EVALUATING ONLINE AUDIENCES:
IDENTIFYING AND EVALUATING PREDICTORS OF AUDIENCE INTERACTIVE FEATURE USE ON INTERNET VIDEO WEBSITES

By

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To my family

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Abstract of Dissertation Presented to the Graduate School
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The advent of digital media and broadband networks is revolutionizing the way audiences consume media, and one such case is online video. Scholars have been productive in examining factors in the adoption of online video. This project, however, situates online video as one example of interactive features available online and analyzes people's usage of a variety of interactive functions on internet video sites. It is the first known study to systematically investigate the predictors of interactive feature usage on internet video sites. More importantly, this project tries to establish a link between online audience behavior and audience valuation. It seeks to identify a group of interactive audiences who take full advantage of the interactivity and responsiveness of new technology, and tries to establish whether interactive audiences are more valuable to advertisers. It incorporates traditional and new audience valuation criteria into the inquiry—demographics, media consumption habits, media engagement levels and internet word of mouth value, to make a necessary addition to the audience valuation literature.

This study launched a national consumer panel survey (N=200) among broadband users and identified a model for predicting audiences' use of interactive features on internet video sites

based on the Diffusion of Innovation theory, the digital divide literature and the theory of planned behavior. According to the results of multiple regression tests, technology-related variables (e.g. web experience, technology ownership, technology characteristics) had a much greater impact on people's online participation behavior than individual-related (e.g. demographics, media consumption) variables. This study demonstrated that interactive audiences are younger, more male-skewing, have higher income levels, are more likely to be in the 18-49 age group, and that they display a higher media engagement level and internet word of mouth value as compared to non-interactive audiences. This result should encourage website developers and advertisers to appeal to the demands of this particular group of audiences online, as they have more power in influencing other adopters' decisions. This study challenges the traditional proposition of the relationship between media consumption level and audience value and advocates that, depending on what type of medium is examined, audience valuation variables should be used with more flexibility.

CHAPTER 1
INTRODUCTION

For as long as the media have fulfilled the audiences' needs, technology has played a central role in altering the communication landscape with each innovation. From the early years when radio challenged the distribution of newspapers, to the later decades when television took over radio to become the most popular information and entertainment source, to the current days when the internet overshadows all pre-existing media platforms, technology has been the perpetual driving force behind every communication paradigm shift.

The advent of technological development in digital media services and broadband networks has significantly changed the options for video consumption in recent years. Today's viewers are no longer confined to a set time or location to watch their favorite television programs. Consumers can watch streaming video on TV network sites the next day, or download the episode from iTunes® and view it whenever they choose. Internet video is a perfect example of the converged multimedia content in an integrated broadband service to provide an interactive experience for audiences. New technology is revolutionizing the way people consume media.

One benefit digital platforms bring is the ability to participate and interact when consuming media. Interactivity has been a critical concept for computer-mediated communications research since the beginning of the internet age (Rafaeli & Sudweeks, 1997). New communication technologies have brought benefits such as the multidimensional presentation of content, audience autonomy in media consumption, and consumer participation in information production and dissemination. Content providers, distributors and advertisers have all embraced the potential such interactive capabilities brings by experimenting on diverse interactive platforms with multichannel distribution. The development of digital technology and delivery platforms has made such exploratory ideas a reality.

State of the Online Video Industry

As the audience's viewing habits go through dramatic changes, they are embracing the convenience and flexibility the new technology brings. According to the Pew Research Center, 69% of American internet users have watched online video, which is about 52% of the American population (Purcell, 2010). Among them, 18-29 year-olds are the most avid online video viewers. According to a national survey in 2009, the use of video sharing websites outranks many other major internet entertainment choices. More people (46% of adult internet users) have watched online videos than downloaded a podcast (19%) or used status updating sites like Twitter (11%) (Madden, 2009).

Many factors have contributed to the rapid development of the online video industry. The mass adoption of broadband access and the maturity of internet video technology provided the technological foundation. The faster-than-56Kbps internet speed enables the immediate transmission of media content to audiences (Jansen, 2010). TV networks' incorporation of webcasting and video download promoted new platforms to the audience. The embrace of video features by major websites and news outlets increased its popularity. And most fundamentally, the audience's desire for a more diverse and active way of consuming media gave the online video industry consistent drive to advance.

The past four years have witnessed significant growth in online video, especially in comedy or funny videos, educational programs, movies or TV shows, and political content (Purcell, 2010). However, there is not a uniform way to define online video consumption platforms. In the Pew Research Center's national survey, researchers defined three major ways of watching online video: watching short video clips, TV shows or movies on an online host site; watching video on a video-sharing site like YouTube™ or Google™ Video; and downloading video to play on computers (Purcell, 2010). In an earlier report, Brightcove executives Allaire

and Berrey (2007) defined three types of internet video sites: consumer video sharing sites, which offer mainly user-submitted video; commercial video portals, which offer professionally created content in response to the challenge of consumer sharing sites; and social networking sites (SNS), though independent of the internet video market, also provide online video.

Commercial video sharing sites. These sites offer mainly user-submitted video, though they also include some professionally produced content. The quintessential case is YouTube™, which is the dominant consumer website in the United States for uploading and sharing video. Others may include DailyMotion™, Veoh™ (no longer in service) and MetaCafe™ (Allaire & Berrey, 2007). These sites "are attempting to leverage their traffic into meaningful distribution opportunities for mid- to long-tail commercial producers, though there are no major success stories in terms of revenue" (Allaire & Berrey, 2007). Consumer sharing sites are often plagued with piracy issues and the low quality of user-generated content.

Commercial video portals. In response to the challenge of the growth of consumer sharing sites, television production companies began offering their professionally created content on commercial video portals. Allaire and Berrey (2007) called them destination sites (one-stop-shop for all kinds of video content) or desktop clients (need to install the software to play streamed videos). ABC was the first to offer full episode streaming of its programs in the fall of 2006 (Becker, 2006). The commercial portals include MSN™ video, AOL™ Video, Google™ Video, Yahoo™ TV, and Hulu™, and the desktop clients include Joost, and Adobe Media Player, Hulu™ Desktop (Allaire & Berrey, 2007), and Onion News Network (Itzkoff, 2010). In recent years, the websites of local news outlets have emerged as another example of commercial video portals when local newspapers, radio stations and TV stations put more video content online (Stelter, 2008). Most commercial video portals offer professionally produced content, are

usually owned by TV networks or production companies, function on an advertising supported base, and most of the revenue returns to the content owners who also control advertising sales.

Social network sites. These sites are in many ways independent of the internet video market, but they also provide internet video. Because of the large amount of web traffic they gather, social networks "are starting to emerge as viable outlets for commercial programming" (Allaire & Berrey, 2007). Some prominent examples include Facebook®, MySpace®, Bebo, and iGoogle. The classification of online video will continue to evolve as the industry grows.

Challenges of an Emerging Media Platform

The emergence of a new media platform often brings challenges and the broadband video industry is no exception. In this case, the primary challenges have been regulatory ones and those associated with the development of new business models to match the distribution models.

Regulatory Challenges

Viacom's 2007 lawsuit against web site YouTube™ raised the question of how to support a fair and authorized distribution model for copyrighted content on the Internet, and in particular, how to regulate the uploading, distribution and downloading of copyrighted video content on the Internet (Pember & Calvert, 2007). Viacom's infringement complaint against YouTube and its owner, Google™, sought "a court ruling to require Google™ and YouTube™ to comply with copyright laws and more than $1 billion dollars in damages" (Johnston, 2007) under the Digital Millennium Copyright Act of 1998. In June of 2010, a U.S. district judge ruled that popular video websites should not be held responsible for users posting video clips owned by Viacom (Lieberman, 2010). Though Viacom has vowed to appeal, if the ruling is supported, it will be more difficult for copyright holders to protect their works in search engines, video hosting websites, picture sharing services (e.g. Flickr™), and social networking sites (Kravets, 2010).

Media scholars, legal experts and policy makers all seek to reach a fair solution that protects the digital right of content owners without stifling the advancement of a creative industry.

Business Model Challenges

As it becomes more difficult to attract an audience "in a 500-channel, 50 million-MySpace user universe" (Shields, Consoli & McClellan, 2006, p. 6), content providers are experimenting with various platforms and strategies to make up the audience loss in broadcast. ABC started webcasting of its primetime shows in fall of 2005, and major broadcast networks signed contract with Apple and Amazon to provide video download on iTunes® and Unbox® since 2006 (Becker, 2006). Hulu™, NBC's joint venture with News Corp., has gained international reputation that ABC announced recently that it will broadcast full-length programs on Hulu™ as well as ABC News' digital channel ABC News Now (Weprin, 2010). However, it is not easy. People are used to the idea that content on the Internet is free; "consumers want to play but few seem to want to pay" (Pfanner, 2007). It has been difficult for online platforms to generate profits. Internet websites are experimenting with a variety of business models in the online video market. A survey of 130 international media executives predicted that advertising-financing would be the predominant business model for online content in the next five years, followed by subscription models and pay-per-play funding (Pfanner, 2007).

However, it is hard to predict how online video business will evolve in the next decades as the industry itself is experiencing drastic changes. Many business models are now in flux and managers are still seeking the optimal business model. Media companies are testing different payment methods and advertising models to adapt to the audiences' preferences and demand. Jeff Zucker, then-president/CEO of NBC Universal said in his 2008 NATPE convention keynote address that, "Our challenge with all these ventures is to effectively monetize them, so that we do not end up trading analog dollars for digital pennies" (Zucker, 2008).

Besides providing more channels, media companies are also incorporating new functions to attract users, such as interactive features on video websites. These new features have brought changes to the online video industry and people's media consumption, and will have an impact on the way audiences are evaluated in an advertising-supported media industry.

Changes in Communication and Media Consumption

Technological advancement ushered in consumer behavioral changes as audiences began to appreciate the interactive nature of the internet by utilizing the new opportunities it provides. Figure 1-1 shows a hierarchy of internet activities based on the level of audience involvement, from passive engagement to active participation. It shows that websites have transformed themselves from static publications to an interactive portal that offers one-to-one and one-to-many communication. Websites are no longer a communication tool, but also a marketing platform for advertisers to get the attention of their target audiences. This is highly manifested in the case of the consumption of online video.

Figure 1-1. Online activity Pyramid (Smith, 2009, Pew internet and American Life Project)

One innovation that high speed internet has brought to audiences is a new way of communication. The high speed and capacity of broadband have introduced "web 2.0," which gives new meaning and capabilities to communication. Web 2.0 is a concept that originally appeared in 2004 when internet innovators used it to describe the web applications that facilitate interactive collaboration, information sharing, and user-centered designs (O'Reilly, 2005). It proposed the notion of "Internet as a participation platform" as compared to the web 1.0 concept of "Internet as an information source" (O'Reilly & Battelle, 2009).

From the early stage of broadband video where internet video sites were simply a way to redirect audiences to the television broadcast of programs, to the current period where it provides a variety of interactive features to facilitate the service, internet video sites are competing with mainstream traditional media for audience share (Yang & Chan-Olmsted, 2008). A major competitive advantage is their interactivity and responsiveness (Chung, 2004). Recent research has confirmed that online audiences are increasingly technology-savvy and participatory (Yang & Chan-Olmsted, 2009). Watching video is only one aspect of interactive behaviors online. Besides that, what else do audiences do on these sites? What other interactive features do they use? How involved are they when using these participatory functions? Such inquiries could help website developers and network producers better design their sites to provide a more satisfactory service to users.

