survey instructions to complete the survey. The survey instructions were: In answering the questions below, use a scale from 1 to 9 where 1 means “very strongly disagree”, 5 means “neither agree nor disagree”, and 9 means “very strongly agree”. Write a number in the space provided that best indicates your feeling about the question.

2. Three pilot tests were conducted in order to enhance the reliability of the survey instrument. The pilot tests helped the researcher to detect flaws in the questions, and as a result, made some amendments to the questionnaire.

3. The researcher’s dissertation proposal was approved by the Lynn University’s Institutional Review Board (IRB) for research concerning the safety of human subjects in August 2003 (See Appendix E for the Institutional Review Board Approval letter). After that, the researcher built a Web site to post the questionnaire on it. The Web survey address was http://mysurvey.hostignition.com/game/

The researcher invited these game players to participate in this survey.

5. The researcher did follow-up requests to different chat rooms every day over the span of the study if the response rate was not high enough.

6. Participants just needed to link to the Web Site, answered the survey questions, then clicked the submit button. The answer sheet automatically sent the responses to the researchers' e-mail address, and then that researcher developed a coding system to record all data into SPSS software.

7. Data for this study were previously collected in the September of 2003. The Web survey took four months. This research intended to recruit at least a minimum of 150 participants, based on the principle that a valid statistical analysis will need to look for about 10 to 15 responses in each of the major sub-categories of the sample for this study.

8. The research instrument was 100% anonymous and confidential. Participation in this research study was completely voluntary, and individuals were free to
withdraw at any time and for any reason without penalty.

9. The raw data was collected from the online survey posted on the Web Site. The research used descriptive statistics, chi-square analysis, correlation analysis and multiple regression analysis to examine all data and explain relationships between the dependent variables and independent variables in this study.

10. Finally, the researcher described the conclusions and recommendations in detail after utilizing the SPSS software to analyze the data.

Instrumentation

Rationale of Selecting Instrument

The researcher utilized the questionnaire-type survey instrument to conduct this research. A survey is a method of collecting information from people about their ideas, feelings, plans, beliefs, social, and personal background (Fowler, 1993; McCullough, 1997; Thomas, 1999). Black (1999) indicated that “questionnaires for quantitative research in the social sciences are usually designed with the intention of being operational definitions of concepts, instruments that reflect strength of attitudes, perceptions, views and opinions.” (p. 53). A survey can be a self-administered questionnaire that someone fills out alone about the research questions. Using questions as measures is an essential part of the survey process. In this study, participants provided raw data and descriptions of attitudes, values, habits and personal background in order to understand participants' buying behavior patterns and play intentions.

Babbie (2001) defined open-ended questions as “questions for which the respondent is asked to provide his or her own answers.” (P. 270). Two open-ended
questions were included to ensure that respondents have the full opportunity to answer or feedback for this research study. In analyzing the open-ended data, the researcher classified and recorded all participants' comments. First, the researcher looked to see if any patterns or common themes emerge in the responses dealing with the specific items. Then the researcher classified & grouped the responses and made a frequency count.

Second, this research developed a set of response categories which adequately represented the answers given. Then the number of answers that fell into each category was determined. Finally, in presenting the outcomes of open-ended questions, the number or percentage of answers in each of the response categories were calculated. These results can be reported in text form or by constructing a table. Because participants can give more in-depth comments and suggestions from open-ended questions, the responses can help the researcher to answer some specific questions such as why people will be willing to play video games in the future and whether or not they plan to purchase video games that are interactive or vivid.

Design of the Web Survey

Baker (1999) described a survey as often beginning by “identifying a number of individuals considered representative of the group to be studied and deciding what questions they should be asked.” (p. 231). Nevertheless, with online Web surveys it can be difficult to ensure that the respondents represent a general population (Babbie, 2001). e-mail and Web surveys share a great deal in common. Both involve computer-to-computer communication over the Internet. Most people who can access e-mail are also able to access Web surveys (Dillman, 2000).
A Web survey was employed to collect raw data for this study. According to Dillman (2000), there are six steps to develop a successful Web survey: (1). Identify the research objective. (2). Decide what information the researcher needs. (3). Develop a questionnaire. (4). Conduct the survey. (5). Analyze the responses, and (6). Recommend a course of action. The researcher would like to incorporate the descriptions in the following manner as they relate the study at hand:

1. Identify research objective: Web surveys are developed to discover the characteristics, behaviors, opinions, and knowledge of a particular population. The key to a successful survey is to clearly identify the research objective in advance. The ideal objective has a narrow scope and can be clearly stated.

2. Decide what information the researcher needs: Be specific and avoid the temptation to gather information that does not help solve the researcher's problem.

3. Develop a questionnaire: The questionnaire has to avoid bias or giving, unclear or ambiguous instructions. The researcher should consider how specific the questions need to be and whether participants are willing and able to answer them.

4. Conduct the survey: The questionnaire needs to be tested on a few people in a pilot test to determine if it is clearly written and can be understood by people representative of the target audience. This can enhance the reliability of responses.

5. Analyze the responses: Results are received in electronic format and are added immediately to a database. In this study, the SPSS software was utilized to record all raw data. Then used descriptive statistics, chi-square analysis, correlation
analysis, and multiple regression analysis to analyze the relationships between the dependent variables and independent variables.

6. Recommend a course of action: With the research questions in mind, this study should be able to recommend specific actions as a result of this survey. Those recommendations can vary widely, depending on the nature of the problem this study tried to solve.

This research study selected a sample of respondents from a population, and then administered a standardized questionnaire to them. Using a Web survey, it is possible to collect data from a large or small population. Baker (1999) indicated that, “Web survey research can describe the attitudes and behaviors of a population of people by selecting in a representative way a sample of individuals and soliciting their responses to a set of questions.” (p. 35). Usually, this type of research (Web survey) involves studying the preferences, attitudes, practices, concerns, or interests of some group of people (Gay & Airasian, 1999). With improvements in technology and Internet software, the rising penetration of computers and the increased ability of users, this method of research has become increasingly popular.

**Development of the Questionnaire**

The questionnaire included an Information and Informed Consent Statement (see Appendix B) and a Consumers’ Buying Behavior Questionnaire (see Appendix C), which were developed by this researcher. An Information and Informed Consent Statement explained the purpose of the study and the aim of this survey to potential participants. The researcher conducted this survey using a sample of consumers who have previous
experience with playing video games and purchasing video games. This research design employed a quantitative method approach, using closed-ended questions on survey instruments. The survey contained 31 closed-ended questions, plus two open-ended questions. Respondents need to rate the questions based on a closed-ended 1 to 9 Likert scale format.

The Likert-Scale Method

A Likert scale of measurement was utilized to rate participants' answers related to the survey questions. Black (1999) stated that, “a principal benefit of the Likert scale is that it gives the researcher the option of considering the responses to each statement separately or of combining the responses to produce an overall, summated score.” (p. 213).

For survey questions, each participant was allowed to answer the question on a scale of 1 to 9, where a 1 response indicates “Very Strongly Disagree,” and a 9 indicates “Very Strongly Agree.” Participants wrote a number in a space provided that best indicates their feeling about the question. They only were able to use the same number once. The 1 to 9 scale can enhance the likelihood of receiving a wide variation of responses than 1 to 3 or 1 to 5 Likert scale format.

In a survey instrument, the closed-end questions produce standardized data that can be analyzed statistically (Arlene, 1995). Statistical analysis is essential in making sense of survey data for a target group of people. Some respondents prefer closed-end questions because they are either unwilling or unable to express themselves while being
surveyed. Also, because the respondent’s expectations are more clearly spelled out, the answers have a better chance of being more reliable or consistent over time.

In this research study, consumers’ purchasing patterns also was evaluated. The opinions of people who purchase more games are important, as the intent of the study is to assess how increasing the vividness and interactivity video games would keep these consumers in the market for more games products and additional learning opportunities.

**Construction of Questionnaire**

*Introduction to the Questionnaire*

The questionnaire used in this study had three sections. One is the survey instrument. The second asks for demographic information, and the third asks for participants’ suggestions and recommendations. The questionnaire total has 33 questions. In the survey question part, Questions 1 and 2 represent the variable of *Consumer Buying Behavior*. Questions 3 to 5 represent the variable of *Creativity*. Questions 6 and 7 represent the variable of *Challenge*. Questions 8 to 10 represent the variable of *Control*. Questions 11 and 12 represent the variable of *Sensory Gratification*. Questions 13 and 14 represent the variable of *Socialize*. Questions 15 and 16 represent the variable of *Audio Effect*. Questions 17 to 21 represent the variable of *Visual Effect*. Questions 22 to 24 represent the variable of *Storytelling*. Question 25 is an open-ended question, which asks participants to explain “whether they believe any other factors besides those listed thus far can influence their buying behavior.”

In the demographic information section, the researcher asked the participants’ age, gender, average hours they play video game per week, how many video games they
purchase in an average year, how many video games they own, what type of video games they particularly like to play, and how much money they spent on purchasing video games last year, in order to examine what genre of video game consumers like to purchase.

The questions were divided as follows:

- **Consumer buying behavior**: Questions 1 and 2.
- **Creativity**: Questions 3, 4, and 5.
- **Challenge**: Questions 6 and 7.
- **Control**: Questions 8, 9, and 10.
- **Sensory Gratification**: Questions 11 and 12.
- **Socialization**: Questions 13 and 14.
- **Audio Effect**: Questions 15 and 16.
- **Visual Effect**: Questions 17, 18, 19, 20, and 21.
- **Storytelling**: Questions 22, 23, and 24
- **Open-ended other factors suggestion**: Question 25.
- **Demographic**: Questions 26, 27, 28, 29, 30, 31, and 32.
- **Open-ended participant’s comments**: Question 33.

**Response Rate**

Babbie (2001) defined the response rate as: “the number of people participating in a survey divided by the number selected in the sample, in the form of a percentage.” (p. 256). The response rate is an important factor to make sure the researcher can obtain a larger sample size and collect accurate data in the research study. The researcher has to
get a high participant return rate from the sample population in order to avoid research bias. Since the number of persons in the target population is not known, a response rate was not calculated. Following strategies have been utilized to increase the response rate for this online Web survey:

1. Pretest: Pretest helps improve the response rate and anticipate the actual circumstances in which the survey will be conducted (such as wording problems, the order of question's, and length of sentences).

2. The researcher used conventional grammar, spelling, and syntax in order to make the information easy for the participants to understand.

3. Keep wording as simple as possible and uncomplicated to make the question easy to answer.

4. Sent e-mail invitation letter to different video game chat-rooms then ask player to participate this survey.

5. The researcher kept visiting the different video game chat-rooms to inform group members of the survey during the period of study once the researcher found that the response rate is not high enough.

Strengths of this Research Study

The strengths of this survey method are as follows:

1. Countrywide targeted sampling will allow for maximum response rates over a much more diverse population than random sampling. By targeting users in general as well as those having personal Web Sites, the researcher expected interest rates and return rates to be higher than might be expected.
2. Some older members of the population, however, in the 56+ age group may or may not be more likely to access information regarding video games via the Internet, and thus using this method might favor a younger age group.

3. The estimate of the relationship is less possible to be biased if the researcher has a high participation rate in a sample selected from a population. At least 150 cases needed to be analyzed by this study. The quantitative research method of the responses can enhance reliability and validity of the study.

4. The study has well formulated research questions that evolve from a comprehensive review of the literature, and the gap in the literature. This study can help people to understand the phenomenon of the video game in society and discover some reasons why people like to purchase and play video games. Furthermore, this study’s results can provide important suggestions to video game developers; enhance their knowledge and understanding of how to create more efficient and effective video games to attract more potential video games users.

**Limitations of this Study**

Labovitz and Hagedorn (1971) indicated that, “Limitation is defined to identify potential weaknesses of the study.” (p. 38). This study had both internal and external limitations. The internal limitations included limits on time, money, and manpower. The research study time limitation is a very important element, because video game consumer inclinations always change.

The external limitations included some issues such as the research environment and response rate. For example, the researcher used a convenient sample method;
therefore, the result of the study may not be generalized to any large population, and the results of this research may not be predictable to other industries. It is also possible that some participants may not be willing to fill out a questionnaire when asking personal information such as age and gender. This reason may lower the response rate.

Population and Sample

Sample Selection

The sample used a convenience sampling method, also called a non-probability sampling in this study. Babbie (2001) described the non-probability sampling as: “any technique in which samples are selected in some way not suggested by probability theory.” (p. 182). He also stated that the non-probability sampling methods cannot guarantee to represent the whole population.

As the literature review indicates, studies have indicated that the average age of typical video game users is between 18 to 56 years old, not young children as one would expect. According to a study conducted by IDSA (2002), the vast majority of people who buy games are over 18 years old and both women and men purchase video games. In this study, the researcher surveyed video game users who vary in age between 18 years and 56 years of age. All of the responses were left out if respondents were under 18 years old or above 56 years old. This range of game players are selected because they are old enough to understand the purpose of this research questionnaire and they also have the money needed to choose and purchase video games. In this study, the criteria for the selection of the participants involve the following factors:

1. Participants must have experience purchasing and playing video game.
2. Individuals must be between the ages of 18 and 56 years old.

The participants in this study were selected based upon specific criteria for selection. These specific criteria were stated in the Information and Informed Consent Statement (see Appendix B) and the Survey Instructions of the questionnaire (see Appendix C).

Babbie (2001) described a study population as “aggregation of elements from which the sample is actually selected.” (p. 185). In this research, the study population consists of the members of these video game groups. For purposes of this study, a targeted sampling methodology rather than random sampling was used as the preferred method. The sample needs to consist of a minimum of 150 participants in the U.S. based on the principle that a valid statistical analysis will utilize 10 to 15 samples for each variable to ensure the statistical significance of this study.

The plan for sample selected was as below:

1. The researcher used the follow-up strategy to ensure this study can get enough sample size. For instance: the researcher did follow-up requests to different chat rooms every week over the span of study.

2. However, if this research study can generate a large response rate from the study population (more than 150 responses), there were two different ways to select a sample from the study population: First, the researcher will employ all of the responses into this study if there are between 150 and 500 respondents. Second, if there are more than 500 respondents, the researcher will utilize a stratified random samples technique to select sample from the study population. Using a stratified sample, members of the study population are
separated into groups with similar characteristics, such as gender and age. Then a random sample is selected from each of the strata. For example, respondents can be grouped according to their age into three strata between 18 to 24, 25 to 34, and 35 to 56 years of age. From each age group, random samples of each age will be equally selected.

Ideally, in a quantitative research study, a diverse population sampling must be utilized. The sample can be defined as “a set of individuals or cases taken from some population for the purpose of making inferences about characteristics of the population.” (George & Mallery, 2001, p. 361). Based on this definition, in this research, the sample consisted of the respondents.

**Population**

George and Mallery (2001) stated that the population can be defined as:

“statistical inference is based on drawing samples from populations to gain a fuller understanding of characteristics of that population.” (p. 359). Babbie (2001) also stated that “population is the theoretically specified aggregation of the elements in a study.” (p. 185). Based on the above-stated definitions, the population of this study is everyone who has purchased a video game or has video game playing experience.

**Inclusion and Exclusion Criteria**

The review of literature of this study has indicated that the average age of video game users is between 18 and 56 years old, not young children as one would expect. In order to collect the most accurate data related to video game players, it is essential and
logical to study people who actually purchase games and not the general population. The researcher hoped to adequately determine how important the characteristic of vividness and interactivity is to active video game users.

To assess which members of the population can most adequately provide the information sought after, the researcher can develop an online survey instrument that can be utilized to conduct primary research for this study. On the Web site, the researcher asked the participant to complete the online questionnaire based on his or her previous experience of playing or purchasing video games. All of the information obtained during this research study was kept anonymous and confidential. There were some steps to keep participants anonymous and confidential as below:

1. In the questionnaire, none of the participants' personal information was asked such as e-mail address, name, day of birth, social security number, etc. There is no way for the researcher to learn who sends back the responses.

2. All information obtained during this research study was kept confidential. The data remained the sole property of myself, the owner, and will not be sold to any entity for any reason.

3. The researcher will lock all data in a safe place for three years, after which time the data will be destroyed.

4. After answering all survey questions, participants just need to click the submit button. The answer sheet can automatically be sent to the researchers' e-mail address. A coding system was developed to record all data to the SPSS software. All of the data was analyzed in aggregate form, and no individual data can be identified in this research study.
5. Participation in this research study was completely voluntary, and participants were free to withdraw at any time and for any reason without penalty.

**Data Collection**

**Collection of Raw Data**

Raw data was collected from online questionnaires via the researcher’s e-mail account. The researcher downloaded the respondents’ questionnaires and printed them out. A coding system was developed when transferring all of the data into the SPSS software. All returned surveys were logged into a spreadsheet indicating the number of completed surveys returned.

Data collection via the Internet was accomplished through a link which sent all completed surveys to an e-mail address directly associated with this research study. The researcher gathered totals of the actual percentage of video games purchased. These video games were categorized according to vividness and interactivity properties. This research study recruited 247 participants in four months, of these, 228 questionnaires were usable.

**Pilot Test**

A pilot test was directed at a representative sample of the target population. The pilot test sample should be selected in the same method as is anticipated for the final survey (Babbie, 1990). A pilot test helped the researcher modifies the survey instrument; therefore, the questionnaire was easier for the participant to read, understand and answer. Arlene and Jacqueline (1998) illustrated that, “A pilot test helps improve the response
rate because it can eliminate severe potential sources of difficulty such as poorly worded questions and no place to record answers.” (p. 76). Arlene and Jacqueline (1998) indicated that, “a pilot test is a tryout, and its purpose is to help produce a survey form that is usable and that will provide you with the information you need. All types of questionnaires and interviews must be pilot tested.” (p. 67). Based on this definition, the researcher collected the raw data, developed personal codes and inputted all data into the SPSS software. Some statistical analyses were utilized such as descriptive statistics, chi square analysis, correlation analysis, and multiple regression analysis.

In this study, a pilot test was conducted in order to help the researcher to develop, adapt, or check the feasibility of techniques, or to calculate how big the final sample needs to be. In the pilot test, ten individuals were invited to fill out the questionnaire. They were all over 18 years or under 56 years of age and have video game playing experience so as to meet the sample criteria. After doing the pilot test, the researcher made some amendments to the survey that can minimize the error rate on answers in the study.

1. Two open-ended questions were added to obtain free-flowing answers from respondents.

2. Participants reacted that 1 to 100 Likert scale was too complicated for them; however, pilot test of this instrument indicated that 1 to 9 Likert scale can result higher response rate.

3. The number of questions has been changed from twenty four to thirty three by breakdown the different aspects of each independent variable of consumer buying behavior into its corresponding divisions.
4. Questions have been clarified for the participants to get better understanding and easier to answer.

Data Analysis

Statistical Data Analysis

The researcher utilized statistical methods to present evidence of the impact of perceived interactivity and vividness of video games on customer buying behavior. A total of four different types of analysis methods were employed in this study. They were descriptive statistics, chi square analysis, correlation analysis and multiple regression analysis.

Descriptive Statistics

There are two purposes of employing descriptive statistics in this study. One is to perform data cleaning and make sure there is no data error on the SPSS software. The other purpose is to provide more statistical descriptive information needed by the researcher (such as Mean, Media, Mode, Standard Deviation, Minimum, Maximum, Kurtosis, and Skewness). In data analysis, the researcher followed three major steps to conduct this study:

1. To determine the discrete variables and the continuous variables in this study.
2. To examine all discrete variables to make sure there are no data errors and find out the statistic descriptive information using frequencies count.
3. To examine all continuous variables and make sure there are no data errors and find out the statistic descriptive information such as Mean, Median, Mode,
Standard Deviation, Minimum and Maximum value, Skewness, and Kurtosis to confirm that each variable has a normal distribution.

*Chi Square Analysis*

The purpose of chi square analysis is to determine whether or not two samples are significantly different in their relation to some variables. It is important to remember that chi square is a tool for interpreting data. This research utilized a chi square analysis method to see the different relationships between the male and female on other independent variables. Before doing the chi square analysis, there are some requirements that have to be met:

1. To ensure that data is reported in raw frequencies.
2. To ensure that the variables are measured independent by of each other.
3. To ensure that the values on each variable are mutually exclusive and exhaustive.
4. To ensure that observed frequencies are large enough.

*Correlation Analysis*

Correlation analysis is used in determining or estimating the relationship between variables in the database. There are two purposes for correlation analysis: first, to determine the relationship between all continuous variables; and second, to determine if they have a high correlation coefficient. In the correlation analysis method, this research followed five major steps to conduct this study:

1. Make sure all variables are continuous variables.
2. Ensure to get a correlation matrix from a correlation analysis. The correlation coefficient has three parts including “direction,” “strength,” and “statistical significance.” The direction has two meanings: (1) “Positive Correlation” indicates that as one variable increases in value, the other variable also tends to increase in value. Conversely, as one variable decreases, the other variable also tends to decrease. (2) “Negative Correlation” indicates that as one variable increases in value, the other variable tends to decrease.

3. Examine the relationship between variables. The strength of relationship means that if the coefficient is close to 1.0, it can be assumed there is a strong positive relationship between two variables. If the coefficient close to -1.0, it can be assumed that there is a strong negative relationship between two variables.

4. Ensure all independent variables do not have higher correlation coefficient, if the correlation coefficient is over .8 or higher, which means those variables does not independent with each other.

Multiple Regression Analysis

There are two reasons to utilize a multiple regressions analysis. One is the multiple regressions analysis can show the influence of two or more independent variables on a single dependent variable. The second is that the multiple regressions analysis can inform the researcher which variable is more important and which variable is less important.

In this study, the regression equation takes the form as below:

\[ Y = f(X_1 + X_2 + X_3 + X_4 + X_5 \ldots X_{10}) + e \]
where \( Y = \) Consumer buying behavior (dependent variable)

\( X_1 = \) Creativity (Independent variable)
\( X_2 = \) Challenge (Independent variable)
\( X_3 = \) Control (Independent variable)
\( X_4 = \) Sensory Gratification (Independent variable)
\( X_5 = \) Socialization (Independent variable)
\( X_6 = \) Audio Effect (Independent variable)
\( X_7 = \) Visual Effect (Independent variable)
\( X_8 = \) Storytelling (Independent variable)
\( X_9 = \) Gender (Independent variable)
\( X_{10} = \) Age (Independent variable)
\( e = \) error term

Basically, the multiple regression analysis shows the following results.

\textit{R square:} The \( R \) square indicates the extent of the relations between the dependent variable and the set of independent variables. Specifically, it indicates the extent of the variance of the dependent variable that is explained by the set of independent variables. The \( R \) square ranges from 0.0 (no relationship) to 1.0, indicating that 100% of the variance of the dependent variable is explained by the set of independent variables.

\textit{Beta weight:} The Beta weight indicates the unique effect of each independent variable on the dependent variable. Similar to a correlation coefficient, the Beta weight indicates the direction and the strength of the relationship between the dependent and independent variable. This study analyzed the Beta weights to
each independent variable explain the unique effect between each independent variable and the dependent variables.

\textit{F statistic:} The F statistic indicates the statistical probability that the relationship between the dependent variable and the set of independent variables could have happened by chance.

\textit{t statistic:} The \(t\) statistic indicates the level of statistical probability of the relationship between the dependent variable and each independent variable.

In general, the researcher utilized the following steps to conduct the multiple regressions analysis in SPSS software:

1. Ensure the dependent variable is a continuous variable.
2. Design dummy variables for the discrete variables. For example, the research question is “Does gender influence the type of video games that are purchased?” The researcher recoded the gender variable to be “1” for females and “0” for males, and then utilized the SPSS software to estimate each dummy variable in order to determine if it had a strong relationship with purchasing behavior or not.
3. Check the specific results of multiple regression analysis such as R square, Beta weight, F statistic, and \(t\) statistic.

\textit{Expected Outcomes}

The researcher expected that this study can prove that consumers are interested in purchasing video games that are better developed, with more intense graphics,
interactivity capabilities and vividness. Interactivity and vividness directly correspond to user satisfaction, sense of reality and entertainment rating. As society becomes increasingly technologically advanced, consumers will anticipate being stimulated in new and titillating ways. Basically, most consumers are interested in games that could potentially increase their reasoning and critical thinking skills. This study can show that video game players are avidly interested in purchasing video games that are interactive and vivid.