This project studies how audiences use interactive functions on internet video sites and evaluates the level of participation on such platforms. It is the first known systematic study of interactive features on video websites. While scholars have examined the factors in online video adoption, no known academic research to date has explored the factors for interactive feature usage. This study examines what variables predict people's usage of interactive features on

internet sites with video functions; this serves as the study's first research question. This project includes demographic and technological variables based on the diffusion of innovation theory (Rogers, 1995); draws literature from the participation divide to investigate experiential variables; and includes media consumption variables based on audience valuation theory.

This study will investigate not only the scale of people's web behavior, but also the quality and monetizable value of such behavior. It tries to identify a group of "highly interactive audiences" who take full advantage of the interactivity and become participatory on such websites. According to the diffusion of innovation theory (Rogers, 1995), this audience segment represents the "innovators" and "early adopters" in the adoption curve of internet video. This study seeks to provide a description of this group of audiences—their demographic and media consumption patterns—which will be valuable to advertisers and marketers.

Broadband Audiences and Their Value

The overall broadband penetration in U.S. households reached 66% in 2010, a small increase from 63% in March 2009 (Smith, 2010a). The high speed internet enables users to "quickly and easily download software, movies, television shows, music, e-books, and news articles" (Jansen, 2010). But are audiences taking advantage of this medium to better communicate with others? Are media consumers fully utilizing the participatory features of websites? Are they watching the interactive advertisements embedded in online videos? Are they uploading and sharing content with other users? If there is a gap between the early adopters and late adopters of internet video sites, what kind of a gap is this and how does it influence the way people consume media? These are just a few questions to be explored.

A more important implication of discovering the difference between the interactive web audiences and non-interactive web audiences is how advertisers and marketers may evaluate—and value—these groups differently. According to audience valuation theory (Napoli, 2003),

advertisers are most interested in reaching the premium audiences who are hard to access but have high purchasing power. Scholars have found that the level of attentiveness or involvement during the viewing process is positively associated with advertising effectiveness (Lynch & Stipp, 1999). This study tries to establish a linkage between audience characteristics and audience value to ask the second research question: Are frequent users of interactive features more valuable than the general population? If the answer is yes, then internet video sites should focus on appealing to this audience and provide content that is most satisfactory to them.

As Owen, Beebe and Manning (1974) stated, "The first and most serious mistake that an analyst of the television industry can make is to assume that TV stations are in business to produce programs. They are not. TV stations are in the business of producing audiences" (p. 4). Audiences are commodities and commodities have economic values and can be traded (Webster & Phalen, 1997). Scholars over the years have identified some determinants of the economic value of audiences in traditional media, such as: size of audience or market, audience demographic composition, audience location (Fisher et al., 1980), number of stations in the market (Levin, 1980), network affiliation or ownership (Fisher et al., 1980), and total levels of media use in market (Poltrack, 1983). Do these principles still hold true in the online world? Are there additional criteria that should be taken into consideration when evaluating online audiences? This study hopes to deepen our understanding of online audiences and make necessary adaptation to the audience valuation theory. The second research question of the study is: Are interactive audiences more valuable than non-interactive audiences? It will be explored from the perspective of demographics, media engagement and internet word-of-mouth value.

The evaluation of audiences also influences the media content. As Owen and Wildman (1992, p.91) stated, "advertisers are willing to pay more for exposure to certain viewers, then the

viewers who are worth more to advertisers will receive heavier weighting" in content creation decisions. Media producers are tempted to create content that appeals to the most valuable audience demographics—the audience segment for which advertisers are willing to pay the most. If this study confirms that participatory audiences are valuable, it will be most helpful to find out the demands and preferences of these audiences so that websites can better cater to their needs. This leads to the third main research question of the study: What are audiences' preferences for interactive features, advertising format and payment method?

Purpose of the Study

As outlined above, this study seeks to answer three research questions:

RQ1: What are the predictors of people's usage of interactive features on websites with video functions?

RQ2: Are interactive audiences more valuable than non-interactive audiences?

RQ3: What are audiences' preferences in regard to interactive features, advertising format, and payment method?

The first research question tries to construct a model for predicting audiences' use of interactive features. It examines the unique predictive power of each individual variable and compares the variables' contribution to influencing people's use of interactive features. The model draws from three sets of literature—diffusion of innovation, participation divide, and audience valuation, and includes four sets of variables: demographics, media consumption, technology and web experience, and technology characteristics. It seeks to identify which factors among the three sets of literature are the most important factors for adoption.

The study is a valuable addition to the audience behavior and audience valuation literature. It explores people's online participation as a way to evaluate both the breadth and depth of their web consumption. A study of the audiences' participatory behaviors adds to the literature of web

interactivity. Many earlier studies analyzed the interactivity of news websites and business sites (Chung, 2004; Ha & James, 1998; Massey & Levy, 1999), and this project will be the first known study to explore interactive features on internet video websites.

More importantly, this project establishes a link between audience behavior and online audience evaluation. It explores participatory behaviors of the most active audience group online and tries to identify the connection between web involvement and audience value. While the study approaches audience valuation from the consumer or audience (supply-side) perspective, these findings can help inform and provide some insight for advertisers, who make their own assessments regarding the valuation of traditional and online media audiences. Lastly, this project investigates people's perception and preferences in selecting different types of video websites, which provides baseline information for future studies on the strategic management of online media content.

This study also has practical implications for the industry and practitioners. It provides a description of the current landscape in internet video website development. Internet video providers can learn about who accesses their websites, what they prefer and expect, and how to best appeal to these audiences. TV networks and major content owners should better understand how to better organize and allocate their programming resources, and how to present them in an appealing format online. Advertisers can better pinpoint the audience characteristics on the sites on which they advertise, to better appeal to target audiences. Web developers can use this as an audience atlas to improve the design of websites.

Outlining the remainder of this dissertation, Chapter 2 provides a literature review on adoption, the diffusion of innovation theory, audience valuation theory and research on the digital divide. It then develops research questions and hypotheses based on previous research.

Chapter 3 describes the methodology, proposed theoretical model, measurement of variables and statistical tests. Chapter 4 presents the results of the tests and main findings in the study. Chapter 5 synthesizes the findings and draws theoretical and practical implications based on this project.

CHAPTER 2
LITERATURE REVIEW

This literature review details existing theories applicable to research on interactive features of internet video websites. First, it surveys the current scholarly development in interactive features and participatory audiences and defines the scope of this project. It reviews several sets of variables used in predicting audiences' participatory behaviors and the theories on which they are based. Then it presents one major theoretical approach in studying consumer adoption of internet interactive features—diffusion of innovation theory. Lastly, the study explicates audience valuation theory and the measurement of audience value, especially internet audience value. Research questions and hypotheses are presented at the end of Chapter 2.

Interactivity and Interactive Features

Interactivity

Interactivity has been a critical concept for computer-mediated communications research since the beginning of the internet age (Morris & Ogan, 1996; Pavlik, 1996; Rafeli & Sudweeks, 1997). The examination of this concept can help explain one of the fundamental differences between traditional and digital media. The potential of interactivity has attracted scholars from various fields to explicate the concept and explore its value. As Chung and Yoo (2006) stated, research on interactivity has made its mark in the communication field.

Earlier scholars defined interactivity as responsiveness (Rafaeli, 1988) and developed a four-step typology with a focus on control (Bordewijk & Van Kaan, 1986). Technologist Ted Nelson (1990) believed that interactivity has two outcomes—engagement in communication and relationship building. Rogers (1995) described interactivity as "the degree to which participants in a communication process can exchange roles and have control over their mutual discourse" (p. 314). Rafaeli and Sudweeks (1997) framed interactivity as "a condition of communication in

which simultaneous and continuous exchange occurs, and these exchanges carry a social, binding force" (p. 4). Jensen (1998) defined interactivity as how the media enable users to exert an influence on the content and form of the communication.

Scholars have measured interactivity using different approaches. In their empirical study of business web sites' interactive features, Ha and James (1998) proposed that interactivity should be defined by the extent to which communicators and the audiences are willing to respond and interact. Based on that conceptualization and the level of communication needs from the participants, Ha and James (1998) measured interactivity in five dimensions: playfulness, choice, connectedness, information collection and reciprocal communication. In an earlier study, Heeter (1989) analyzed interactivity with six dimensions: complexity of choice available, effort users must exert, responsiveness to the user, monitoring information use, ease of adding information and facilitation of interpersonal communication.

In research about internet interactivity, scholars agree that there are two categories of web site interactivity—medium interactivity and human interactivity (Ha & James, 1998; Massey & Levy, 1999; Stromer-Galley, 2000). Other terms used to describe this distinction include user-to-medium interactivity vs. user-to-user interactivity, content interactivity vs. interpersonal interactivity (Massey & Levy, 1999), computer-mediated communication vs. interpersonal communication (Ha & James, 1998), media interaction vs. human interaction (Stromer-Galley, 2000), medium interactivity vs. human interactivity (Chung, 2004).

Medium interactivity refers to the interaction between users and the website (Chung, 2004). It emphasizes the interactive capabilities and nature of the medium itself (Landow, 1992). Medium interaction functions enable users to interact with the medium itself via "hyperlinks, filling out electronic surveys, downloading information, watching streaming audio and video,

playing games, even purchasing goods and services—without ever directly communicating with another person" (Stromer-Galley, 2000, p. 118). Cho and Leckenby (1999) included keyword search functions, multimedia features or virtual reality display, downloading software, and online games.

The other category of web interactivity—human interactivity—is the communication between two or more users that can happen on the media platform, such as talking with other readers on the message board (Massey & Levy, 1999). This is from the interpersonal communication perspective (Ha & James, 1998) and traces back to early literature that defined interactivity as responsiveness and reflexivity (Rafaeli, 1988). Rafaeli and Sudweeks (1997) described it as "the extent to which messages in a sequence relate to each other and especially the extent to which later messages recount the relatedness of earlier messages" (p. 3). This level of interactivity assumes that people are active communicators capable of sharing and receiving information. It is considered to be of a higher level than medium interactivity because it resembles person-to-person communication (Stromer-Galley, 2000). Examples of these interactivity features include comments/feedback, online discussions and forums, site surveys and so on (Cho & Leckenby, 1999).

Chung (2004) was creative in proposing that web interactivity is actually on a continuum instead of a static point based on the level of participation involved. It is a multi-dimensional construct with three levels—medium interactivity, human-medium interactivity, and human interactivity (from the lowest to highest). Chung and Yoo (2006) argued that the progression of web interactivity is carried out by a variety of interactive features on internet website. They examined people's use of interactive features on internet news sites and conceptually and operationally defined the three dimensions of web interactivity that follow.

Medium interactivity. Medium interactive features solely rely on the technology to allow users to exert control (Chung & Yoo, 2006). As early literature pointed out, interactivity is about the control of information source, subject, and time of consumption (Bordewijk & van Kaam, 1986). These functions focus on control or choice where users can actively select the content and format they'd like to consume. Examples of medium interactive features include search functions, sending articles, audio/video download, photo galleries, update feature, user login and animated ads (Chung & Yoo, 2006).