**Reliability and Validity**

Reliability and validity are essential to the measurements and research procedure designs. Reliability is a term that provides an instrument that measure always over time and populations. These two concepts are distinct yet related. While high reliability does not warrant validity, a study cannot achieve validity without reliability. Arlene and Jacqueline (1998) indicated that, “A valid survey produces accurate information. Reliable and valid surveys are obtained by making sure the definitions and models you use to select questions are grounded in theory or experience.” (p. 334). Arlene (1995) stated that, “reliability means the freedom from random error.” (p. 23). The most important test of reliability is repeatability, the ability to get the same data values from several measurements made in a similar manner (Arlene & Jacqueline, 1998).

In order for a research study to be valid it must not be affected by extraneous factors that systematically “push” or “pull” the results in one particular direction (Baker, 1999). In other words, reliability can be defined as the extent to which an experiment, test, or any measuring procedure yields the same result on repeated trials. For example, if
we have a test consisting entirely of math questions, the test and the testing procedure have to be able to yield consistent results on repeated trials in order to satisfy the reliability measure.

Validity refers to the degree to which a study accurately reflects or assesses the specific concept that the researcher is attempting to measure. It eventually leads to how close research conclusions based on the measurement results is to the truth. A measurement can be reliable, but not necessarily valid (but the measurement must necessarily first be reliable before it can be valid. However, reliability in itself is not the only condition for validity). Both reliability and validity are necessary for accurate measurement in a research study.

In order to represent the reliability and validity, this research employed the quantitative research method to develop a closed-end 1 to 9 Likert scale questionnaire and design an internet survey to collect data. A questionnaire type of survey measurement was selected in this study. Sampling is the procedure or factor that also affects reliability and validity. The sample of participants was large enough to provide statistically meaningful data. A pilot test also was conducted to ensure the validity of this study. This study employed the SPSS software function of the descriptive statistic, chi-square analysis, the correlation analysis, and the multiple regressions analysis to analyze data which present the relationship between the dependent and independent variables.

Ethics

A primary concern of the investigator is the safety of the research participant. This is assured by carefully considering the risk/benefit ratio, using all available
information to make an appropriate assessment and continually monitoring the research proceeds. Confidentiality of participants will be assured. All participants were assigned a personal ID number, with which they were identified with for future reference, much like a social security number. All information obtained during this research study was kept anonymous and confidential. There is no way for the researcher to know who filled out the questionnaire and sent back the responses in this research study. The whole survey procedure was 100 percent guarantee participants’ anonymity.

A disclaimer statement was posted on each survey, letting consumers know that any information they provide for the purposes of this study will remain the sole property of myself, the owner, and will not be sold to any entity for any reason. Participation in this research study was completely voluntary, and participants were free to withdraw at any time and for any reason without penalty.

**Summary**

The researcher utilized quantitative research methods to conduct this study. The primary data collection method for this study was the utilization of 1 to 9 closed-end Likert-scale survey questionnaires in order to get wide variations. Moreover, two open-ended questions were included to ask for participants' comments or suggestions about this subject. Potentially eight demographic questions were developed to assess a broad range of consumer information. The variables to be studied included the following: Interactivity and Vividness, Creativity, Challenge, Control, Sensory Gratification, Socialization, Audio Effect, Visual Effect, Storytelling, Gender, and Age. The level of significance for all analyses in this research was set at the $p = < .05$ level.
Consumers were asked questions regarding their buying behavior. The intention was to assess how many games members of any given population purchase during the course of the year, and what causes one video game to be more popular than others.

Participants were provided with information regarding the outcome of the surveys they submitted, to examine changes in patterns of buying behavior. Confidentiality of participants was respected in all situations. The information gathered during this study was used for the sole purpose of proving the idea that vividness and interactivity are critical for video game developers to consider. Suggestions and survey data were utilized to propose a new methodology and theory of video games, and hopefully utilized in the creation of not one but several new video games.

The purpose of this research was to prove that the most important factors in video game purchasing habits is the interactivity, vividness and challenging nature of the games themselves. The outcomes expected from this study were to increase the interactivity and vividness of future video games could assist consumers in building social, reasoning and critical thinking skills. Game developers should recognize that consumers desire to be challenged, and expect to learn and engage all the senses when using video games.
CHAPTER IV
RESULTS

Overview

Chapter four presents the result of this study about the impact of perceived interactivity and vividness of video games on customer buying behavior. The first goal of this research study was to examine the relationship between the characteristics of vividness, interactivity, and the game player's playing behavior. The second goal of the study was to ultimately see if the characteristics of interactivity and vividness have an effect on the consumers' buying behavior. The independent variables were Interactivity, Vividness, Gender, and Age. Sub-variables for the independent variable "Interactivity" were included creativity, challenge, control, sensory gratification, and socialization. Sub-variables for the independent variable "Vividness" were audio effect, visual effect, and storytelling. The dependent variable was Customer Buying Behavior.

This study utilized a quantitative method approach, using 1 to 9 Likert-scale closed-ended questions on survey instruments. The closed-ended questions produced standardized data that can be analyzed statistically. For survey questions, each respondent was allowed to answer the question on a scale of 1 to 9, where a 1 response indicates "very strongly disagree," a 9 indicates "very strongly agree," and a 5 response "neither agree nor disagree". The selection of participants depended on their previous video game purchasing or playing experience to answer the questionnaire. Data were collected during September, October, November, and December of 2003. A total of 247 responses were received from the subjects. Of these, 228 questionnaires were usable.
This chapter presents the findings from this study. The findings are reported in adequate detail to justify the conclusion. Research methods of data analysis included the descriptive statistic, chi-square analysis, the correlation analysis, and multiple regression analysis.

**Descriptive Characteristics of Respondents**

There are two purposes of employing descriptive statistics in this study. One is to perform data cleaning and make sure there is no data error on the SPSS software. The other purpose is to provide more statistical descriptive information needed by the researcher. The sample consisted of 121 males ($N = 121$) and 107 females ($N = 107$), giving a 53 percent and 47 percent split. There were 120 subjects (53 percent) between the ages of 18 to 24, a total of 56 subjects (25 percent) between the ages of 25 to 34, and 52 subjects (23 percent) between the ages of 35 to 56.

Participants stated that their favorite games are: sports games (26.3 percent), action/adventure games (21.9 percent), strategy/RPG games (20.2 percent); racing games (12.3 percent); fighting (6.1 percent); shooter games (9.6 percent); and adult or other games (3.5 percent). The average time spent playing video games was 9.34 (mean = 9.34) hours per week, with the minimum 3 hours and the maximum 20 hours.

The respondents reported in an average year the number of video games purchased to be 2.7 (mean = 2.7), with the minimum one game and the maximum nine games. The average number of video games owned by Respondents was 17.37 (mean = 17.37), the minimum owned, three games and the maximum owned, 50 games. The
average money spent to buy video games was $153.71 (mean = 153.71) U.S. dollars, with the minimum amount $50 dollars, and the maximum was amount $495 dollars.

**Analyses Research Question 1**

1. What are the factors that affect the likelihood of a consumer’s purchasing behavior for a video game?

**Finding 1:** The research results indicate that the independent variables of vividness and interactivity had large effects on consumer buying behavior for a video game. There were statistically significant correlations between the independent and dependent variable. The most statistically significant correlations with consumer buying behavior from highest to lowest were (see Appendix F):

1. Sensory Gratification (Correlation Coefficients = .269**);
2. Challenge (Correlation Coefficients = .236**);
3. Audio Effect (Correlation Coefficients = .167**);
4. Creativity (Correlation Coefficients = .137**);
5. Control; (Correlation Coefficients = .123**);
6. Socialization (Correlation Coefficients = .107*);
7. Visual Effect (Correlation Coefficients = .090*); and
8. Storytelling (Correlation Coefficients = .076*).

These variables had a statistically significant effect on consumer buying behavior, with most scores at the .01 level of significance. This means there is a 99% probability that these relationship scores were not produced by chance.
Research Sub Question 1a

1a. Does vividness affect the likelihood of a consumer’s purchasing behavior for a video game?

**Finding 1a:** Consumers’ purchasing behavior had a strong positive correlation with vividness. In order to answer research question 1a, three different statistical analyses were employed. They were descriptive analysis, correlation analysis, and multiple regression analysis.

**Descriptive Analysis for Question 1a**

Table 1 below displays the basic descriptive data of consumer buying behavior (dependent variable) and audio effect, visual effect, and storytelling (independent variables).

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Std. Error of Mean</th>
<th>Median</th>
<th>Mode</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Audio Effect</td>
<td>6.965</td>
<td>.0568</td>
<td>7.0</td>
<td>7.5</td>
<td>0.857</td>
</tr>
<tr>
<td>Visual Effect</td>
<td>6.862</td>
<td>.0391</td>
<td>7.0</td>
<td>7.0</td>
<td>0.591</td>
</tr>
<tr>
<td>Storytelling</td>
<td>4.936</td>
<td>.0801</td>
<td>5.0</td>
<td>5.0</td>
<td>1.210</td>
</tr>
<tr>
<td>Consumer</td>
<td>7.436</td>
<td>.0591</td>
<td>7.5</td>
<td>8.5</td>
<td>0.893</td>
</tr>
</tbody>
</table>

N= 228
The results of the descriptive analysis for the independent variable of Audio Effect had a mean score of 6.96, a median score of 7, and a mode score of 7.5, with a standard deviation of .857 ($SD = .857$). Visual Effect had a mean score of 6.862, a median score of 7, and a mode score of 7, with a standard deviation of .5908 ($SD = .5908$). Storytelling had a mean score of 4.936, a median score of 5, and a mode score of 5, with a standard deviation of 1.2101 ($SD = 1.2101$). The dependent variables of consumer buying behavior had a mean of 7.436, a median score of 7.5, and a mode score of 8.5, with a standard deviation of .8925 ($SD = .8925$).

**Correlation Analysis for Question 1a**

Table 2 below displays the result of correlation analysis between audio effect, visual effect, and storytelling (independent variables).

<table>
<thead>
<tr>
<th>Variables</th>
<th>Audio Effect</th>
<th>Visual Effect</th>
<th>Storytelling</th>
</tr>
</thead>
<tbody>
<tr>
<td>Audio Effect (Pearson Correlation)</td>
<td>1</td>
<td>.399**</td>
<td>.061</td>
</tr>
<tr>
<td>Visual Effect (Pearson Correlation)</td>
<td>.399**</td>
<td>1</td>
<td>.026</td>
</tr>
<tr>
<td>Storytelling (Pearson Correlation)</td>
<td>.061</td>
<td>.026</td>
<td>1</td>
</tr>
</tbody>
</table>

N = 228

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).
A Pearson Product-Moment correlation analysis was conducted for independent continuous variables (Audio Effect, Visual Effect, and Storytelling). This analysis determined the relationships between the independent variables. The reason for employing a correlation analysis was to ensure that the three independent variables were independent of each other. If a correlation coefficient approaches or was higher than .8, then, in essence, the variables are the same.

The results show that the Audio Effect was correlated with Visual Effect, with a correlation coefficient of .399. The correlation was statistically significant at the .01 level. There was no problem with multi-collinearity. However, Audio Effect and Visual Effect have positive correlation with Storytelling. The three independent variables were independent of each other, no problem with multi-collinearity.

Table 3 shows the result of correlation analysis for consumer buying behavior and vividness (Audio Effect, Visual Effect, and Storytelling).

Table 3
The Result of Correlation Analysis for Consumer Buying Behavior and Vividness (Audio Effect, Visual Effect and Storytelling)

<table>
<thead>
<tr>
<th>Variables</th>
<th>Audio Effect</th>
<th>Visual Effect</th>
<th>Storytelling</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consumer Buying Behavior</td>
<td>.616**</td>
<td>.448**</td>
<td>.178**</td>
</tr>
</tbody>
</table>

(Pearson Correlation)

N = 228

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).
The correlation between Consumers’ purchasing behavior, Audio Effect, and Visual Effect was statistically significant \( (p < .01) \), which means they have a strong positive correlation. It indicates that as the value of one variable increases, the value of the other variable also tends to increase. The variable of Storytelling was also statistically significant, \( p < .01 \) with consumers’ purchasing behavior. However, the results show that there is no problem with multi-collinearity.

Vividness engages audio, visual and storyline abilities of the consumer. The result of correlation analysis shows that vividness can influence consumer buying behavior. In other words, video games can utilize the characteristic of vividness to attract the player’s attention; the player will purchase video games in the future. The characteristic of vividness provides these three factors to increase the ability of video games to persuade players to purchase games and play them. Video game developers have to enhance quality of graphic, sound, and storyline in their presentation to motivate players to purchase and play video games.