Human-medium interactivity. This interactivity lies between the two extremes of interactivity and relies on technology to achieve higher-level personalization goals (Chung & Yoo, 2006). It is achieved by features that "utilize characteristics of medium interactivity and allow partial human-to-human communication (e.g. expression of one's own opinion)" (Chung & Yoo, 2006). These functions allow users to customize the content, share their personal opinions, or submit their own productions. Examples are topic/headline customization features, email alerts, submitting news stories, pictures, news tips, online polls and blogs (Chung & Yoo, 2006).

Human interactivity. This is the highest level of web interactivity, and it refers to the exchange of ideas between senders and receivers (Chung & Yoo, 2006). As reflected in earlier research, Heeter (1989) emphasized the responsiveness and facilitation of interpersonal communication. Ha and James (1998) included reciprocal communication as one of the five dimensions of interactivity. Human interaction functions encourage the interaction between publishers and the audience and utilize features like email link, letter to the editor, message boards, forums and live chat (Chung & Yoo, 2006).

With the rapid adoption of broadband and the web 2.0 wave, many new internet participatory features are emerging. Web 2.0 emphasizes interactivity, co-creation, and user generated content (Deuze, 2006). One prominent example of web 2.0 is social networking sites. Steuer (1995) defined interactivity as "the extent to which users can participate in modifying the form and content of a mediated environment in real time" (p. 84). Social network sites enable users to construct a profile and communicate feelings or share content within their friend circle (Boyd & Ellison, 2007). Many internet video websites have been equipped with links to social networking sites like Facebook®, MySpace® and Twitter. Since social networking sites offer a simulated face-to-face interaction among users, it qualifies as a human interactivity feature.

Interactive Features

Most empirical research on web site interactivity derives from studies on news sites, broadcast station websites or business sites (Chung, 2004; Ha & James, 1998; Massey & Levy, 1999). This study examines interactivity on internet video websites because they have become a fierce competitor to traditional media outlets, and one of the advantages of such sites is interactivity. Scholars have been productive in examining internet video websites in recent years, but most have focused on exploring the adoption model or identifying predictors for using online video. This project, however, goes beyond the predictors of using online video. It situates online video as only one example of interactive features available on internet websites and analyzes people's usage of a variety of interactive features on internet video sites, such as emailing or embedding video, uploading pictures and video and linking to social networking sites. It aims to investigate the differences in people's consumption of interactive features online in regard to their perceived utilities, an aspect of uses and gratifications. It examines what they like and what they don't like, who are the regular users and casual users, and how these findings can be valuable to advertisers.

To compile a comprehensive list of interactive features on video sites, this study reviews a national survey on internet videos conducted by the Pew Research Center (Madden, 2007). In that survey, respondents were asked about the following activities on internet video sites.

- Send or receive a link to the video
- Share a video link by posting it on a website or blog
- Rate video you see on the internet
- Post a comment after you see a video online
- Upload a video file for others to see

The study found that people who actively exploit such features "make up the motivated minority of the online video audience" and among them, young adults were most active (Madden, 2007, p. 3). Fully 57% of online video viewers have shared video links with others while only 8% have uploaded a video online. Three in four respondents have received links to online video and 9% of the respondents said they get such video links on a daily basis. The exchange of video links was especially popular among young adults as 12% of them received video links at least once per day (Madden, 2007).

The Usage Divide and Interactive Audiences

The Usage Divide

In studies of web usage, scholars have shifted the focus from simple access to the internet to the more complicated "ability to utilize the Internet." Factors such as involvement in internet activities, active contribution to websites, and interactive consumption of web content may result in different levels of competency in internet usage. As Hargittai and Walejko (2008) indicated, the breadth and frequency of usage might lead to a new divide between internet users—mere consumers vs. active contributors. The usage difference could include a series of actions online,

from creative expressions such as fan fiction and digital mash-ups to the more collaborative problem-solving, internet grass rooting, and media circulation (Jenkins, 2006).

Participatory Audiences

In their study of the digital divide among youth, Hargittai and Walejko (2008) defined participatory audiences as those who create content and share their creations online. They asked respondents about four prevalent creative activities online—the creation of music, poetry or fiction, artistic photography, and film/video (p. 244). In another survey by the Pew Research Center (2004), scholars defined online contribution as creating a Web site, posting material to another Web site for work, family or another organization, posting materials to a personal or another person's Weblog or online diary… posting photos, artwork, writing, or audio and video files to the World Wide Web, to a chat room or discussion or newsgroup or to a central server for sharing with others. (Lenhart, Horrigan & Fallows, 2004, p. 5) A later study by the same organization defined content creators as people "who have done at least one of the following: created or worked on a blog, created or worked on web pages, shared original creative content, or remixed content they found online" (Zickuhr, 2009).

Livingstone and Helsper (2007) believe that the measurement of internet activities can be approached in two ways: 1) based on the amount of use, people can be classified as non-users, low users, weekly users, daily users, etc.; or 2) based on the breadth of use, measured by how many online opportunities an individual has taken. They found that for the young generation, the longer and more frequently these people use the Internet, the more opportunities or activities they take up online (Livingstone & Helsper, 2007). By incorporating both aspects into the analysis of teens' internet consumption, Livingstone and Helsper (2007) divided the young internet users (9-to-19 years old who use the internet at least once a week) into four categories, focusing on function:

- Basic users (16%) whose online activities focus on information seeking. Typical activities: use for school, look for general information.
- Moderate users (29%) who use the internet for not only information, but also entertainment and communication. Typical activities: games and email.
- Broad users (27%) who enjoy the peer-to-peer engagement online by using instant messenger and downloading music.
- All-rounders (27%). This group takes advantage of the interactive and creative functions online and can take up to eight typical activities.

Much recent literature has focused on studying "a participatory audience" online, people who actively contribute and share content online (Correa, 2009; Hargittai, 2002; Hargittai & Walejko, 2008). Though it is an established term, these "participatory audiences" are usually young in age and do not represent the typical internet user. In fact, people's internet activities can be at different levels when measured by participation, from passively surfing internet sites, to purposely searching for information, to using the interactive features online and to eventually contributing to the digital literacy.

Classification of Interactive Audiences

The Pew Research Center (2004) discovered three distinct groups of internet contributors based on their online content creation behaviors—

> "Power creators are the internet users who are most enthusiastic about content-creating activities. They are young – their average age is 25 – and they are more likely than other kinds of creators do things like use instant messaging, play games, and download music. And they are the most likely group to be blogging.
>
> Older creators have an average age of 58 and are experienced internet users. They are highly educated, like sharing pictures, and are the most likely of the creator groups to have built their own Web sites. They are also the most likely to have used the internet for genealogical research.
>
> Content omnivores are among the heaviest overall users of the Internet. Most are employed. Most log on frequently and spend considerable time online doing a variety of activities. They are likely to have broadband connections at home. The average age of this group is 40" (Lenhart, Horrigan, & Fallows, 2004, p. 4).

Now, seven years after the study, those who were in their 20s when participating in the survey might have entered their 30s, and whether the same conclusions can be applied to today's population is uncertain. That's why this study will not base participatory audiences on specific age brackets, but rather participatory behaviors.

Audience interactivity is a construct that can be measured in multiple dimensions: frequency, range and level. Evaluation of audience interactivity is most comprehensive when all three factors are taken into consideration. However, most scholars define audience interactivity by the frequency of use of interactive functions or of joining participatory activities (Lenhart, Horrigan, & Fallows, 2004) as frequency is the most commonly used and accepted criterion.

Once we have identified and categorized the interactive audiences, the next questions are why people have different levels of participatory behaviors online and what factors contribute to their usage of various interactive features. A summary of literature on predicting audiences' behaviors is as follows:

Predictors of Participatory Audiences

Traditional literature has included demographics as predictors of digital divide (Bucy, 2000). Early scholars investigated "the knowledge gap" and believed the differences in knowledge were related to the following factors—socioeconomic status (Tichenor, Donohue & Olien, 1970), motivation (Ettema & Kline, 1977), educational level (Wanta & Elliott, 1995), and media use (Griffin, 1990). Since participation divide is the more current and manifest versions of the digital divide, scholars of the participation divide have borrowed these propositions in examining participatory audiences.

Age and Socioeconomic Status

When examining complex internet activities among the youth (teens, young adults and college students), scholars found that gender, socioeconomic status, race and age were all

important discriminators (Hargittai & Hinnant, 2008; Hargittai & Walejko, 2008). Age is a discriminator because it influences people's self-evaluation of internet and computer competency. Older people (between the age of 70 and 85) seem to believe they are too old to keep up with the new technologies (Turner, Turner & Van de Walle, 2007). Senior adults (between the age of 60 and 91) may hold a low self-efficacy in using those (Czaja et al., 2006).

Livingstone and Helsper (2007) found that offering home internet access to family with low socioeconomic status can help close the gap in digital usage. From the sociological perspective, a higher level of socioeconomic status will contribute positively to both obtaining access and maintaining quality of that access (Golding & Murdock, 2001). Adding to that literature, Correa (2009) found that among college students, gender, race and age were also effective distinguishers between those who contribute to online participation and those who do not.

Gender

The difference between genders was mainly discovered among the younger generation. The Pew Research Center found that teenage boys like to upload videos while teenage girls prefer blogging (Lenhart, Madden, Rankin, McGill & Smith, 2007). Men were found to be more active than women in sharing online content (Hargittai & Walejko, 2008), and using video-sharing applications (Chen, 2007). Correa (2009) found that men were more likely than women to create online content by uploading videos, posting comments, writing blogs, or contributing to civil journalism websites.

Gender also appears to be a discriminating factor in other variables' impact on adoption. In studies of social network sites, women use these mainly for escapism while men see them as an opportunity to make new friends (Golan, Lim & Sedita, 2009). Livingstone and Helsper (2007) discovered that when holding home access constant, age and gender differences among children

remain in the case of online usage: boys and older teenagers used the internet more frequently than girls and younger children.

Race/Ethnicity

It's worth noting that ethnicity or race has emerged as a dividing factor in internet activities. Earlier studies investigated how being in an ethnic group influenced people's access to the Internet. In the 1990's, African Americans were less likely to have access to the web and a smaller percentage of them had ever used the internet (Cooper & Kimmelman, 1999; McConnaughey & Lader, 1998). Later, Hoffman, Novak and Schlosser (2000) found that being in an ethnic group usually put people in a disadvantageous position for accessing the web (Hoffman, Novak & Schlosser, 2000).

However, the trend is changing in recent years as some ethnic populations demonstrate more interest and enthusiasm in utilizing the internet (Fox, 2009). The fastest growing segment online is Latinos in America, whose internet use has risen 10% from 2006 to 2008. Though they are still behind Caucasians in usage, the gap has shrunk greatly (Fox, 2009). In the case of cellphone usage, African Americans and English-speaking Latinos were more likely to own a cellphone and use a wider range of cellphone features. And compared with Caucasians, minority adults are more likely to use mobile devices to send text messages, access the web, use Social networking sites , and check email (Smith, 2010b).

Race/ethnicity emerges as a discriminator in online activities as well. In an earlier study, Caucasians were more likely to search for product or service related information than African Americans, while Blacks were more likely to use the web at locations other than home (Hoffman, Novak & Schlosser, 2000). Some later studies discovered that African Americans and Latinos are more likely to use online social applications such as social networking sites (Lenhart, 2009) and more likely to create content online than Caucasians (Correa, 2009).