**Multiple Regression Analysis for Question 1a**

For vividness, a regression analysis can indicate the relationship between this set of independent variables and the dependent variable. This method enables the researcher to determine the influence upon the dependent variable by the set of independent variables. Consumer buying behavior was the research dependent variable. A regression analysis of the set of variables resulted in an \( R^2 = .448 \). The R square was statistically significant at the .01 level, with an F of 60.588. This means that there was a moderately strong relationship between consumer purchasing behavior and vividness. The
significance of the research demonstrates and answers this research question presented at the beginning of this study. Table 4 below displays the result of regression analysis between Consumer buying behavior (dependent variable) and Audio Effect, Visual Effect, and Storytelling (independent variables).

Table 4

*The Result of Regression Analysis for Consumer Buying Behavior and Vividness (Audio Effect, Visual Effect, and Storytelling)*

Dependent Variable: Consumer Buying Behavior

<table>
<thead>
<tr>
<th>R Square</th>
<th>Sig.</th>
<th>F Statistic</th>
</tr>
</thead>
<tbody>
<tr>
<td>.448</td>
<td>.000**</td>
<td>60.58</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Variable</th>
<th>Beta weight</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Audio Effect</td>
<td>.512</td>
<td>.000**</td>
</tr>
<tr>
<td>Visual Effect</td>
<td>.240</td>
<td>.000**</td>
</tr>
<tr>
<td>Storytelling</td>
<td>.141</td>
<td>.005**</td>
</tr>
</tbody>
</table>

a. Predictors: (Constant), Audio effect, Visual effect, Storytelling.

b. Dependent Variable: Consumer Buying Behavior

N = 228  *p <= .05  **p <= .01

The Beta weight, similar to correlation coefficients, can indicate the most important independent variable as the one having the greatest effect on the dependent variable, and the ones having the second largest and least effect on consumer buying behavior.
For vividness, the first most important factor was Audio Effect, which was .512 at the .01 level of significance. The second most important factor was Visual Effect, which was .240 at the .01 level of statistical significance. The third most important factor was Storytelling, which was .141 at the .01 level of significance. However, audio effect, video effect, and storytelling do not only have a moderately strong effect but also have statistical significance.

This result was supported by the review of literature in this study. The characteristic of vividness directly connects with the consumers’ desires, and players can have new experiences while playing the games. Audio Effects cause players to become caught up in the gaming world (Fontaine, 1995). Visual Effects can rapidly catch players’ motivation to continue playing the games (Held & Durlach, 1993). And Storytelling was the ability of a game to produce a narrative tale in which the player can participate (Crawford, 1997; Richard, 2001). Based on this result, the characteristic of vividness can be seen to influence consumers’ buying behavior or intention to play a particular game.

**Research Sub Question 1b:**

1b. Does interactivity affect the likelihood of a consumer’s purchasing behavior for a video game?

**Finding 1b:** Consumer’s purchasing behavior had a strong positive correlation with interactivity. The descriptive analysis for Creativity had a mean score of 6.731 (SD=.7758). Challenge had a mean score of 7.294 (SD=.8925). Control had a mean score of 6.87 (SD=.725). Sensory Gratification had a mean score of 7.476 (SD=.8425).
Socialization had a mean score of 6.969 ($SD = .9533$). The dependent variable of consumer buying behavior has a mean score of 7.447 ($SD = .5739$). Table 5 below displays the basic descriptive data of Consumer buying behavior, Creativity, Challenge, Control, Sensory Gratification, and Socialization.

Table 5:

*The Result of Descriptive Analysis for Consumer Buying Behavior and Interactivity*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Std. Error of Mean</th>
<th>Median</th>
<th>Mode</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Creativity</td>
<td>6.731</td>
<td>.0514</td>
<td>6.67</td>
<td>7.0</td>
<td>.7758</td>
</tr>
<tr>
<td>Challenge</td>
<td>7.294</td>
<td>.0591</td>
<td>7.5</td>
<td>7.5</td>
<td>.8925</td>
</tr>
<tr>
<td>Control</td>
<td>6.867</td>
<td>.0480</td>
<td>7.0</td>
<td>7.0</td>
<td>.7246</td>
</tr>
<tr>
<td>Sensory</td>
<td>7.476</td>
<td>.0558</td>
<td>7.5</td>
<td>8.5</td>
<td>.8425</td>
</tr>
<tr>
<td>Socialization</td>
<td>7.042</td>
<td>.0635</td>
<td>7.0</td>
<td>6.5</td>
<td>.9615</td>
</tr>
<tr>
<td>Consumer</td>
<td>7.436</td>
<td>.0591</td>
<td>7.5</td>
<td>8.5</td>
<td>.8925</td>
</tr>
</tbody>
</table>

N= 228

*Correlation Analysis for Question 1b*

The correlation between consumers’ purchasing behavior and interactivity was statistically significant, $p < .01$, which means they have a strong positive correlation, indicating that as the value of one variable increases, the value of the other variable also tends to increase. In other words, the result has shown that there was no problem with multi-collinearity. The correlation analysis has shown that it is a relatively high level of
responsiveness on the part of an information source, as solicited by queries or other input from the consumer. However, an interactive video game has the potential ability to respond to the consumer’s reaction about general situational factors.

Table 6 below displays the result of correlation analysis between consumer buying behavior (dependent variable) and creativity, challenge, control, sensory gratification, and socialization (independent variables).

Table 6

The Result of Correlation Analysis for Consumer Buying Behavior and Interactivity:

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Consumer</td>
<td>1</td>
<td>.515**</td>
<td>.678**</td>
<td>.590**</td>
<td>.633**</td>
<td>.613**</td>
</tr>
<tr>
<td>Creativity</td>
<td>.515**</td>
<td>1</td>
<td>.484**</td>
<td>.402**</td>
<td>.367**</td>
<td>.396**</td>
</tr>
<tr>
<td>Challenge</td>
<td>.679**</td>
<td>.484**</td>
<td>1</td>
<td>.515**</td>
<td>.484**</td>
<td>.543**</td>
</tr>
<tr>
<td>Control</td>
<td>.590**</td>
<td>.402**</td>
<td>.515**</td>
<td>1</td>
<td>.428**</td>
<td>.533**</td>
</tr>
<tr>
<td>Sensory</td>
<td>.663**</td>
<td>.367**</td>
<td>.484**</td>
<td>.428**</td>
<td>1</td>
<td>.480**</td>
</tr>
<tr>
<td>Socialization</td>
<td>.613**</td>
<td>.396**</td>
<td>.543**</td>
<td>.533**</td>
<td>.480**</td>
<td>1</td>
</tr>
</tbody>
</table>

N = 228

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

The result of correlation analysis indicated four important things as described below:
1. The independent variables of creativity, challenge, control, sensory gratification, and socialization had positive correlation. These correlations were statistically significant at the .01 level.

2. The correlation analysis showed that the independent variables of creativity, challenge, control, sensory gratification, and socialization were independent of each other.

3. The correlation analysis indicated that there was a strong positive correlation between the consumer buying behavior (dependent variable) and interactivity (independent variables). The correlation was statistically significant at the .01 level.

4. Consequently, the results indicated that the characteristic of interactivity can influence consumer buying behavior.

**Multiple Regression Analysis for Question 1b**

For interactivity, a regression analysis indicated a relationship between this set of independent variables and dependent variable. A regression analysis of the set of variables resulted in an $R^2 = .673$. The $R$ square was statistically significant at the .01 level, with an $F$ of 91.38. This means that there was a moderately strong relationship between consumer purchasing behavior and interactivity. The significance of the research demonstrates and answers this research question presented at the beginning of this study.

The Beta weight indicated that the first most important factor was Sensory Gratification, which was .331 at the .01 level of significance. The second most important factor was Challenge, which was .283 at the .01 level of significance. The third key
factor was Control, which was .165 at the .01 level of significance. The fourth most important factor was Socialization, which was .162 at the .01 level of significance. The last key factor was Creativity, which was .125 at the .01 level of significance. However, Creativity, Challenge, Control, Sensory Gratification, and Socialization not only had a moderately strong effect, but also had statistical significance with consumer buying behavior. Table 7 below displays the result of regression analysis between Consumer buying behavior (dependent variable) and Creativity, Challenge, Control, Sensory Gratification, and Storytelling (independent variables).

Table 7

*The Result of Regression Analysis for Consumer Buying Behavior and Interactivity*

Dependent Variable: Consumer Buying Behavior

<table>
<thead>
<tr>
<th>Variable</th>
<th>Beta weight</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>R Square .673</td>
<td>Sig. .000**</td>
<td>F Statistics. 91.38</td>
</tr>
<tr>
<td>Creativity</td>
<td>.125</td>
<td>.006**</td>
</tr>
<tr>
<td>Challenge</td>
<td>.283</td>
<td>.000**</td>
</tr>
<tr>
<td>Control</td>
<td>.165</td>
<td>.001**</td>
</tr>
<tr>
<td>Sensory gratification</td>
<td>.331</td>
<td>.000**</td>
</tr>
<tr>
<td>Socialization</td>
<td>.162</td>
<td>.001**</td>
</tr>
</tbody>
</table>

c. Predictors: (Constant), Creativity, Challenge, Control, Sensory, and Socialization.
d. Dependent Variable: Consumer Buying Behavior. N = 228  *p =< .05  **p =< .01
This result was reflected in Vorderer’s research (1999), which stated that, “A key to explaining why video games have become very popular forms of entertainment is to explore the player’s gratification which is linked to the interactive form.” (p. 36). The interactivity of video games directly corresponded to consumer satisfaction and emotional buying of a game. This result was verified by this analysis.

Creativity causes players to explore sides of their personality that they keep submerged in their daily lives (Houser & Deloach, 1998; Kerlow, 1996). Challenge can stimulate players to think differently, and to try out many different solutions to a given problem (Richard, 2001). Video games present players with challenges as a means of increasing playing enjoyment.

Control was the ability of game players to practice their skills at an appropriate level in the video game world. Especially in multi-player gaming, players play games to win respect and totally control the whole game. Sensory gratification can provide the emotional experience beyond excitement and accomplishment, into more unexplored and uncharted emotional territory (Biocca & Levy, 1995). And socialization can extend the enjoyment that multiple players receive from interacting with a game.

Video games not only connect with one person but also connect with their friends. Based upon this result, it can be concluded that the characteristic of interactivity can influence consumers’ buying behavior and intention to play a game.

**Analyses Research Question 2**

2. What type of video games do consumers purchase?
Finding 2: In the report of frequencies count, participants stated that their favorite games are: Sports games (26.3 percent); Action/Adventure games (21.9 percent); Strategy/RPG games (20.2 percent); Racing games (12.3 percent); Fighting games (6.1 percent); Shooter games (9.6 percent); and Adult or other games (3.5 percent).

The result of this study was similar to that of IDSA’s (2002) investigation, which stated that the best selling types of video games in 2001 were: Sports (22.2 percent), Action/Adventure (19.8 percent), Strategy/RPG (17.6 percent), Racing (16.7 percent), Fighting (5.7 percent), shooters (9.1 percent), and adult or other (7 percent). Please refer to Table 8 for a complete listing of the statistics.

Table 8

*The Result of Frequencies Count Shows the Percentage for Type of Video Games*

<table>
<thead>
<tr>
<th>TYPE OF GAMES</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valid</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sports</td>
<td>60</td>
<td>26.3</td>
</tr>
<tr>
<td>Action/Adventure</td>
<td>50</td>
<td>21.9</td>
</tr>
<tr>
<td>Strategy/RPG</td>
<td>46</td>
<td>20.2</td>
</tr>
<tr>
<td>Racing</td>
<td>28</td>
<td>12.3</td>
</tr>
<tr>
<td>Fighting</td>
<td>14</td>
<td>6.1</td>
</tr>
<tr>
<td>Shooters</td>
<td>22</td>
<td>9.6</td>
</tr>
<tr>
<td>Adult or other</td>
<td>8</td>
<td>3.5</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>228</td>
<td>100.0</td>
</tr>
</tbody>
</table>

(N= 228)
Research Sub Question 2a:
2a. Does gender influence the types of video games that are purchased?

Finding 2a: There is statistically significant evidence that gender does influence the purchase of individual types of video games. The final data-producing sample consists of 228 participants who completed the survey, including 121 males (53.1 percent) and 107 females (46.9 percent). Table 9 shows the result of frequencies count for male and female respondents.

Table 9

*The Result of Frequencies Count for Male and Female Response Rate*

<table>
<thead>
<tr>
<th>Gender</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valid</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>121</td>
<td>53.1</td>
</tr>
<tr>
<td>Female</td>
<td>107</td>
<td>46.9</td>
</tr>
<tr>
<td>Total</td>
<td>228</td>
<td>100.0</td>
</tr>
</tbody>
</table>

The results of this study was similar to that of IDSA’s (2002) investigation, which stated that 46 percent of video game buyers are female and 54 percent of video game buyers are male. These data showed that females and males purchase games in almost equal numbers, and further showed that the female gaming market is growing and maturing. Therefore, if the video game developer is going to reach any kind of critical mass, it needs to produce more games with content and play patterns that appeal to females.
Cross-Tabulation and Chi-Square Analysis for Question 2a

The results showed that the percentage of males who chose different types of video games such as sports games (38 percent), action/adventure games (10 percent), strategy/RPG games (3 percent), racing games (14 percent), fighting games (15.7 percent), shooters games (13.2 percent), and adult or other games (5.7 percent). Table 10 below displays the result of Cross-tabs and Chi-square analysis of the relationship between gender and types of video games purchased.

Table 10
The Result of Cross-Tabulation Showing the Relationship between Gender and Types of Games

<table>
<thead>
<tr>
<th>GENDER</th>
<th>TYPE OF GAMES</th>
<th>Crosstabulation</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Male</td>
<td></td>
<td></td>
<td>55</td>
</tr>
<tr>
<td>Female</td>
<td></td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td>60</td>
</tr>
</tbody>
</table>

Chi-Square Tests

<table>
<thead>
<tr>
<th>Value</th>
<th>df</th>
<th>Asymp. Sig. (2-sided)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pearson Chi-Square</td>
<td>81.413a</td>
<td>0.000</td>
</tr>
<tr>
<td>N of Valid Cases</td>
<td>228</td>
<td></td>
</tr>
</tbody>
</table>

a. 2 cells (14.3%) have expected count less than 5. The minimum expected count is 3.75.

The proportion of females choosing different types of video games were as follows: as sports games (4.6 percent), action/adventure games (30.8 percent),
strategy/RPG games (32.7 percent), racing games (19.6 percent), fighting games (2.8 percent), shooters games (2.8 percent), and adult or other games (5.7 percent).

The results of this study also illustrated that two groups (male and female) were significantly different in their relation to the same variable (type of video game). The results of this study were supported by a Chi-square value (81.413) and a significance level of less than .01.

According to Schutte, Malouff, Gorden, and Rodesta (1988), games about sports, driving or shooting are typical themes in male-oriented video games. Women usually prefer to play video games that involve mysteries and storytelling (Barnett, 1999; Cesarone, 1994; Herz, 1997). Females prefer games that employ problem-solving and allied play such as "Myst," an adventure game by Broderbund, or games that provide puzzles or spatial relationships such as "Tetris." The games industry is currently growing faster than the target market. Thus, to keep the game industry strong and growing, game developers must looking at the expanding females’ market, which means designing video games that are persuasive to the female audience.

Research Sub Question 2b:

2b. Do age groups have an effect on the different types of video games that are purchased?

Finding 2b: In this study, the researcher surveyed video game users who varied in age between 18 years and 56 years of age. All of the responses were left out if respondents were under 18 years old or above 56 years old. Respondents were divided into three strata: between 18 to 24 years, 25 to 34 years, and 35 to 56 years of age.
There is a statistically significant difference between age group 1 and age group 3. There is also a statistically significant difference between age group 2 and age group 3, but there is no statistical significance difference between age group 1 and age group 2.

The frequencies count showed three age groups’ basic information. There were a total of 120, 18- to- 24- year-olds (52.6 percent), 56 between the ages of 25- to- 34 (24.6 percent), and 52 between the ages of 35- to- 56 (22.8 percent). Please refer to Table 11 for a complete listing of the statistics.

Table 11

The Frequencies Count of Age Group

<table>
<thead>
<tr>
<th>AGE GROUP</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valid 18 - 24</td>
<td>120</td>
<td>52.6</td>
</tr>
<tr>
<td>25 - 34</td>
<td>56</td>
<td>24.6</td>
</tr>
<tr>
<td>35 - 56</td>
<td>52</td>
<td>22.8</td>
</tr>
<tr>
<td>Total</td>
<td>228</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Cross-Tabulation and Chi-Square Analysis for Question 2a

The results of the Cross-tabulation and Chi-square analysis were reviewed to answer the question posed above. The values showed the percentage of Age Group 1 (18 to 24 years old) choosing different types of video game such as sports games (30 percent), action/adventure games (22 percent), strategy/RPG games (17 percent), racing games (11 percent), fighting games (5 percent), shooters games (10 percent), and adult or other games (3 percent).
The Group 2 respondents (25 to 34 years old) choose different types of video game such as sports games (28 percent), action/ adventure games (26 percent), strategy/RPG games (26 percent), racing games (12 percent), fighting games (2 percent), shooters games (2 percent), and adult or other games (2 percent).

And the Group 3 respondents (35 to 56 years old) choose different types of video game such as sports games (13 percent), action/ adventure games (15 percent), strategy/RPG games (19 percent), racing games (15 percent), fighting games (13 percent), shooters games (17 percent), and adult or other games (6 percent).

The results support this study with a Chi-square value (22.75) and significance level of less than .05. Please refer to Table 12 for a complete listing of the statistics.

Table 12

The Result of Cross-tabulation Analysis for the Relationship between Age Group and Type of Video Games

<table>
<thead>
<tr>
<th>AGE GROUP * TYPE OF GAMES Crosstabulation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Count</td>
</tr>
<tr>
<td>-------</td>
</tr>
<tr>
<td>AGE GROUP</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Total</td>
</tr>
</tbody>
</table>
Chi-Square Tests

<table>
<thead>
<tr>
<th></th>
<th>Value</th>
<th>df</th>
<th>Asymp. Sig. (2-sided)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pearson Chi-Square</td>
<td>22.745*</td>
<td>12</td>
<td>.030</td>
</tr>
<tr>
<td>N of Valid Cases</td>
<td>228</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*5 cells (23.8%) have expected count less than 5. The minimum expected count is 1.82.

There are clear trends visible along age groups line. This research data presented that Age Group 1 and Age Group 2 preferred to play Sports games, Action/Adventure games, Strategy/RPG games, and Racing games. The Age Group 3 preferred to play Strategy/RPG games, Shooters games, Action/Adventure games, and Racing games. The result was consistent with IDSA’s (2002) investigation which concluded that the best selling types of video games in 2001 were: Sports games, Action/Adventure games, Strategy/RPG games, Racing games, and Shooters games.

Analyses Research Question 3

3. What is the demographical make-up of the sample?

Research Sub Question 3a:

3a. What is the age and gender of the survey sample?

Finding 3a: The average age of video game players in the U.S. is 27.45 (mean = 27.45) years old, with the minimum 18 and the maximum 56 years old. The final data-producing sample consisted of 228 participants who completed the survey, including 121 male (53.1 percent) and 107 female (46.9 percent). Please refer to Table 13 for a complete listing of the statistics.
Table 13

The Result of Frequencies Count of Age and gender

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Median</th>
<th>Mode</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>27.45</td>
<td>23</td>
<td>18</td>
<td>9.943</td>
</tr>
</tbody>
</table>

N= 228

GENDER

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valid</td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>121</td>
</tr>
<tr>
<td>Female</td>
<td>107</td>
</tr>
<tr>
<td>Total</td>
<td>228</td>
</tr>
</tbody>
</table>

Research Sub Question 3b:

3b. What is the general purchasing behavior of the survey sample?

Finding 3b: According to the frequencies count, the average number of video games purchased is 2.70 (mean = 2.70), with the minimum number one and the maximum number nine. Please refer to Table 14 for a complete listing of the statistics.

Table 14

The frequencies count of Purchase Video Game

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Buy Game</td>
<td>2.70</td>
<td>1</td>
<td>9</td>
<td>1.554</td>
</tr>
</tbody>
</table>

N= 228
This results of the study conformed with the results of a study conducted in January of 2003 by KRC research, working with ISDA, that revealed that 56% of Americans age 45 and under intended to purchase at least one video game during the year, and of people aged 45+, between 26 - 37% of the population intended on purchasing a game for their home/family (ISDA, 2003). Table 15 shows the frequencies count of games owned.

Table 15

The Frequencies Count of Games Owned

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Own Game</td>
<td>17.37</td>
<td>3</td>
<td>50</td>
<td>10.761</td>
</tr>
</tbody>
</table>

N= 228

The average number of video games owned by participants is 17.37 (mean = 17.37), with the minimum number 3 and the maximum number 50. The average amount of money spent on video game purchases was 151.98 (mean = 151.98) U.S. dollars, with the minimum amount 50 U.S. dollars, and the maximum amount 450 U.S. dollars. An interactive video game has the potential ability to respond to the consumers' reaction about general situational factors. This is the reason why player likes to spend money to purchase different games in order to get the different feelings of enjoyment. Please refer to Table 16 for a complete listing of the statistics.
Table 16

The Frequencies Count of Money Spent on Video Games Purchases in 2003

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Money</td>
<td>153.71</td>
<td>59</td>
<td>495</td>
<td>91.664</td>
</tr>
</tbody>
</table>

N= 228

Research Sub Question 3c:

3c. What is the general game playing behavior of the survey sample?

Finding 3c: Based upon this study showed that the average time spent playing video games is 9.34 hours per week (mean = 9.34), with the minimum 3 hours and the maximum amount 20 hours. Please refer to Table 17 for a complete listing of the statistics.

Table 17

The Frequencies Count of Time Spent Playing Video Games per Week.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hours</td>
<td>9.34</td>
<td>3</td>
<td>20</td>
<td>3.225</td>
</tr>
</tbody>
</table>

N= 228

According to a 1993 survey of 357 respondents, the average amount of time spent playing video games is 3 hours per week (Shine, 1998). A 1996 survey of 1000 students found that the average time students spend playing video games was 6.5 hours per week.
(James, 2002). These findings illustrate that many players have access to playing video games at least 9.34 hours per week. It is obvious that average game playing time has increased.

The results of survey data indicate that video game marketers must actively aid consumers by anticipating wants, shaping desires, and pointing the way to possible solutions. Video game developers have to collect and employ consumer knowledge and information to help video game producers design customer satisfaction into the product or to develop entirely new products to match consumer demand in order to get more benefit from consumers.

**Analyses Open-ended Question**

Question 25: Do you believe that any other factors in addition to those items listed above influence your buying behavior? Please explain.

And Demographic Question 8: Do you have any comments or suggestions that you feel the researcher should consider? Please explain.

For two open-ended questions, 12 respondents answered question 25 and seven respondents answered demographic question 8. After reviewing these answers, it was found that almost all suggestions and comments were already illustrated in this research. However, the sample size was not big enough to analyze or categorize. For validity and reliability, this study cannot utilize these open-ended answers. Please see Appendix F for a listing of the suggestions by subject.
CHAPTER V
SUMMARY, DISCUSSION, IMPLICATIONS, FURTHER RESEARCH, AND CONCLUSIONS

Summary

Chapter five presents a summary of the findings in this study about the impact of perceived interactivity and vividness of video games on customers' buying behavior, which includes a discussion about the interpretations, limitations, implications, recommendations, and conclusions in this study. This study examines what kinds of games captivate consumers, determines whether more interactive games achieve more positive press, and evaluate how video games of the future should be developed. The first goal of this research study was to examine the relationship between the characteristics of vividness, interactivity, and the game players' playing behavior. The second goal of the study was to see if the characteristics of interactivity and vividness ultimately have an effect on the consumers' buying behavior.

Solutions to serious problems must be based upon serious assessments of this subject. The theory behind this study was that increasing the level of interactivity and vividness can influence the purchase and sales of video games. The results showed that the characteristics of interactivity and vividness significantly differ in consumer buying behavior by respondents. Thus, the vividness and interactivity of video games can be expected to influence the involvement and immersion experienced by players. To enhance the characteristics of interactivity and vividness is important for future video game development, because interactivity and vividness are important in helping players
actively engage in the communication process between game developers and players. This is closely related to the concept of relationship marketing, where game developers make an effort to establish a relationship with consumers so that it results in more sales. There were 228 participants in this study, including 121 males and 107 females. The average age of video game players in the survey is 27.45 years old, with the minimum age 18 and the maximum 56 years old.