Psychological Factors

Scholars have included other variables in the study on digital divide such as digital equipment, autonomy of use, social support, skill, and purpose for using the internet (DiMaggio et al., 2004; Hassani, 2006). Self-determination theory investigates the role of motivation in people's learning and performance (Deci & Ryan, 1985). Based on self-determination theory, Correa (2009) included psychological predictors (e.g. perceived competence, perceived usefulness, motivation) and digital literacy (e.g. internet experience, computer skills) in the study of internet content creation among college students as detailed below:

- Motivation (measured by purpose for using the Internet)
- Self-efficacy (Perceived competence, or self-efficacy, refers to "feeling able to perform a task regardless of the actual skill." It is measured by perceived internet competency, self-reported levels of competency with computers and the Internet)
- Attitude/perceived value of internet use (measured by perceived usefulness)

Correa (2009) found that perceived usefulness and perceived computer competence were both positively related to greater levels of online content contribution among college students. These psychological factors were found to be the most significant predictors of online content creation when controlling for socio-demographic characteristics. For instance, the gender gap disappeared when the psychological predictors were included. Correa (2009) explained that women's lower level of motivation, self-efficacy and less knowledge regarding online content creation may have put them in an inferior status when compared to men.

Personality Traits

As researchers discovered various approaches to study internet adoption, scholars have tested the influence of personality on internet uses by using the Five-Factor Model proposed by McCrae and Costa (1997). It states that personality contains five factors at a broad level: extraversion, agreeableness, neuroticism, openness to experiences and conscientiousness

(Ehrenberg et al., 2008). Among them, extraversion and neuroticism were found to be significant discriminators in internet social interactions (Amichai-Hamburger, Wainapel & Fox, 2002). In studies of social networking site use, extraversion, neuroticism and openness to experience were discovered as important predictors (Ross et al., 2009). A national survey further confirmed that extraversion, emotional stability and openness to experience were related to social networking site usage (Correa, Willard Hinsley & Gil de Zuniga, 2010).

Competency Factors

Social cognitive theory asserts that people are more likely to participate in certain activities when they believe they have the competency to perform the behaviors (Bandura, 1997). Internet competency is an important factor in predicting people's online activities. Internet self-efficacy is the evaluation of one's capability of locating specific information online and troubleshooting web related problems (Eastin & LaRose, 2000). Web competency is highly related to the perceived ease of use of the Internet, and thus influences people's adoption decisions. Scholars have found evidence in studies on the use of online shopping sites (Eastin, 2002), E-learning sites (Roca, Chiu & Martinez, 2006), and internet phone service (Park, 2008).

In the case of online participation, people need a certain level of computer competency and web literacy to use the interactive features. More and more scholars have included "digital literacy" in their study of digital media consumption (Hargittai, 2002; Livingstone & Helsper, 2007; van Dijk, 2004). As Hargittai and Walejko (2008) stated, such web savvy techniques are especially important in predicting the more complicated internet activities such as content creation and sharing.

As to how to measure "digital literacy," earlier studies focused on people's computer competency (Shashaani, 1994) while recent literature added variables on people's internet skills (Hargittai, 2002; Livingstone & Helsper, 2007). Computer competency is usually measured by

asking people to self-evaluate their computer skills (Bandura, 1997), which can be subjective and inaccurate (Hargittai, 2005). Hargittai (2005) developed a scheme based on "people's actual abilities as measured through observations or survey items that measure users' actual knowledge of computer-and Internet-related terms and functions" (p. 371).

Besides internet skills, scholars have also included variables on internet experience (Correa, 2009). Years of internet use, whether having multiple access locations, presence of web-enabled computers at home, and formal technology education are all strong predictors of greater internet usage (de Haan, 2004; Eastin & LaRose, 2000; Hargittai & Hinnant, 2008). Livingstone and Helsper (2007) advocate measuring required skills with variables such as frequency of use, time spent online, types of usage, internet expertise, web skills, and attitudes toward the Internet.

Motivations for Adoption of Internet Video

Perceived Utilities

The uses and gratification theory proposes that an individual seeks out a media source that best fulfills his needs (Blumler & Katz, 1974). The theory states that a media user is actively involved in choosing certain media platforms. Some studies use this theory to examine what kind of needs people fulfill by using what kind of media (Flanagin & Metzger, 2000). As for TV viewing, previous studies have identified needs such as time passing, relaxation, habit, companionship, arousal, escape and entertainment (Greenberg, 1974; Rubin, 1983). As for the Internet, the perceived utilities include information seeking, escape, interaction, personal communication, relaxation, entertainment and diversion (Atkin, Jeffres & Neuendorf, 1998; Ferguson & Perse, 2000; Kaye, 1998; Lin, 2001; Papacharissi & Rubin, 2000; Parker & Plank, 2002). Though the internet fulfills similar needs as traditional media, it has introduced some new utilities to media consumption, such as interactivity, convenience, fashion and novelty, and social interactions.

Perceived Needs

Uses and gratification theory introduced the concept of perceived needs as a primary determinant for new technology adoption (Neuendorf et al., 1998). In predicting internet usage, Papacharissi and Rubin (2000) used variables such as companionship, action, substitution for friendship, passing time, and solitude to measure audience needs. In a study of online game adoption, the scholars included action, companionship, passing time, solitude and substitute for friend as perceived needs for online games (Chang, Lee & Kim, 2006). With the development of internet social media, such as instant messenger and social networking website, scholars discovered that though people used to go online for the anonymity it provided (McKenna & Bargh, 2000), they now see the internet as a place to expand their circle of friends (Jones & Fox, 2009). In recent surveys on social networking site usage, scholars identified five main motivations—entertainment, learning about social events, sharing media, maintaining relationships and meeting new people (Nyland & Near, 2007), and other significant predictors—social information seeking, diversion, voyeurism and exhibitionism (Bumgarner, 2007).

Perceived Popularity

According to the theory of planned behavior, a person's idea of subjective norms is based on the perceptions of whether they are expected by their friends, family and society to perform certain tasks (Ajzen, 1985). The behaviors of the social network around an individual have a big impact on his or her performance. Schmitz and Fulk (1991) suggested that for adoption decisions, people are influenced by the social network surrounding them.

The influence of the human network on people's adoption decisions have been shown in the case of the web where scholars found that the three dominant ways people were introduced to the internet included teaching by friends and family, learning at work, and self-teaching (Katz & Aspden, 1997). Chang et al. (2006) used the concept of perceived popularity to measure the

influence of social systems among young adopters of online games. Since using interactive features requires a certain level of response from others; the level of adoption of these features in the population will have an impact on people's decision to utilize the functions. Thus we hypothesize that the perceived popularity of interactive features among the general population will be one predictor of people's adoption.

Uses and gratifications theory is a commonly used approach to examine adoption behaviors and plenty of scholarly articles have done so. It has generated fruitful research in new media adoption such as the internet (Papacharissi & Rubin, 2000; Zhu & He, 2002), online games (Chang et al., 2006), and social networking sites (Ancu & Cozma, 2009). It is important to recognize the contribution this theory has made to new media studies.

Diffusion of Innovation Theory

The diffusion of innovation theory states that new technology will be adopted by the mass population over a period of time under a variety of influences (Rogers, 1995). Based on their degree of innovativeness and attitude in adoption, the population can be classified as innovators (2.5% of all adopters), early adopters (13.5%), early majority (34%), late majority (34%) and laggards (16%). It is likely that the audiences' adoption of utilizing interactive features on internet sites also follows such patterns. Rogers (1995) identified factors that may influence people's adoption, including demographics, social status, personal characteristics, media consumption habits, technology ownership, and communication participation.

Age and gender. Rogers (1995) did not propose a direct relationship between age and adoption; however, numerous studies have found that adopters of media technologies tend to be younger than non-adopters (Chan-Olmsted, Li, & Jung, 2005; Wei, 2001, 2006). Rose's (2003) analysis of an Arbitron study found that the those people who use streaming video/audio online are slightly younger and wealthier and possess stronger buying power than "non-streamies." Lam

(2001) described a typical adopter of video webcasting as a male between the age of 25 and 44 that has at least some college education, and makes approximately $50,000 a year. Lam (2001) also found that 44% of webcasting users were women, indicating that females are not far behind males in adopting this new technology. Recent studies echoed Lam's (2001) finding that gender is not a unique predictor of college students' adoption of webcasting and video download (Yang & Chan-Olmsted, 2009).

Social status. Rogers (1995) posited that early adopters have a higher social status than later adopters, indicated by such variables as income, level of living, possession of wealth, occupational prestige and the like. Social status is commonly measured by household income level and has an impact on new media adoption. According to Dupagne and Driscoll's (2009) tally, 16 out of 18 articles examining new media adoption confirmed a positive relationship between income and adoption.

Education. Rogers (1995) suggested that earlier adopters of new communication technologies are better educated than late adopters. Anderson and Melchior (1995) indicated that lack of proper education was a significant barrier to technology access and adoption. A wide range of research on different technologies has supported these dispositions such as research about VCRs (Reagan, 1987), personal computers (Danko & MacLachlan, 1983), DBS (Bruce, 1996), HDTV (Dupagne & Driscoll, 1999), and the internet (Atkin, Jeffres, & Neuendorf, 1998).

Media consumption. Diffusion of innovation theory suggested that earlier adopters "have greater exposure to mass media communication channels than do later adopters" (Rogers, 1995). Hence, adopters are seen as having a higher degree of mass media use than non-adopters. Leung and Wei (1998) found that mass media use exerts a significant effect on the intention to adopt interactive television in Hong Kong. Chan-Olmsted, Li and Jung (2005) found that heavy online

users (people who report being on the web three or more hours a day) are very involved with other media. However, some empirical studies imply that heavy internet users might actually consume less traditional media (Atkin, Neuendorf, Jeffres & Skalski, 2003; Leung & Wei, 1998). While trying to link new media adoption to three traditional media—magazine, newspaper and primetime TV, Leung and Wei (1998) found significant results only for newspaper consumption. Atkin, et al. (2003) concluded that newspaper reading has a negative influence on people's adoption intention for digital television. Yang and Chan-Olmsted (2009) found that online video platforms (webcasting and video download) were not a threat to the following media platforms—newspapers, magazines, music, or radio. However, they had a significant influence on people's TV viewing habits. Over half the respondents in the survey said online video platforms were a substitute to television to some extent.

Some scholars have discovered a "displacement effect" that exists in people's consumption of multiple media (James, Wotring & Forrest, 1995). Scholars found that people used telephone less after adopting email, and they consumed TV news and newspapers less after adopting online news sites (Dimmick, Kline & Stafford, 2000; Dimmick, Chen & Li, 2004). Althaus and Tewksbury's (2000) survey contradicted Dimmick's niche theory in discovering that using the internet as a news source has no relationship with watching television news, and a positive relationship with reading newspapers among college students. Though there has been no definite answer on whether audience has given up traditional media consumption in favor of new platforms, researchers have found "a steady erosion of traditional media use that could be a direct consequence of the increase in internet use" (Lin, 2001, p. 450). Both Berman (2001) and Kayany and Yelsma (2000) found that the time people spend on TV, newspapers and family conversations have decreased because of the increased popularity of internet content.

Technology ownership. Rogers (1995) discussed the influence a "technology cluster" might have on people's adoption behavior. In the observation of the dissemination of agricultural practices in Asian countries, Rogers (1995, p. 235) found that the adoption of one new idea may trigger the adoption of several others because in the minds of potential users, an innovation is perceived as closely related to other new innovations. A technology cluster refers to a set of technologies with commonalities (Rogers, 1995), and studies have found that people have a tendency to adopt innovations in the same technology cluster. In Chang et al.'s (2006) study of online gamers, researchers used new media ownership as a proxy variable of "actualized innovativeness." Studies have shown that ownership of similar technologies is a powerful predictor in new media adoption, such as in telecommunication technologies (Reagan, 1987), between cable TV and computer (LaRose & Atkin, 1988), in cell phones (Leung & Wei, 1998), internet and cable TV shopping (Li, 2004), online service (Lin, 2001), digital cable (Kang, 2002), and wireless internet (Wei, 2006).

Perceived popularity. According to the theory of planned behavior, a person's idea of subjective norms is based on the perceptions of whether they are expected by their friends, family and society to perform certain tasks (Ajzen, 1985). The behaviors of the social network around an individual have a substantial impact on their performance. Schmitz and Fulk (1991) suggested that for adoption decisions, people are influenced by the social network around them. In Diffusion of Innovation theory, Rogers (1995) referred to perceived social norms as a measure of the social systems around a person, and stressed its importance in predicting people's adoption decisions. As Valente (1995) puts it, the pressure people feel from a critical mass can be an important threshold for the diffusion process. Other terms used to describe the perceived

popularity include “social atmosphere,” “social pressure,” “cultural fashion,” and “bandwagon effects” (Zhu & He, 2002, p. 471).

Empirical studies have shown that perceived popularity is a significant predictor in the Chinese population’s adoption of the internet (Zhu & He, 2002), college students’ adoption of online games in South Korea (Chang et al., 2006), and the young generation’s adoption of webcasting (Yang, 2009a). It is usually measured by how popular a technology is considered to be—among one’s family, primary group members, in the occupation, and in the general population (Zhu & He, 2002).

Perceived characteristics. Diffusion of Innovation theory states that the perceived characteristics of a new technology accelerate its mass adoption (Rogers, 1995). According to Rogers and Shoemaker’s (1971) model, five characteristics are relevant to the concept of perceived characteristics of a new technology: relative advantage, compatibility, complexity, trialability, and observability. Lin (2001) found that adoption benefits, adoption complexity, innovativeness, need, and available resources were significant predictors in online service adoption. Wei (2006) confirmed that compatibility, ease of use, and observability were important in wireless internet adoption. Some scholars have added two more variables to measurement of perceived utilities based on Ostlund’s (1974) literature—perceived risk on time and perceived risk on money and obtained significant results (Chang, et al., 2006; Yang & Chan-Olmsted, 2009).

Audience Valuation Theory

One of the main approaches to analyzing audiences is the commodity or “coin-of-exchange” model which states that audiences have economic value and can be traded for access by advertisers (Webster & Phalen, 1994). Smythe (1981) stated the main product manufactured

by networks and sold to advertisers was the “commodity audience”. The “audience as a commodity” approach assumes that:

> Audiences have an economic value that is expressed in measurement of their size and composition... Commercial media must be allowed to create and sell audiences if the media are to exist… The public interest is served by preserving the system of advertiser-supported media. (Webster & Phalen, 1994, p. 30)

As Owen, Beebe and Manning (1974) stated, “The first and most serious mistake that an analyst of the television industry can make is to assume that TV stations are in business to produce programs. They are not. TV stations are in the business of producing audiences” (p. 4). Commodities have economic values and can be traded. Scholars over the years have identified some determinants of the economic value of audiences such as: size of audience or market, audience demographic composition, audience location (Fisher et al., 1980), number of stations in the market (Levin, 1980), network affiliation or ownership (Fisher et al., 1980), and total levels of media use in market (Poltrack, 1983).

So in the case of online interactive activities, who is the valuable audience segment? Since advertisers are trying to appeal to the core or “optimal” audiences, who are these optimal audiences and what is the best way to reach them? Identifying and analyzing the optimal audience sector means much to advertisers and marketers who want to make their money’s worth. These inquiries are especially important in the competitive industry of offering internet video as the commercial potential for internet video sites is still to be determined.

Demographics

“Advertisers typically value various audience segments differently, based upon their demographic characteristics” (Napoli, 2002, p. 171). Demographic variables can affect the value of audiences because they serve as effective surrogate measures of product purchase intentions and behaviors (Stoddard, 1986). Though researchers have cautioned about the uncertainty in

predicting consumption behaviors based only on demographic factors, because of the lack of purchase behavior data, demographic factors are still the most frequently used variables in audience valuation studies.

The three most basic demographic factors in determining audience's value are age, gender and household income (HHI) because "they are presumed to correlate with behavioral patterns pertaining to product-purchasing and media consumption habits" (Napoli, 2003, p. 104). Some other variables that may influence audiences' value include ethnicity, market size, ease of access to audience, media choice, and purchasing behavior, among others.

Age

In their book *The Mass Audience: Rediscovering the Dominant Model*, Webster and Phalen (1997) synthesized earlier work by stating that advertisers believe younger audiences (18-49) are more valuable than older members (above 50) because they spend more on consumer goods (Webster & Phalen, 1997). In a consumer industry, young audiences are considered spenders while older people are considered savers, thus young people are more likely to act upon a promotional message than seniors. Also, advertisers believe that older consumers have already established some brand loyalty, thus are more difficult to persuade than young people who are still seeking their favorite brand (Napoli, 2003). And young audiences are thought to have more years to come for consuming goods than older people (Turow, 1997).

In a nutshell, younger audience members (i.e., 18-49) are valued more highly than older audience members (i.e., 50+) due to their presumed greater inclination to change brands, higher level of income and lower level of availability in mass media (Koschat & Putsis, 2000). The universally agreed upon most valuable audience segment is the 18-34 age bracket (Salamon, 2001). Teenagers were becoming more popular advertising targets because they were gaining more purchasing power (Salamon, 2001).

Gender

Traditionally speaking, white men were the higher valued commodity audience for which advertisers were willing to pay because they have higher income level (Meehan, 2002). Also women consume more media than men and thus are easier to reach. From the perspective of scarcity, women's audience value may be diminished because of this (Reinholz, 2000). Scholars pointed out that the effect of gender is dependent on the advertised products and media platforms (Napoli, 2003). For household products, females were considered more valuable because they made most decisions on these products (Waterman & Yan, 1999).

Household income (HHI)

Income is a major predictor of audience valuation because advertisers will pay a higher price to reach people with a higher income level than people with a lower income (Berry & Waldfogel, 1999; Kalita & Ducoffe, 1995). Income has become a universal guide for advertisers and media planners when setting commercial prices (Koschat & Putsis, 2000). This is due in part to the fact that certain products and services can only be bought by people of certain income levels (Napoli, 2003) and "advertisers frequently will use income as a variable by which to screen out certain media outlets" (Napoli, 2002, p. 171). Advertisers covet the 18-49 group because, supposedly, they represent the highest buying power group (Pomerantz, 2006). The 18-49 group is also a standard segment The Nielsen Company uses in audience measurement reports (Nielsen, 2009).

Ethnicity

Ethnicity is a factor important to advertisers because "a certain degree of ethnicity correlates with income" (Napoli, 2003, p. 106). Because advertisers value audiences with larger incomes more than those with smaller incomes as the former have higher buying power (Kalita & Ducoffe, 1995), minority audiences are traded for a discount price in advertising. Moreover,

there is a negative relationship between people's media consumption and their advertising value (Napoli, 2003). Audience's availability to media messages means they are easier to reach, thus driving down their value to advertisers (Koschat & Putsis, 2000). Research has found that African American and Hispanic audiences spent significantly more time watching television and listening to radio than Caucasians (Radio Advertising Bureau, 2001). They are largely available in mass media and thus cheaper to reach, so their value to advertisers is diminished.

Though "discounting minority audiences" made sense from an advertiser's perspective, "such lower valuations may undermine the viability of minority targeted media content" (Napoli, 2002, p.172). A study has demonstrated that the prominence of minority audiences (e.g. African Americans and Hispanics) influenced the value of radio audiences negatively (Napoli, 2002). Media policy scholar Philip Napoli commented that "such impediments to the economic viability of minority-targeted media could undermine the principles of source and content diversity that long have been objectives of electronic media regulation in the United States" and advocated the "establishment of new minority media outlets and also consider means of preserving the viability of existing media outlets" (Napoli, 2002, p. 169, 172).

It is worth noting that demographic factors are included in two theories mentioned in this project—Diffusion of Innovation and audience valuation theory. Such overlap may be due to the fact that these theories are all based on people's adoption behaviors. Demographic information will be collected and used in testing research questions based on all three theories.

Audience Autonomy

Audience autonomy refers to the level of control audiences have in consuming media content--when, where and how they will consume the media (Napoli, 2003). New media environments facilitate a higher level of audience autonomy. The invention of the VCR and DVR gave people more say in how they want their programs delivered (Lewis, 2000), and the

internet makes “anytime, anywhere” television a possibility. Television programs used to be called “appointment viewing,” which means people watch it at a set time. The time of viewing is controllable so for time-specific advertising events, traditional media such as TV and radio are better choices than the Internet. In the online video industry, content is usually stored and made available for an extended period of time. And the interactive features on such websites give audiences an unprecedented level of control in the selection and consumption of the programs (Napoli, 2003). More participation from the audience introduces a higher level of audience autonomy.

However, such audience autonomy poses perils to audience measurement and advertising effectiveness. Avoiding commercials has never been easier with the convenient functions on internet video sites, and this shakes the economic foundation of advertising-supported media. So how to ensure a web audience’s advertising exposure and how to achieve a high level of effectiveness among this audience become valuable inquiries. This study intends to identify the demographic and psychographic traits of the more interactive audience of online video to help advertisers in targeting these hard-to-get viewers.

Media Engagement

Rubin and Perse (1987) defined media engagement as “the cognitive, affective, and behavioral participation during and because of exposure” (p. 247). Also called “media involvement,” media engagement entails six dimensions including inspirational, trustworthy, life enhancing, social interaction, personal timeout and advertising attention and receptivity (Simmons, 2008).

Scholars have found that the level of attentiveness or involvement during the viewing process is associated with advertising effectiveness (Lynch & Stipp, 1999). Simmons Research, a research firm under the Experian company that has conducted national consumer surveys for

over 50 years, compiled a multimedia engagement study in 2008. The project investigated the consumer engagement with nearly 1,000 broadcast, cable and syndicated television, internet and print properties. Simmons' study (2008) confirmed a linkage between how engaged people are when consuming a medium and the receptivity and attention they give to the advertising messages inserted in those platforms. Specifically speaking, people are 44% more engaged in advertisements embedded in online video sites than the commercials they watch during regular broadcast because they are more engaged on the website (Simmons, 2008). From this perspective, people who watch advertisements during online video segments are more valuable than the regular broadcast viewers.

In a study of the relationship between online engagement and advertising effectiveness, Calder, Malthouse and Schaedel (2009) developed a scheme of eight dimensions to measure online media engagement. Syndicated market research defines "engaged people" as those who "visit the site often, spend substantial time on the site, or have many page views" (Calder et al., 2009). They found that the more engaged people are with the media content, the more likely they are to be exposed to advertising messages on the site, and the platform that carries more engaging content would bring more advertising effectiveness (Calder et al., 2009). Simmons' (2008) study provided additional support. Researchers have discovered that the more dimensions by which a website can engage a user, the higher advertising receptivity and attention the site can get (Simmons, 2008). Those websites that have the highest engagement scores have the highest click-through rates of the ads on the webpage (Simmons, 2008). Following the above reasoning, it is possible that if people are constantly using the interactive features online and engaged in multiple levels of interaction, they might become more engaged on the websites.