Discussion

Research Questions

Three research questions address the purposes of this study. These questions are as follows:

1. What are the factors that affect the likelihood of a consumer’s purchasing behavior for a video game?
   (1a.) Does vividness affect the likelihood of a consumer’s purchasing behavior for a video game?
   (1b.) Does interactivity affect the likelihood of a consumer’s purchasing behavior for a video game?

2. What type of video games do consumers purchase?
   (2a.) Does gender influence the types of video games that are purchased?
   (2b.) Do age groups have an effect on the different types of video games that are purchased?

3. What is the demographical make-up of the sample?
   (3a.) What is the age and gender of the survey sample?
Findings in Research Question 1

1. What are the factors that affect the likelihood of a consumer's purchasing behavior for a video game?

Responses to research Question 1 provide the data indicating that the independent variables of vividness and interactivity affect consumer buying behavior for a video game. Consumers' purchasing behavior had a strong positive correlation with vividness and interactivity. There were significant correlations between the interactivity, vividness and consumer buying behavior. These variables had statistical significance with consumer buying behavior, with most scores .50 or higher at the .01 level of significance. This means there is a 99% probability that these relationship scores were not produced by chance. Players are highly selective in the video game they seek and tolerate. Consequently, when players are choosing games, they choose things that they think will produce in themselves appealing levels of stimulation, distraction, or involvement.

The characteristics of interactivity and vividness directly connect with the consumers' desires, and players can have new experiences while playing the games. This result was reflected in Vorderer's research (1999), which stated that, "A key to explaining why video games have become very popular forms of entertainment is to explore the player's gratification which is linked to the interactive form." (p. 36). The interactivity of video games directly corresponded to consumer satisfaction and
emotional buying of a game. The relationship between consumer buying behavior and interactivity and vividness were interpreted as follows:

1. Sensory Gratification: this study result showed that sensory gratification (the players' ability to modify the form and content of a video game environment in real time) was the most important fact to convince players to purchase and play a video game. All data pointed out that players are likely to purchase a video game if the game can stimulate their imagination or can provide enjoyment to players. Sensory gratification can provide the emotional experience beyond excitement and accomplishment, into more unexplored and uncharted emotional territory (Biocca & Levy, 1995), and a good game designer would be wise to concentrate on expanding in this direction. Players are likely to play video games just for fun. This is likely to have considerable impact on players' enjoyment and is likely to enhance players' feeling of experiencing mediated events and relationships.

2. Challenge: challenge was the second most important fact to persuade consumers to play and purchase video games. Challenge can stimulate players to think differently and to try out many different solutions to a given problem (Richard, 2001). Video games have to allow the player to choose the difficulty level in order to stimulate their potential ability in this virtual environment. Video games present players with challenges as a means of increasing playing enjoyment. The level of challenge presented provides one of the primary motivating factors for single or multiple players in purchasing or playing a particular game. This allows the game to become progressively more interesting as it becomes more challenging. Video game
developers have to make personal challenges to maintain interest. Some games can hold a player’s interest for long periods of time.

3. Audio Effect: the results of this study pointed out that audio effect was the third important factor to effect consumer buying behavior. Audio effects influence how receptors in the brain stimulate the sound processing centers of brain (Fontaine, 1992; Jaeckel, 1995). Audio effects cause players to become caught up in the gaming world (Fontaine, 1995). In this study, most participants demonstrated that if the game has good audio effect or provides lifelike sounds, they will be likely to purchase the game. High-Fidelity audio made video games more likeable and realistic. A player will seldom play a video game without sound.

4. Creativity: creativity was the fourth factor that can influence consumers’ playing and buying video games. Creativity cause players to explore sides of their personality that they keep submerged in their daily lives (Houser & Deloach, 1998; Kerlow, 1996). The data showed that most players like to purchase video games that provide easy to manage solutions, even allows players the opportunity to create online games. In other words, video games need to engage the players and cause them to think creatively. When a player is going to play a video game, he/she likes to engage in exciting, interesting activities, and to travel to unusual locales in their life experience. Therefore, enhancing the degree of creativity can create more attractive features to match customers’ needs.

5. Control: in order to control play in a video game, players are required to pay more attention, to make mental maps of the game environment, and to coordinate visual attention with motor behavior. Control is the ability of game players to practice
their skills at an appropriate level in the video game world. In other words, the aim of a video game is to engage the player not as a passive spectator, but as an active participant (Crawford, 1997). Most respondents choose to purchase a video game if they can control the difficulty of video game or if the game provides a multiple player mode. When a player points at objects on the screen, the game makes the player feel in control. Control was the fifth important factor to manipulate consumers’ desire to buy and play video games.

6. Socialization: the data in this study showed that socialization was the sixth most important factor to provide an environment for helping players to develop their social skills. Most young players are likely to purchase video games if the game provides a chance to find other players or the game has a tournament with other players. Multiplayer-games enable players to communicate and collaborate in joint game sessions. Some reasons players like to play video games is to have a social experience with their friends or family (Crawford, 1997; Kerlinger, 1973; Richard, 2001). The interactivity of video games not only enables the players to connect with one person but also to connect with their friends. As Richard (2001) stated, “People like to play video games because they like being with their friends and want to engage in a shared activity that is more social than going to a movie or watching TV.” (p 3). The data stated that young players like to play with their friends or other players but older players did not. The reason was that games have a strong social component, and people need to be socialized in order to perform those kinds of activities.

7. Visual Effect: visual effect was the seventh most important factor to cause
consumers to purchase video games. Most people think of video games as a visual medium. The primary faith in the continued evolution of games resides in the ability to improve the technology for their visual presentation (Heijden, 1992).

Visual effects can rapidly catch players' motivation to continue playing the games (Held & Durlach, 1993). Visual effect is the essential foundation for the design of video games. The game player can assume multiple perspectives or identities, and soon learns that the rules which underpin a game at one level might be stretched or broken at another. Players pay more attention to moving images than to still images. Players know that unexpected motion, formal features, and novelty all really draw attention.

8. Storytelling: video games are seen as interactive narratives, procedural stories or remediated cinema. The result of this study is that the variable of storytelling is the least important factor to influence consumers' playing or buying video games. As Juul (2002) stated, "Narratives may be fundamental to human thought, but this does not mean that everything should be described in narrative terms." (p. 2). In other words, video games do not necessarily, or should not necessarily, tell a story. Most females preferred video games providing the storyline to help them enjoy this game environment. On the other hand, the data showed that males do not need a storyline when playing video games.

Based upon the results of this study, it can be seen that the characteristics of vividness and interactivity can influence consumers' buying behavior and meaning to play a game. Interactivity and vividness is one of the most important and distinguishable features of a video game. Video gaming, unlike reading a novel or watching a TV
program, not only actively engages the thought processes through interaction, but also provides entertainment and a channel for leisure activities. Findings in this study imply a deeper relationship among interactivity, vividness, and buying behavior.

**Findings in Research Question 2**

2. What type of video games do consumers purchase?

Research question 2 aims to describe that what type of video games consumers purchase, determine whether gender influences the types of video games, and whether age has an effect on the different types of video games that are purchased. The data showed that participants' favorite games were: Sports games, Action/Adventure games, Strategy/RPG games, Racing games, Fighting games, Shooters games, and Adult or other games. The results of the study were similar to those of IDSA's (2002) investigation, which stated that the best selling types of video game in 2001 were: Sports games, Action/Adventure games, Strategy/RPG games, Racing games, Fighting games, Shooters games, and adult or other games.

The final data-producing sample consists of 228 participants who completed the survey, including 121 males (53.1 percent) and 107 females (46.9 percent). The results of the study were similar to those of IDSA’s (2002) investigation, which stated that 46 percent of video game buyers are female and 54 percent of video game buyers are male. There was statistically significance differences between male and female purchasing patterns that showed gender does influences the individual types of video games purchased. The results of the Cross-tabulation and Chi-square analysis were appropriate to answer this question, Chi-square value (81.413) and significance less than .01 level.
Females preferred games that employed problem-solving and allied play such as “Myst,” an adventure game by Broderbund, or games that provide puzzles or spatial relationships such as “Tetris.” The games industry is currently growing faster than the target market. Thus, to keep the game industry strong and growing, game developers must look at expanding the females’ market, which means designing video games that are appealing to the female audience. According to Schutte, Malouff, Gorden, and Rodesta (1988), games about sports, driving or shooting are typical themes in male-oriented video game. Women usually prefer to play video games that involve mysteries and storytelling (Barnett, 1999; Cesarone, 1994; Herz, 1997). Therefore, if the video game developer is going to reach any kind of critical mass, it needs to produce more games with content and play patterns that appeal to females.

In this study, the researcher surveyed video game users who vary in age between 18 years and 56 years of age. Respondents were divided into three strata (between 18 to 24 years, 25 to 34 years, and 35 to 56 years of age). The results support this study with a Chi-square value of 22.75 and significance level of less than .05. There was a statistically significant difference between Age Group 1 (ages 18 to 24) and Age Group 3 (ages 35 to 56). There was also a statistically significant difference between Age Group 2 (ages 25 to 34) and Age Group 3 (ages 35 to 56), but there was no statistically significant difference between Age Group 1 and Age Group 2. There are clear trends visible along age and gender lines. Therefore, video game developers have to consider the meaning of this result when they develop a game; they have to think about the target players and provide appropriate video game content for players.
Findings in Research Question 3

3. What is the demographical make-up of the sample?

Responses to Research Question 3 provided data on the demographical make-up of the survey sample, including age and gender, general purchasing behavior, and general game playing behavior. The average age of video game players in the survey is 27.45 years old, with the minimum age 18 and the maximum 56 years old. The final data-producing sample consisted of 228 participants who completed the survey; including 121 males and 107 females. On the other hand, the average of purchasing video game is 2.70 that the minimum is buy one game and maximum is purchase nine games. The results of the study conformed to the results of a study conducted by ISDA, which conducted a poll that revealed that 56% of Americans age 45 and less intended to purchase at least one video game during the year, and of people aged 45+ between 26 - 37% of the population intended to purchase a game for their home/family (ISDA, 2003).

The average number of video games owned by participants is 17.37, with the minimum number 3 and the maximum number 50. The average amount of money spent on video game purchases was 151.98 U.S. dollars, with the minimum amount 50 U.S. dollars, and the maximum amount 450 U.S. dollars. The average time spent playing video games is 9.34 hours per week, with the minimum 3 hours and the maximum amount 20 hours. These findings illustrate that many players have access to playing video games at least 9.34 hours per week.

Most games require the player to take part in developing the game scenario, but players are routinely rewarded for identifying and selecting the strategies built in by the game designer (Wolf & Mark, 2002). On the other hand, the results of data indicated that
video game marketers must actively aid consumers by anticipating wants, shaping desires, and pointing the way to possible solutions.

**Limitations of the Study**

There were some limitations in this study as follows:

1. The researcher was using a convenience sample method; therefore, the result of the study may not be generalizable to any other population.

2. The results of this research may not be precisely transferable to other industries.

3. Time limitations on research study are an important element, due to the frequent changes in video consumers' buying inclinations.

4. This is a preliminary study in a complex area of video game research. Though plausible in terms of related data, research questions about discounting and about the role of video games need to be more specifically tested.

5. Only a few respondents answered the open-ended questions; thus, the sample size was too little to analyze or categorize these questions.

6. The lack of sponsorship was a constraint since the necessary funds for a larger study was not available to the researcher on this study.

**Recommendations for Practical Implications**

The present study provided evidence in support of the conclusion that there is an impact of perceived interactivity and vividness of video games on customer buying behavior. The central issue is how to catch the players' attention to buy and play games. At the same time, interactivity and vividness are presented as two key dimensions: the
more interactivity and vividness that a video game has, the more benefit to the game market.

Good video games are designed to motivate the player to continue playing the games again and again. The content of video game has to include the feature of interactivity and vividness. Therefore, the players can and will follow their own needs, tests, and preferences in purchasing games. On the other hands, players often find great satisfaction in using the games in ways that are totally unpredictable to the outsider. Playing video games is a valued leisure activity among adolescents, who often prefer interactive games. This study would like to provide some points of recommendation for practical implication as follows:

1. The characteristics of interactivity and vividness influence the consumers’ buying behavior. To the video game industry, improving the characteristic of interactivity and vividness should be an important guideline for development of any new video game. Good video game developers should increase the degree of interactivity and vividness when they develop new games in order to motivate the consumers’ purchasing behavior.