A higher level of involvement induces a higher level of advertising effectiveness (Calder et al., 2009). People who use interactive features on internet sites will be more likely to watch and recall the advertisements. Some empirical studies have confirmed this. A study released in the fourth quarter of 2008 stated that viewers of NBC Rewind (a full-episode online viewing service) felt a strong desire to interact with the advertisements online (Lafayette, 2008). The interactive advertising was found to be relevant, entertaining, and likely to elicit a higher brand recall (Lafayette, 2008). In The Nielsen Company's "Quad Study," a comparative examination of broadcast and cable network audiences' viewing habits, scholars identified an audience type called "Gold card viewers" who watched a program regularly and usually in its entirety (Weissman, 1999). Broadcasters argued that they could charge a premium price for the "Gold card" viewers because the audiences were paying more attention and hence should have higher advertising recall (Weissman, 1999). Though cable networks later argued that the classification was rigid and did not effectively gauge the viewers' actual interaction with the commercials, both broadcast and cable networks agreed that viewing length and frequency can influence advertising effectiveness (Cable Television Advertising Bureau, 1999).

Some empirical studies in the field of marketing also confirmed a positive relationship between website interactivity and users' attitude toward the site. Scholars discovered that interactive features on a websites prompted people to have a positive attitude toward the site, the brand advertised on the web page, and people's purchase intention for those products (Ko, Cho & Roberts, 2005). The study also found that using human-human interactive features had a stronger effect on people's attitude toward the set than human-message interactive features. This may imply that "the paradigm of the internet as an information source can shift to that of a virtual communication tool" (Ko, Cho & Roberts, 2005, p. 67). And, web site developers should

consider improving human-human interactive functions which may help people generate favorable attitude toward the site and the products advertised there.

Internet Word of Mouth Value

Internet word of mouth helps websites to gain popularity and build brand image in the digital world because of the existence of "informational cascades." Informational cascade means people tend to agree with decisions made by others before them (Bikhchandani, et al., 1998). The assumption is that the collective mass makes more reasonable decisions than individuals (Sim & Fu, 2009). Such belief results in herding behavior in an informational cascade when subsequent individuals defer to preceding decisions (Bikhchandani, et al., 1998).

Informational cascade works in the online world because many of the available products online are experience goods. Media are experience goods because people need to experiment themselves to obtain the utilities. Media consumption is not only about utilities, but also it forms tastes that develop into habit that will influence people's future choice in media selection (Hoskins, McFadyen & Finn, 2004). For example, people have little information about the quality and relevance of an online video before actually watching it (Shapiro & Varian, 1999). The lack of information prompts users to follow the footsteps of previous viewers and try out the most popular or highest rated videos first. Uncertainty or absence of information about the product quality triggers a heavier reliance on information provided by the precedents (Sim & Fu, 2009). A series of empirical studies have confirmed the existence and power of informational cascade in online platforms such as software download (Hanson & Putler, 1996), online news sites (Sundar & Nass, 2001), peer-to-peer (P2P) technologies (Song & Walden, 2003), music download (Salganik, Dodds, & Watts, 2006), e-commerce (Huang & Chen, 2006), and online video (Sim & Fu, 2009).

Disseminating information about online goods is critical in forming an informational cascade (de Vany & Lee, 2001). In the case of internet video consumption, a national survey found that online word of mouth practices such as emailing, embedding and posting videos have become common activities among users (Madden, 2007). The perceived popularity of the highly ranked videos played an essential role in persuading others. Interestingly, scholars found that the top 20% of the videos on YouTube™ managed to gather more than half of the views on the website, while 70% of the listed videos were only viewed once (Gill et al., 2007). This further demonstrated that informational cascades can exert powerful influence on people's viewing choices.

The usage of online interactive features is an adoption decision that is influenced by internet word of mouth. The more people tell their acquaintances about using interactive features, the more power they have over others' decisions to adopt. Thus, people who like to disseminate information about online participation are more valuable in terms of persuasion power.

Another approach to understand this is that people can increase the "network externalities" of websites by advocating usage of interactive features. "Network externalities" refers to the accruing benefits brought by the extension of members in a network (Soubeyran, Suzumura & Weber, 2007). The value of a service increases when more people are involved in the same market or network. As scholars put it, "new adopters confer additional benefits to the existing adopters, increasing the overall value of a network to a subscriber as the size of the network increases" (Teo, Seng & Fu, 2009, p. 7). This concept can be applied to the adoption of interactive features on internet sites. By using various interactive functions, surfers are building an online interaction network. The value of such network increases when more people join the

circle or exert pressure on others to do so. The more people leave comments or write on the discussion board, the more popular and valuable the network becomes, and the more likely others are to join the communication.

Preferences on Interactive Features and Internet Video Sites

Preferences on Interactive Features

With abundant interactive functions available, how the audiences perceive these features would be interesting to know. Chung and Yoo's (2006) survey found that people use medium interactive features most frequently, followed by human-medium features and human interactive features. The Pew Research Center found that 14% of web users in the U.S. uploaded a video in 2010, a big increase from the 8% of internet users uploading a video in 2007 (Purcell, 2010). It seems people prefer some interactive functions more than others. It would be interesting to find out what interactive features people prefer the most and the least, and how interactive and non-interactive audiences might have different tastes in their preferences of interactive features.

Preferences on Business Model

In a digital world, online revenue is generated from a combination of advertising income, subscription fees and e-commerce (Viacom, 2007). The internet advertising model is critical in making "digital money." Two case studies of broadcast and cable networks' internet media platform strategy showed that media companies use a variety of advertising models for online video (Yang & Chan-Olmsted, 2008; Yang, 2009b). For instance, a majority of the top 20 cable networks had single advertising sponsorship for their online video, while NBC charged advertisers according to "how many videos are streamed and pages viewed" (Becker, 2006). Also different websites display online advertisements differently. Some networks stream advertisements before the video appears (pre-roll) while others embed the commercials within

the video content. This study investigates such differences and how they are received by the consumers.

Another business model that has developed quickly in recent years is digital download. According to a Pew Research Center study in late 2010, nearly two-thirds of internet users in the U.S. have paid to download content from the web (Jansen, 2010). One third of web users have paid for software, another one third have paid for music, and 16% have paid for online video. It seems paying for online video is still not a mainstream behavior. The study found that the 30-49 age group was most likely to purchase online content compared with people in other age groups, though no significant divide was found between male and female, or white and non-white. A college degree and income, however, did have a positive impact on people's download behaviors (Jansen, 2010).

Preferences on Advertising Format

Another trend in recent years is that many websites offered interactive online advertisements where audiences can click the product information link or interact with the messages (Yang, 2009b). The interactive advertisements got people more involved and achieved higher effectiveness. According to Laura Caraccioli-Davis, EVP of Starcom Entertainment, online advertising reaches people "at a time when they're fully engaged, so you have their full attention" (Frutkin, 2006, p. 8).

Preferences on Internet Video Sites

Audiences are consumers. They make subjective decisions on what media to consume and how. Attribute theory states that consumers gain utilities not from the products but from the attributes of the products (Hoskins, McFadyen & Finn, 2004). Consumer goods are the means by which key attributes are provided through the consumption process. One type of relative advantage, technology fluidity, was proposed by media scholar Carolyn Lin (2004). Lin (2004)

argues that the fluid nature of webcasting makes it a suitable platform to substitute television, and thus is an important factor in internet video adoption. Internet video platforms have some attributes that traditional television cannot provide such as convenience (time and location), shorter commercials, the possibility of skipping the commercials, a wider program selection, interactive interface, and the possibility to send the link to others, among others (Yang & Chan-Olmsted, 2009). These unique attributes give the web an edge in competition with television among certain audiences.

In the competitive market of internet video, a variety of leading sites have become popular destinations because they exceed others in key attributes. As audiences make decisions about where to find the desired content, they choose sites that offer the best utilities they seek. Shim et al. (2007) argued that the two key factors affecting a consumer's media choice are personalization and usability, on which some video sites may exceed others. YouTube™ is the most popular internet video site because it has an open system where everyone can participate, a powerful search function, high brand recognition, and low requirement on web speed.

This study identifies the attributes people obtain from different types of internet video sites. Such analysis investigates what motivates people to choose certain destination sites over others. It helps to show the competitive advantage of different types of video sites. It will be an exploratory analysis of the competition among different video sites. It is worth noting that the purpose of this study is not to generate a universally accepted approach to classify video sites, but to compare the leading brands and the characteristics they provide. As many video sites compete for eyeballs online, the goal of this study is to find out what attracts the audiences to each type of site.

Research Questions and Hypotheses

This section discusses the development of research questions and hypotheses for this study.

Main RQ 1: What are the predictors of people's usage of interactive features on websites with video functions?

The first purpose of the study is to identify predictors of people's usage of interactive features on websites with video functions. This investigation is based on two sets of literature: one is the literature on consumer web behavior, which explores the participation divide using experiential and competency variables; and the other is the diffusion of innovation theory, which has produced many successful studies in communication. This project includes four sets of variables as predictors: demographics, media consumption, technology and web experience, and technology characteristics, as shown in Table 2-1.

Table 2-1. Tested predictors of interactive feature use frequency

Demographics	Media consumption	Technology and web experience	Technology characteristics
Age	Daily newspaper time	Web literacy	Relative advantage
Education	Daily magazine time	Web experience	Compatibility
Income	Daily TV time	Technology ownership	Complexity
Gender	Daily radio time	Account ownership	Trialability
Race	Daily web time		Observability
	Daily movie time		Perceived risk in time
	Daily game time		Perceived risk in money
	Daily music time		Perceived popularity

Scholars have identified socio-demographic, psychographic and experiential predictors of online participation (Correa, 2009; Hargittai, 2002; Hargittai & Walejko, 2008). Many researchers have studied people's motivation for using interactive or participatory functions online, but mainly on news and business sites. No known scholars to date have examined available interactive features on internet video websites and how people use them. This project will test how demographic, experiential, and technological variables affect people's usage of interactive features online.

The dependent variable in this study is people's frequency in using interactive features. Scholars have established three levels of interactive features on websites with video functions. Based on Chung and Yoo's (2006) explication of interactivity, websites offer medium, human-medium and human interactivity features. This study uses people's frequency in using all three levels of interactive features.

While each of the independent variables will be discussed and relevant hypotheses presented, one of the objectives of the study (which the analysis will demonstrate) is to identify which theoretical area most drives the decision making process for interactive feature use. Do demographics play the greatest role? Or are technology/web experience, media consumption, or technology characteristics more responsible? Each of the possible predictors is presented below, along with the relevant hypotheses.

Demographics

Age is a discriminator in people's online participation because it influences people's motivations and competency in internet activities. Many scholars have shown that a younger age is related with more participatory behaviors (Hargittai & Hinnant, 2008; Hargittai & Walejko, 2008). So this study proposes that:

H1: Age is negatively related with people's frequency in using interactive features.

Early scholars on knowledge gap believed the differences in knowledge were related to socioeconomic status (Tichenor, Donohue & Olien, 1970) and used household income to measure socioeconomics (Correa, 2009). The diffusion of innovation theory also included socioeconomic status in predicting adoption (Rogers, 1995). So this study proposes that:

H2: Income is positively related with people's frequency in using interactive features.

Though the effect of gender on people's use of digital technologies is not clear, plenty of recent research has found that men are more active than women in webcasting, sharing resources

online, and online content creation (Chen, 2007; Correa, 2009; Hargittai & Walejko, 2008; Lam, 2001). Since this study is also about people's online participatory behaviors, it is hypothesized that men are more active than women. One empirical study has found that teenage girls are more active than teenage boys in one area of online participation—using social networking sites (Lenhart, et al., 2009) and suggested that girls are more socially communicative on the web than boys. However, because that study was only limited to teenagers, it is not enough proof to hypothesize that way. Due to the existing literature, then, it is hypothesized that:

H3: Males use interactive features more frequently than females.

Race/ethnicity is a factor worth investigating. Earlier research on the digital divide considered being in an ethnic group a disadvantage (Cooper & Kimmelman, 1999; McConnaughey & Lader, 1998), while recent studies have demonstrated the opposite. Some recent studies found that African Americans and Latinos are more likely to use online social applications such as social networking sites (Lenhart, 2009) and are more likely to create content online than Caucasians (Correa, 2009). This study bases its argument on the more recent empirical findings and proposes that ethnicity/race has a positive relationship with using interactive features. In this study, minority audiences refer to non-Caucasian audiences. Specifically speaking, this study investigates whether Caucasians use interactive features more frequently than non-Caucasians.

H4: Caucasians use interactive features more frequently than non-Caucasians.

Rogers (1995) stated that "earlier adopters have more years of formal education than do later adopters" (p. 288). Though the empirical evidence has been unsettled on the relationship between education and adoption, a majority of studies using the diffusion theory found a positive association. This led to the next hypothesis:

H5: Education level is positively related with people's frequency in using interactive features.

Media Consumption

Although Rogers (1995) believed that earlier adopters have more mass communication channels than later adopters, the empirical results are mixed. Earlier studies found no relationship between media consumption and service adoption (Atkin et al., 1998), while later research showed a positive relationship (Neuendorf et al., 1998; Wei, 2006). Given the conceptual strength of Rogers' proposition, this study predicts that:

H6: Media consumption level is positively associated with people's frequency in using interactive features.

H6a: The more time people spend reading newspapers, the more frequently they use interactive features.

H6b: The more time people spend reading magazines, the more frequently they use interactive features.

H6c: The more time people spend listening to radio, the more frequently they use interactive features.

H6d: The more time people spend watching television, the more frequently they use interactive features.

H6e: The more time people spend surfing on the Internet, the more frequently they use interactive features.

H6f: The more time people spend watching movies (DVD and movie theaters), the more frequently they use interactive features.

H6g: The more time people spend playing video or computer games, the more frequently they use interactive features.

H6h: The more time people spend listening to music, the more frequently they use interactive features.

Technology and Web Experiences

People need a certain level of internet competency to perform tasks on the web. Plenty of studies have demonstrated that internet competency is an important factor in predicting people's online activities (Correa, 2009; Hargittai, 2002; Livingstone & Helsper, 2007; van Dijk, 2004). Hargittai (2008) developed a composite variable called "web literacy" to evaluate people's internet competency which has shown to be valid and reliable. This concept will be explicated more in detail in Chapter 3 which follows. This study includes this variable to test its importance in predicting people's interactive behaviors. It is hypothesized that:

H7: Web literacy is positively associated with people's frequency in using interactive features.

Besides web literacy, scholars have included variables on internet experience in studies on people's online behaviors (Correa, 2009). Years of internet use, presence of web-enabled computers at home or office, and formal technology education are all strong predictors of greater internet usage (de Haan, 2004; Eastin & LaRose, 2000; Hargittai & Hinnant, 2008). So in this study it is proposed that:

H8: internet experience is positively associated with people's frequency in using interactive features.

Rogers (1995) discussed technology cluster's influence in the adoption process. Technology cluster refers to a set of technologies with commonalities (Larose & Atkin, 1992). Scholars found that the use of one medium may prompt the adoption of functionally similar media (LaRose & Atkin, 1992). In Kang's (2002) study on digital cable, researchers used five electronic devices to measure technology ownership—video camera, VCR, video game, CD

player and personal computer. In a study about digital television, Chan-Olmsted and Chang (2006) included DVD, DVR digital cable, pay cable and large screen TV to measure technology ownership. Studies have demonstrated that ownership of similar technologies is a powerful predictor in new media adoption (Dupagne & Driscoll, 2009). These studies confirmed that the adoption of one innovation may trigger the adoption of other similar technologies and the existence of technology cluster does have an impact on the adoption of communication devices.

In the case of interactive features, the technology cluster should include technologies that enable users to perform interactive tasks on the web. Such platform technologies include high speed Internet, mobile phone with internet access, online game console, digital television, and iPod with video functions. From the functional perspective, technology cluster should also include platforms that provide similar utilities as interactive features, such as information seeking, entertainment seeking and social relationship. Internet websites offer such utilities for information (e.g. nytimes.com), entertainment (e.g. YouTube™.com) and social relationship (e.g. Facebook®). Since users usually need accounts to access these web sites, this study used internet account ownership as a proxy variable for technology ownership. It is proposed that:

H9: Technology ownership is positively associated with people's frequency in using interactive features.

H10: Account ownership is positively associated with people's frequency in using interactive features.

Technology Characteristics

Diffusion of Innovation theory states that the perceived characteristics of a new technology accelerate the mass adoption of it (Rogers, 1995). Many empirical studies have supported this (Chang, 2006; Lin, 2001; Yang & Chan-Olmsted, 2009). Based on the diffusion theory, this study proposes that:

H11: Perceived characteristics of interactive features are positively associated with people's frequency in using interactive features.

According to theory of the planned behavior, actions of the social network around an individual have a big impact on their performance (Ajzen, 1985). This peer pressure has been interpreted as the "perceived popularity" of a new technology included in many digital adoption studies (Chang, et al., 2006). A positive relationship between perceived popularity and actual adoption behaviors have been confirmed across the board. Hence this study proposes that:

H12: Perceived popularity of interactive features are positively associated with people's frequency in using interactive features.

The second purpose of this project is to investigate whether interactive audiences are more valuable than non-interactive audiences. Audience valuation theory (Napoli, 2003; Webster & Phalen, 1997) states that demographics and media consumption habits are significant indicators of an audience's value to advertisers. When evaluating online audiences, people's media engagement level and internet word of mouth value play roles as well (Calder et al., 2009; Sundar & Nass, 2001). The following research question is tested with specific hypotheses in terms of demographics, media consumption habits, media engagement level and internet word of mouth value.

Main RQ 2: Are interactive audiences more valuable than non-interactive audiences?

The three most influential determinants for audience value are age, gender and household income (Napoli, 2003). Younger audience members (i.e., 18-49) are valued more highly than older audience members (i.e., 50+) due to their presumed greater inclination to change brands, higher level of income and lower level of availability in mass media (Koschat & Putsis, 2000). Male audiences are more valuable than female audiences because they are more likely to be

employed and have a higher level of income (Meehan, 2002). Education has a positive relationship with audience valuation because a higher level of education is associated with high household income. The industry has come to agree that people in the 18-49 age segment are the most desirable audience segment (Nielsen, 2009; Pomerantz, 2006). Based on audience valuation literature, this project predicts that interactive audiences are younger, more male-skewed, more educated, have a higher level of household income, and more likely to be in the 18-49 age group than non-interactive audiences.

RQ13: Are interactive audiences more valuable than non-interactive audiences in terms of demographics?

H13a: The younger the audiences are, the more frequently they use interactive features.

H13b: The higher income audiences have, the more frequently they use interactive features.

H13c: Male audiences use interactive features more frequently than female audiences.

H13d: The more educated audiences are, the more frequently they use interactive features.

H13e: Audiences in the 18-49 age group use interactive features more frequently than audiences in other age groups.

Ethnicity is a demographic segment where interactive audiences may not exceed non-interactive ones in terms of audience value. In advertising, minority audiences are looked down upon because they usually have lower socioeconomic status (Napoli, 2003) and are heavier media consumers (Radio Advertising Bureau, 2001). Empirical research has shown that people from minority ethnic groups are more likely to participate in online activities (Correa, 2009; Fox, 2009), so this study hypothesizes that interactive audiences are more ethnically diverse than non-interactive audiences. Even though there is no direct theoretical measurement of audience value

in terms of ethnicity, in practice, advertising inventory targeting minority audiences tends to be sold at lower prices by media firms (Napoli, 2003). Thus this study projects that interactive audiences, because they are more ethnically diverse, are less valuable than non-interactive audiences in terms of advertising value.

H13f: Interactive audiences are less valuable than non-interactive audiences in terms of ethnicity.

Scholars found that a higher level of media involvement induces a higher level of advertising effectiveness (Calder et al., 2009; Lynch & Stipp, 1999; Simmons, 2008). Media involvement, or media engagement, is achieved by the attentiveness, frequency and length of consumption when using a medium. Those who use media more often and for a longer period of time are more involved. Empirical studies have confirmed that people who watch programs online regularly are more likely to watch and recall the advertisements (Lafayette, 2008; Weissman, 1999). Also, scholars found that the more dimensions in which a website can engage an individual, the more involved that person is (Simmons, 2008). Since interactive audiences are more active than non-interactive audiences, it is predicted that they have a higher level of media engagement, and thus a higher level of advertising effectiveness. This will be tested in terms of likelihood to watch programs and advertisements in entirety, the dimensions they are engaged in on internet video sites, and average stay on one's favorite online video site.

H14: Interactive audiences are more valuable than non-interactive audiences in terms of media engagement level.

H14a: The more audiences watch online programs in their entirety, the more frequently they use interactive features.

H14b: The more audiences watch online advertisements in their entirety, the more frequently they use interactive features.

H14c: The more dimensions of interactive features audiences use, the more frequently they use interactive features.

H14d: The longer audiences stay on their favorite online video sites, the more frequently they use interactive features.

Internet word of mouth helps websites to gain popularity and build brand image in the digital world because of the existence of "informational cascades." Empirical studies have found evidence for the existence and power of informational cascade in the adoption of online news sites (Sundar & Nass, 2001), music download (Salganik, Dodds, & Watts, 2006), e-commerce (Huang & Chen, 2006), and online video (Sim & Fu, 2009). Scholars discovered that electronic word of mouth practices such as emailing, embedding and posting videos have become common activities among users (Madden, 2007). Since many of the interactive features contribute to the building of informational cascades, it is hypothesized that interactive audiences have more internet word of mouth power than non-interactive audiences.

H15: Interactive audiences are more valuable than non-interactive audiences in terms of internet word of mouth value.

H15a: The more frequently people use interactive features, the more likely they will tell others about the programs they watched.

H15b: The more frequently people use interactive features, the more likely they are to tell others about the websites they went to.

H15c: The more frequently people use interactive features, the more likely they are to tell others about the interactive features they used.

The third and final goal of this project is to gather information about people's preferences in using online interactive features and internet video sites. It seeks to find out the audiences' most and least favored interactive functions, new features they wish to have, their preferred online advertising format and preferred payment method. These questions are not the focus of this project, but will serve as an extension of the investigation and gather information for future studies. Because of the exploratory nature of this inquiry, some questions are asked open-endedly.

Main RQ 3: What are the audiences' preferences on interactive features, advertising format and payment method?

RQ16: What are the audiences' preferences on interactive features on internet video sites—favorite, least favorite and anticipated new features?