2. The most important factor from this research study with regard to convincing players to purchase and play a video game is sensory gratification. However, if a game is not fun, it will not satisfy the motivations of the player. Players want to feel something when they play with game, and they are seeking some form of emotional “payoff” when they play a video game. In other words, an identical phenomenon occurs with video games where players’ experience the same type of emotional by feeling for and feeling with the video games. The game developers have to increase the level of
sensory gratification in order to create a good relationship between consumers and games.

3. The results of this study showed that females and males purchase games in almost equal numbers. Recently, female oriented games have become the new trend, and the games market no longer dominated by male gamers. In other words, the female gaming market is growing and maturing. Therefore, game developer must pay attention to the long dismissed female market if they hope to enjoy continued economic growth.

4. The average amount of time spent playing video games is 9.34 hours per week. This result of research compares favorably with the 1993 and 1996 survey results. The average game playing time has increased. Apparently, video games have the potential to become a mass entertainment.

5. When developing a structure of story through games they should be attractive to the players. For example, quantities of material building characterization, unrelated to the players’ goals, should be avoided. Game developers must consider that if they cannot develop video games to meet the consumers’ demand then they will not earn benefit from consumers.

6. When game developers create a new game they must rethink how it should engage the players; the best games succeed by discovering new structures of interactivity, vividness, and genres. Players can choose video games in the same way they choose any other form of entertainment. If game developers cannot attract the players’ attention that means this game failed in this game market.

7. If the game industry is to further broaden gaming appeal to mass-market audiences, it
must learn to enhance the level of interactivity and vividness in video game to match consumers’ needs and desires.

8. Once a useful group player age has been identified, effective strategies can thus be developed to attract the appropriate customer segments. Video games are important for people to know to establish some sort of street credibility. People use their experiences for social purposes.

9. When game developers design games, they have to consider strategies that do not require a high degree of frustration tolerance in video game, as they provide instant and continuous feedback in the form of immediate knowledge of results.

10. Video games have to provide an arena for competition with peers. Game developers must utilize new methodologies and characteristics of game, as well as anticipate and meet skyrocketing consumers’ expectations.

11. Video games have to appear inherently to motivate players intrinsically by stimulating due curiosity. This may be due to the challenges and elements of fantasy.

12. Game developers have to rethink that any amount of characteristic of video games should be treated as a serious concern.

Recommendations for Further Research

Game industry growth is radically accelerating and changing market conditions demand evolution. Video games are popular channels for consumers to release emotions and stimulate many centers of the mind. The findings of this study indicate that the characteristics of interactivity and vividness relate to consumer buying behavior. Video game playing is not a passive activity. Players are rewarded for their skills at shooting
down or exploding various targets. Actually, in a global sense, video games have the potential to become the dominant form of personal entertainment in the 21st century.

Future research dealing with the characteristics of video games could profitably address:

1. To refine the influence of realism of characters and actions portrayed in a game.

2. In age groups, playing video games may have even greater popularity and significance. Therefore careful assessment of age-related changes in game playing and purchasing habits and preferences is needed.

3. Further research could be conducted on age groups or other factors to determine whether such factors influence consumer buying behavior; the next step is to determine how important each age group is to the industry.

4. Collaborative studies should be developed so that researchers may explore the implications of a pervasive preference for entertainment media.

5. Further research could be conducted to consider the strength of individual differences when researching the effects of video games on purchasing behavior.

6. A long-term longitudinal study should be employed to understand the characteristics of video games that influence players to buy the game and play it.

7. Further research could be conducted on refining the survey instrument developed in order to improve reliability and validity of the instrument.

8. Further research could be conducted on replicating the study in different geographic areas, as different areas might have different results.

9. Further research could be conducted on a larger sample to allow multiple comparisons according to the eleven variables.
10. Further research could be conducted on a more detailed comparative study of males and females video game playing behavior and their diverse buying behavior patterns.

11. Further research could be conducted on the interrelationship among these variables.

12. Further research is needed to explore the relationships among a variety of variables implicated in the customer and type of game connection.

Conclusions

Video games are popular channels for consumers to release emotions and stimulate many centers of the mind. The rapid increase in popularity of video games demonstrates a huge potential for growth. Basically, the video games require visual-motor coordination of the kind that invariably allows players to improve with practice, therefore giving them an experience of mastery and competence. Players can utilize this virtual space to escape from everyday routines and stresses presented by work, friends, and society. Although the game business is a billion dollar industry, the competition is fierce. Therefore, it is important for manufacturers and video game developers to understand what makes consumers buy games and play games. This study has been developed to help learn the effects of these two salient factors on consumers' buying behavior. The implications of this research are revealing. There is a critical necessarily for video game developer, game designer, and publisher to deeply understand about the characteristics of interactivity and vividness in order to utilize these factors to stimulate and intrigue a diverse audience.

The goal of this research was try to predict which factors of interactivity and vividness would increase consumers' buying behavior. An answer to this question is
valuable to video game developers wanting to attract and retain consumers. On the other hand, the video game developer has to utilize the factors of interactivity and vividness for incite game players' feeling, such as happiness, enjoyment, relaxation and challenge, with playing video games. Thus, the manner in which people experience a video game environment was a central issue for this study. In sum, the evidence shows that interactivity and vividness are necessary for an adequate description of consumer buying behavior. Such results provide strong evidence for the influence of interactivity and vividness on consumers’ buying behavior and playing attention.

This study did develop, test and show that consumers' buying behavior to video games can be predicted. The process of testing consumers’ buying behavior model brought us closer to idealized goal of predicting which of factors would attract players to play and purchase video games. However, this study would like attempted to highlight the importance of video games design based on the consumers' point of view. If video games can satisfy customers and they can create profits for the companies. The result of this study likes to emphasize that video game developers have to pay more attention to consumers’ buying behavior in order to understand such behavior and develop new products. Game developers also have to ask themselves how to meet customers’ needs and create a repetitive market.

The results of this study showed that a video game’s creativity, challenge, control, sensory gratification, socialization, audio effect, visual effect, and storytelling qualities have positive relevance to engage consumers’ minds and stimulate their imagination to play or purchase video games. Findings in this study imply a deeper relationship among interactivity, vividness, and buying behavior. Therefore, video game developers have to
enhance the qualities of interactivity and vividness in their presentation to motivate players to purchase and play video games. On the other hand, the results also indicated that there was statistically significance that gender differences can influence the individual types of video games purchased. Thus, video game companies must be committed to reaching out to the female consumer market, just as they have successfully done for the male market, they would like to have more consumer sales in the video game marketing.

Video games were selected as the phenomenon since the entertainment industry particularly focuses on capturing and holding the attention of its audience. Video game developers have to consider the meaning of these results when they develop a game; they have to think about the target players and provide appropriate video game content for players. There seems to be one successful way to continue to move video games in a saturated game market: increase the interactivity and vividness of the game. In the future, customers might voice their likes and dislikes, and games can be tailored according to customers’ wishes. To increase video game marketplace, merging the features of interactivity, vividness, and customization may be a key to enhance customers’ buying behavior and playing intentions.
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Appendix A

The E-mail Invitation Letter
Dear Gamer:

Could you help me? I am Yi-Lin Yu (Simon), and I am a Ph.D. student at Lynn University in Boca Raton, Florida. I am conducting a research study as part of my doctoral dissertation process. This research is being conducted under the direction of Professor Frederick L. Dembowski. I am requesting your assistance by completing a questionnaire regarding your experiences with playing and purchasing video games.

The purpose of this study is to examine the relationship between the characteristics of vividness, interactivity, and the game player’s behavior, and to analyze the characteristics of interactivity and vividness that increase or decrease consumers’ buying behavior.

If you agree to participate in this study, please click on the hyperlink below:
http://mysurvey.hostignition.com/game

Could you also help me by sending this email to your friends who have experience in playing and purchasing video games. Your cooperation in this research study is greatly appreciated!!!

Sincerely yours,

Yi-Lin, Yu
Ph.D. student
Lynn University
Appendix B

The Information and Informed Consent for Participants

in this Web Based Research Study
The Impact of Perceived Interactivity and Vividness of Video Games

on Customer Buying Behavior

Yi-Lin, Yu

The Information and Informed Consent for Participants
in this Web Based Research Study

The purpose of this research study is to examine the relationships between the characteristics of vividness, interactivity, and the game player’s behavior. The study will also analyze the characteristics of interactivity and vividness that increase or decrease consumers’ buying behavior.

Thank you for participating in this online survey. You must be between the ages of 18 to 56 years old in order to participate in this survey. This research is conducted by Mr. Yi-Lin, Yu, who is a Ph.D. student at Lynn University in Boca Raton, Florida. The researcher is conducting this survey, under the direction of Professor Frederick L. Dembowski to obtain feedback regarding your experience with playing and purchasing video games.

In this study, you are asked to complete an online questionnaire based on your experiences purchasing and playing video games. The purpose of this Web survey is to gather the data for this research. All of the information obtained during this research study will be kept anonymous and confidential. Answering this questionnaire will take about 5-7 minutes for all of the questions. Participation in this research study is completely voluntary, and you are free to withdraw at any time and for any reason without penalty. Your response to all questions is extremely important to this research study. By completing the questionnaire, you give your informed consent to participate in this study.

If you have any questions about this research study, please contact with Mr. Yu by e-mail at [redacted]. Your cooperation in this research study is greatly appreciated.

Sincerely yours,

Yi-Lin, Yu (Simon)
Ph.D. student at Lynn University
Appendix C

The Consumer Buying Behavior Questionnaire (Paper Version)
Consumers' buying behavior Questionnaire

You must be between the ages of 18 to 56 years old in order to participate in this survey.

Survey Instructions:
Please follow the steps below while completing this survey.
• In answering the questions below, use a scale from 1 to 9 where 1 means “very strongly disagree”, 5 means “neither agree nor disagree”, and 9 means “very strongly agree”. Write a number in the space provided that best indicates your feeling about the question.

Section 1
Rate the following questions from 1 to 9. Please use the scale as described in the instructions. In this section, please DO NOT USE THE SAME NUMBER MORE THAN ONCE!

1. ___ if the game is interactive (sparks my creativity, challenges you, gives you a sense of control, pleases your senses, and allows you to socialize).
2. ___ if the game is vivid (for example, the video game provides audio effects, visual effects and storytelling features).

Section 2
Rate the following questions from 1 to 9. Please use the scale as described in the instructions. In this section, please DO NOT USE THE SAME NUMBER MORE THAN ONCE!

3. ______ if the game involves solving problems and puzzles.
4. ______ if the game is easy for me to manage.
5. ______ if the game allows me to create other online games.

Section 3
Rate the following questions from 1 to 9. Please use the scale as described in the instructions. In this section, please DO NOT USE THE SAME NUMBER MORE THAN ONCE!

6. ______ if I can control the level of difficulty of the game.
7. _____ if the game provides me multiple player modes (offers the ability for two or more players to play together).

Section 4
Rate the following questions from 1 to 9. Please use the scale as described in the instructions. In this section, please DO NOT USE THE SAME NUMBER MORE THAN ONCE!

- I am more likely to purchase a video game:
  8. _____ if I can control the game by voice.
  9. _____ if I can control the outcome of the story.
  10. _____ if I am able to use peripherals in the game (e.g., guns or special controllers).

Section 5
Rate the following questions from 1 to 9. Please use the scale as described in the instructions. In this section, please DO NOT USE THE SAME NUMBER MORE THAN ONCE!

- I am more likely to purchase a video game:
  11. _____ if the game stimulates my imagination.
  12. _____ if the game is enjoyable.

Section 6
Rate the following questions from 1 to 9. Please use the scale as described in the instructions. In this section, please DO NOT USE THE SAME NUMBER MORE THAN ONCE!

- I am more likely to purchase a video game:
  13. _____ if the game makes it easy for me to find other players.
  14. _____ if I am able to play a game in a tournament with other players.

Section 7
Rate the following questions from 1 to 9. Please use the scale as described in the instructions. In this section, please DO NOT USE THE SAME NUMBER MORE THAN ONCE!

- I am more likely to purchase a video game:
  15. _____ if the game has good audio effects, such as DOLBY superior sound, clear voice, or good music.
  16. _____ if the game has lifelike sounds (e.g. the real-life sounds of guns shooting, glass breaking and cars racing).
Section 8
Rate the following questions from 1 to 9. Please use the scale as described in the instructions. In this section, please DO NOT USE THE SAME NUMBER MORE THAN ONCE!

- I am more likely to purchase a video game:
  17. _____ if the game has good graphics (e.g. the picture is clear and well designed).
  18. _____ if the game allows me to play in 3D scenes.
  19. _____ if the game has brilliant colors.
  20. _____ if the game has lifelike graphics (e.g., offers a lifelike landscape and buildings).
  21. _____ if the game has realistic textures (e.g. the texture of wood look likes real wood or the texture of stone look likes a real stone).

-----------------------------------------------------------------------------------------------------------------------------------

Section 9
Rate the following questions from 1 to 9. Please use the scale as described in the instructions. In this section, please DO NOT USE THE SAME NUMBER MORE THAN ONCE!

- I am more likely to purchase a video game:
  22. _____ if the game tells a story (e.g. the story like MYST, Tomb Raider, The Last Express, or Harry Potter).
  23. _____ if the game allows me to create different story endings.
  24. _____ if the game has lifelike characters (e.g. the Ali in boxing games, the Bruce Lee in fighting games, and Michael Jordan in sports games).

25. Are there any factors besides of those above that influence your buying behavior of video game? Please explain.
DEMOGRAPHIC PROFILE

Please write your response regarding your basic information.

1. ______ What is your age?

2. Are you female or male? (Please check one)
   - 1  Female
   - 2  Male

3. ______ How many hours on average do you play video games per week?

4. ______ How many video games did you buy in last year?

5. ______ How many video games do you own?

6. What type of video games do you particularly likely to play? (Please check one)
   - 1  Sports
   - 2  Action/Adventure
   - 3  Strategy/RPG
   - 4  Racing
   - 5  Fighting
   - 6  Shooters
   - 7  Adult/other
   - 8 Other types of games

7. ______ How much money did you spend to purchase video games last year?

8. Do you have any comments or suggestions that you feel the researcher should consider in this research study? Please explain.

Please click the submit button after you finish the questionnaire!

Thanks again for your time in helping with this study!
Appendix D

The Consumer Buying Behavior Questionnaire (Web Version)
You must be between the ages of 18 to 56 years old in order to participate in this survey.

Survey Instructions

Please follow the steps below to complete this survey.

- In answering the questions below, use a scale from 1 to 9 where 1 means “very strongly disagree”, 5 means “neither agree nor disagree”, and 9 means “very strongly agree”. Write a number in the space provided that best indicates your feeling about the question.

Section 1

Rate the following questions from 1 to 9. Please use the scale as described in the instructions. In this section, please DO NOT USE THE SAME NUMBER MORE THAN ONCE!

I am more likely to purchase a video game:

1. if the game is interactive (sparks my creativity, challenges you, gives you a sense of control, pleases your senses, and allows you to socialize).

2. if the game is vivid (for example, the video game provides audio effects, visual effects and storytelling features).

Section 2

Rate the following questions from 1 to 9. Please use the scale as described in the instructions. In this section, please DO NOT USE THE SAME NUMBER MORE THAN ONCE!

I am more likely to purchase a video game:

3. if the game involves solving problems and puzzles.

4. if the game is easy for me to manage.

5. if the game allows me to create other online games.
Section 3

Rate the following questions from 1 to 9. Please use the scale as described in the instructions. In this section, please DO NOT USE THE SAME NUMBER MORE THAN ONCE!

I am more likely to purchase a video game:

6. if I can control the level of difficulty of the game.

7. if the game provides me multiple player modes (offers the ability for two or more players to play together).

Section 4

Rate the following questions from 1 to 9. Please use the scale as described in the instructions. In this section, please DO NOT USE THE SAME NUMBER MORE THAN ONCE!

I am more likely to purchase a video game:

8. if I can control the game by voice.

9. if I can control the outcome of the story.

10. if I am able to use peripherals in the game (e.g., guns or special controllers).

Section 5

Rate the following questions from 1 to 9. Please use the scale as described in the instructions. In this section, please DO NOT USE THE SAME NUMBER MORE THAN ONCE!

I am more likely to purchase a video game:

11. if the game stimulates my imagination.

12. if the game is enjoyable.

Section 6

Rate the following questions from 1 to 9. Please use the scale as described in the instructions. In this section, please DO NOT USE THE SAME NUMBER MORE THAN ONCE!

I am more likely to purchase a video game:
13. if the game makes it easy for me to find other players.

14. if I am able to play a game in a tournament with other players.

Section 7
Rate the following questions from 1 to 9. Please use the scale as described in the instructions. In this section, please DO NOT USE THE SAME NUMBER MORE THAN ONCE!

**I am more likely to purchase a video game:**

15. if the game has good audio effects, such as DOLBY superior sound, clear voice, or good music.

16. if the game has lifelike sounds (e.g. the real-life sounds of guns shooting, glass breaking and cars racing).

Section 8
Rate the following questions from 1 to 9. Please use the scale as described in the instructions. In this section, please DO NOT USE THE SAME NUMBER MORE THAN ONCE!

**I am more likely to purchase a video game:**

17. if the game has good graphics (e.g. the picture is clear and well designed).

18. if the game allows me to play in 3D scenes.

19. if the game has brilliant colors.

20. if the game has lifelike graphics (e.g., offers a lifelike landscape and buildings).

21. if the game has realistic textures (e.g. the texture of wood look likes real wood or the texture of stone look likes a real stone).

Section 9
Rate the following questions from 1 to 9. Please use the scale as described in the instructions. In this section, please DO NOT USE THE SAME NUMBER MORE THAN ONCE!

**I am more likely to purchase a video game:**

22. if the game tells a story (e.g. the story like MYST, Tomb Raider, The Last Express, or Harry Potter).
23. If the game allows me to create different story endings.

24. If the game has lifelike characters (e.g., the Ali in boxing games, the Bruce Lee in fighting games, and Michael Jordan in sports games).

25. Are there any factors besides of those above that influence your buying behavior of video game? Please explain.

DEMOGRAPHIC PROFILE
1. What is your age? __________

2. Are you female or male? (Please check one)
   - Female
   - Male

3. How many hours on average do you play video games per week? __________

4. How many video games did you buy in last year? __________

5. How many video games do you own? __________

6. What type of video games do you particularly likely to play? (Please check one)
   - Sports
   - Action/Adventure
   - Strategy/RPG
   - Racing
   - Fighting
   - Shooters
   - Adult/Other
   - Other types of game

7. How much money did you spend to purchase video games last year? __________
8. Do you have any comments or suggestions that you feel the researcher should consider in this research study? Please explain.

Please put your comments or suggestions here

(I) Please click the submit button after you finish the questionnaire!
Thanks again for your time in helping with this study!
APPENDIX E

Institutional Review Board Approval
August 13, 2003

Yu Yi-Lin

Dear Simon:

The Institutional Review Board has reviewed your proposal entitled "The Impact of Perceived Interactivity and Vividness of Video Games on Consumers' Buying Behavior." Your request for an exemption has been granted.

If you have any questions, please feel free to call me at [redacted].

Best of luck on your research.

Sincerely,

[Signature]

Karen Casey-Acosta, Ph.D.
Chair, Institutional Review Board

Cc: Dr. Dr. Frederick Dembowski, Chair, Dissertation Committee

3601 North Military Trail, Boca Raton, Florida 33431-5598
(561) 237-7000 www.lynn.edu
APPENDIX F

Regression Analysis for Consumer Buying Behavior
The Result of Regression Analysis for Consumer Buying Behavior, Interactivity and Vividness

### Model Summary

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
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</thead>
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<tr>
<td>1</td>
<td>.839</td>
<td>.704</td>
<td>.693</td>
<td>.4946</td>
</tr>
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</table>

*a. Predictors: (Constant), STORYTELLING, CREATIVITY, VISUAL, AUDIO, SENSORY, CONTROL, SOCIALIZATION, CHALLENGE*

### ANOVA

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
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<td>Regression</td>
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<td>8</td>
<td>15.907</td>
<td>65.021</td>
</tr>
<tr>
<td></td>
<td>Residual</td>
<td>53.576</td>
<td>219</td>
<td>.245</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>180.828</td>
<td>227</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*a. Predictors: (Constant), STORYTELLING, CREATIVITY, VISUAL, AUDIO, SENSORY, CONTROL, SOCIALIZATION, CHALLENGE*

*b. Dependent Variable: CONSUMER*

### Coefficients

<table>
<thead>
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<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
</tr>
<tr>
<td>1</td>
<td>(Constant)</td>
<td>-1.636</td>
</tr>
<tr>
<td></td>
<td>CREATIVITY</td>
<td>.157</td>
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<tr>
<td></td>
<td>CHALLENGE</td>
<td>.236</td>
</tr>
<tr>
<td></td>
<td>CONTROL</td>
<td>.152</td>
</tr>
<tr>
<td></td>
<td>SENSORY</td>
<td>.285</td>
</tr>
<tr>
<td></td>
<td>SOCIALIZATION</td>
<td>9.939E-02</td>
</tr>
<tr>
<td></td>
<td>AUDIO</td>
<td>.174</td>
</tr>
<tr>
<td></td>
<td>VISUAL</td>
<td>.135</td>
</tr>
<tr>
<td></td>
<td>STORYTELLING</td>
<td>5.583E-02</td>
</tr>
</tbody>
</table>

*a. Dependent Variable: CONSUMER*
APPENDIX G

The Open-Ended Question: Comments by Subjects
**Question 25:**

Do you believe that any other factors those items listed influence you buying behavior?

Please explain.

**Answer:**

<table>
<thead>
<tr>
<th>Respondent Number</th>
<th>Content</th>
</tr>
</thead>
<tbody>
<tr>
<td>28</td>
<td>I think it's important to know how a game is utilizing new graphics technology and faster processors.</td>
</tr>
<tr>
<td>47</td>
<td>Manufacturer determines how well a game has been programmed because that is the reputation of company.</td>
</tr>
<tr>
<td>53</td>
<td>I like it when you have the freedom to traverse a wide area and have a variety of smaller things can take adventure.</td>
</tr>
<tr>
<td>67</td>
<td>Great graphics, sound, interactive, individual and multi-player, realistic.</td>
</tr>
<tr>
<td>70</td>
<td>I enjoy nonlinear games. Being able to do what I want and to create the outcome of the game is the excellence thing.</td>
</tr>
<tr>
<td>72</td>
<td>Feelings! The game should offer emotional storyline.</td>
</tr>
<tr>
<td>73</td>
<td>The game play must be great and the storyline must be professional.</td>
</tr>
<tr>
<td>80</td>
<td>I prefer history games. Strategy and tactics.</td>
</tr>
<tr>
<td>93</td>
<td>I buy video games for my nephews or other children in my life and my answers are based on what they like.</td>
</tr>
<tr>
<td>121</td>
<td>I would like play game all alone. I do not need anyone to company with me.</td>
</tr>
<tr>
<td>179</td>
<td>Degree of freedom in the game. The more things you can do, the better it is.</td>
</tr>
<tr>
<td>196</td>
<td>Replay value; will this game be any fun after I beat it? Is it worth buying, or just renting at bloc?</td>
</tr>
</tbody>
</table>
Demographic Question 8:

Do you have any comments or suggestions that you feel the researcher should consider? Please, explain.

Answer:

<table>
<thead>
<tr>
<th>Respondent Number</th>
<th>Content</th>
</tr>
</thead>
<tbody>
<tr>
<td>28</td>
<td>It would be interesting to note how willing people would be to spend extra money on the advanced hardware required to play some newer games.</td>
</tr>
<tr>
<td>67</td>
<td>I believe graphics are very important in some games such as ghost recon, America’s army, black hawk down, and similar interactive games.</td>
</tr>
<tr>
<td>71</td>
<td>Overall I found it pretty hard to answer the questions, especially when I was only allowed to use the same number once in each section.</td>
</tr>
<tr>
<td>85</td>
<td>Remember that it’s near impossible for someone to fill out a survey completely truthfully. You will need to compare actual sales of different genres of games to get a better idea of that.</td>
</tr>
<tr>
<td>121</td>
<td>Reasons why people purchase/play video games. Reactions before and after play.</td>
</tr>
<tr>
<td>145</td>
<td>The examples of lifelike characters refer to celebrities, there are many lifelike characters used in games that are purely fiction, these typically work out better, Tomb Raider, Halflife, Final Fantasy, not many games based on celebrities have shown any innovations to video games beyond their new methods of marketing.</td>
</tr>
<tr>
<td>197</td>
<td>A good video game has to have great graphics, and must take more than a night to beat. Splinter Cell is my favor. But I think that it really depends on the person as to what video game you my want to play.</td>
</tr>
</tbody>
</table>