RQ17: What kind of advertising format do interactive audiences prefer—pre-roll, post-roll, embedded commercial breaks, or embedded ads throughout the video?

RQ18: What payment method for online video do audiences prefer—pay-per-view, subscription based, combination of the two, or other?

Chapter 2 has presented the literature reviewed for this study. It surveyed the definition of interactivity and scholarly research in defining interactive audiences. It presented the main theoretical approach used for this study—the diffusion of innovation theory. It explicated audience valuation theory and the relevant research in audience measurement. Based on prior research and the purpose of this study, research questions and hypotheses were developed at the end of Chapter 2, which should help identify the main predictors or "driving forces" in audience's use of interactive features on online video sites, as well the extent or contribution of each of these predictors. The methodology of this study is presented in Chapter 3.

CHAPTER 3
METHODOLOGY

Chapter 3 describes the research design, data collection method, variable measurement, statistical methods, and development of the questionnaire. One pre-test was conducted prior to the main survey to improve the reliability and validity of measurements and discover potential issues with the questionnaire. The questionnaire was revised and then sent out as the final survey. The measurement of each variable is presented. Analytical tests and applied statistical methods are also described.

Online Survey

A national online survey was conducted to investigate the audiences' usage of interactive features on internet video sites. The population is broadband internet users in the United States. Only internet users are included because the purpose of the study is to investigate online viewers' participatory behaviors and preferences. This study seeks to identify internet users who have experiences using internet video websites and interactive features.

At the beginning of the online survey, there were three filtering questions. Only people who said yes to all three questions qualified for this study:

- Do you have high-speed internet access (at home, work, school or other places)?
- Have you ever watched online video (e.g. on YouTube™, abc.com, nytimes.com…)?
- Have you used any of the following interactive features on internet video sites?

This study includes only broadband users for two reasons: First, in order to watch online videos with satisfactory quality, the internet requires a speed faster than 56Kbps, or the so-called "broadband speed." Because this study is about people's online participatory behaviors, the limitation brought by internet speed should not be a factor in their decision making. To make sure the results are comparable between active users and non-active ones, this study included

only people with broadband access. All the hypotheses and research questions were tested among broadband users.

Another reason for this sample stipulation is that majority of internet users in the United States now have high speed Internet. The overall broadband penetration for U.S. households reached 63% in March 2009, according to a survey by the Pew Research Center (Website Optimization, 2009a). According to Nielsen reports, the broadband penetration among active internet users in U.S. homes was 94% in November 2009 (Website Optimization, 2009b). The narrowband users, who have an internet connecting speed of 56Kbps or less, make up less than 6% of active internet users (Website Optimization, 2009b). Broadband is more common in the workplace, as 98.76% of U.S. workers had high speed internet in November 2009 (Website Optimization, 2009b). Since narrowband users occupy only a small portion of internet users both at work and at home, and their online consumption may be greatly influenced by this deficit, they are eliminated from this study.

By asking the third filtering question, only people who have used one of some of the interactive features qualified. This is because this project examines people's participatory behaviors on such websites, not about why they choose not to use these features. It aimed to obtain a sample that was comprised of people who have at least some experience using the interactive functions to provide information about their participatory behaviors and preferences.

Consumer Panel Survey

This study used a consumer panel provided by a third party consumer research firm, United Samples, Inc. (uSamp). The research firm recruited consumers to participate in the online survey via email. Consumer panelists are recruited via regular networks with marketing firms, social networks, and partnerships with non-profit organizations. The respondents were attracted with a small amount of incentives, usually in the form of online gift certificates, charitable

donations, or virtual currencies, to secure a highly motivated panel (United Samples, 2010). For this particular study, participants received an email with a link to the online survey web page and completed the survey. Two hundred completed surveys were obtained. The firm used a proprietary respondent identifier by creating a unique ID for each respondent to prevent duplicated answers and possible fraud in the surveying process.

Online Survey vs. Other Methods

This study conducted an online survey designed in the Qualtrics system. Online surveys have several advantages over traditional survey methods: 1) it is inexpensive and easy to conduct; 2) it requires a shorter implementation time; 3) respondents can be shown a variety of visual aids, audio and video materials; and 4) it is convenient to compile the data (Wimmer & Dominick, 2006). It also has some disadvantages: 1) it is difficult to ensure the identity of the respondent; 2) it has little control over the data-gathering process; 3) the response rates are inconsistent (Sheehan, 2001); and 4) the users' computer and internet competency may affect their ability to complete the online survey (Wimmer & Dominick, 2006).

Online survey fits the purpose and scope of this project. First, the study aims to identify people's participatory behaviors in a nationwide sample. Online survey makes large samples possible at a reasonable cost, compared to telephone surveys which are subject to long distance charges (Babbie, 2001). Second, this project is about internet users, and the respondents should have some experience using multimedia online. Third, online survey questionnaire design is more flexible and interactive, which can help respondents in answering the questions. Finally, online surveys make data compilation easier and quicker.

Development of Questionnaire and Pre-test

Development of Questionnaire

This questionnaire included questions about people's demographics, media consumption patterns, technology and web experience, usage and preferences of interactive features on internet sites with video functions, and the perceived technology characteristics of interactive features. The measurement of variables was based on adoption studies, audience behavior, participation divide, audience measurement and evaluation, among others.

Defining Internet sites with video functions

After reviewing literature and industry reports on video websites (Allaire & Berrey, 2007; Madden, 2007), the author conducted a brief content analysis of available video websites in February of 2010. This study combines observations from the content analysis and literature findings to include the following types of internet sites with video functions:

- Commercial video sites (e.g. abc.com, discovery.com)
- Video aggregator sites (e.g. AOL Video, Hulu™, Google Video™)
- News websites with video features (cnn.com, fox.com)
- Television news station websites (NY1.com, kolotv.com)
- User generated content website (YouTube™, MetaCafe™, Veoh™)

YouTube™, a prominent video sharing web site, is one of the most popular user-generated content sites. Many of the videos on YouTube™ are produced by amateurs rather than marketers or professional producers. In 2006, Time Magazine declared that "You" was the "Person of the Year" as individuals contributed to UGC (User Generated Content) web sites such as YouTube™, where individual users displayed power and influence in online communities and the society (Grossman, 2006).

Moreover, the business model of YouTube™ is different from other commercial video sites. Commercial aggregator sites such as Hulu™ obtain the copyright to display professionally produced videos on their websites, and make profits from both online advertising and subscription. But YouTube™, at least until 2009, did not include any advertisement on videos produced by amateurs, which makes up the majority of the content on the site (Stelter & Helft, 2009). In recent years, because of economic pressure, YouTube™ has signed contracts with major studios to showcase their productions. However, Eric Schmidt, former chief executive of YouTube's parent company Google™, said that "YouTube™ would continue to embrace content created by users, even if it was not easy to earn revenue from it, because that content was essential to the popularity of the site" (Stelter & Helft, 2009, p. B1).

Although Allaire and Berrey (2007) included social networking sites as one provider of internet videos, we do not include social networking sites in this study because first, these sites need an account or subscription to log in to use those functions. Second, watching online video is not a major reason that people use social networking websites (Bumgarner, 2007). Finally, according to recent findings, only a portion of the population qualifies as active users of these websites. A fall 2009 survey by the Pew Research Center discovered that while nearly three quarters of online teenagers (12-17 years old) and young adults (18-29) are on social networking sites, only 40% of the 30+ population adopted this technology (Lenhart, Purcell, Smith & Zickuhr, 2010).

Defining interactive features

Based on a brief content analysis of internet video websites and a literature summary of internet interactivity, a list of common interactive functions on these sites was established. The respondents were asked about how frequently they used each of these functions. According to the scheme of classifying features based on the level of interactivity (Chung & Yoo, 2006), the

interactive features on internet video websites were divided into the three categories: Medium interactive features are those which rely on the medium for users to exert control (Chung & Yoo, 2006) with examples such as search functions or selecting a program. Medium-human interactive features use the characteristics of medium interactivity to facilitate partial human-to-human communication, with examples such as commenting, ranking, and uploading videos (Chung & Yoo, 2006). Human interactive features allow the exchange of ideas between senders and receivers, and examples include online forum and web chat (Chung & Yoo, 2006). A complete list of interactive features included in this study as follows:

Medium interactivity features:

- Choose a program or content for viewing
- Choose an advertisement (format and content)
- Search functions
- Download a podcast (video/audio)
- View photo galleries

Human-medium interactivity features:

- Leave comments
- Rank a video
- Send a video link via email
- Subscribe to a show or a channel
- Embed a video/video link
- Click on recommended relevant content (e.g. “You might also like…”)
- Participate in online surveys, polls, quizzes, and feedback
- Send updates to mobile gadgets
- Upload pictures

- Upload video or audio

Human interactivity features:

- Write letters to editors/producers
- Participate in a discussion forum/BBS
- Use online chat features or instant messenger (e.g. AIM™, Skype™…)
- Follow links to social networking website (e.g. Facebook®, MySpace®)

Defining interactive audiences

Audience interactivity is a construct that can be measured in multiple dimensions: frequency, range and level. Those who perform certain activities on a regular basis are considered "regular users" or "frequent users," while others are defined as non-users or casual users (Jones, 2009). Audience activity can also be evaluated by the range of interactive features they use. Out of the 19 interactive features defined in this study, the more features an individual uses, the more interactive he or she is. In other words, a person who uses 15 out of the 19 functions is more interactive than someone who uses only five out of the 19 features. Moreover, which of those 19 features one uses matters, too. The level of interactivity manifested by a person's online activities should be considered as well. For two people who both use 10 out of 19 interactive features, if one uses mostly simple functions such as searching for programs or choosing a content, while the other spends much time uploading videos and posting on online forum, the latter is considered more participatory than the former, thus more interactive.

Evaluation of audience interactivity is most comprehensive when all three factors are taken into consideration. Among them, frequency is the most commonly used and accepted criterion. This project will define audience interactivity based on frequency of feature use. To make the study more in-depth and robust, information will be gathered about the other two dimensions.

Such data can be used for future studies. But in this dissertation, all research questions are based on defining audience interactivity according to frequency of usage.

To break away from the limitation of investigating only those who create content online, this project examines those who perform any level of interactive activities online. The sample included early, mass, and later adopters of internet interactive functions. Since there is no universal way of defining a "participatory audience," this project defined people's interactive activities on the web based on a synthesis of existing literature. "An interactive audience member" is someone who uses interactive features on an internet website. Previous research has indicated that interactivity is a concept on a continuum instead of a static point, based on the level of participation involved (Chung, 2004). This study measures user interactivity based on how frequently they use the 19 interactive features on internet video website. It is a continuous variable that reflects the extent of audience's interactive and participatory behaviors online.

"Interactive audiences" are different from "internet audiences" because the latter is a term to describe all people who are on the web, whether they use interactive features or not. "Interactive audiences" are different from the commonly used "participatory audience" because the latter only refers to people who contribute online (audio, video, pictures, writing, etc.). Because of the different levels of interactive features available online, a person can be an "interactive audience" for medium-interactivity features while a "non-interactive audience" for human interactivity features.

Pre-test and Adjustment

A pre-test was conducted between June 28 and July 7, 2010 on Qualtrics. The purpose of the questionnaire was to check the reliability of the measurement metrics on some variables, detect potential problems with the language, and test the respondents' understanding of the questionnaire. Ninety-eight respondents, ranging from 23 to 74 years old, completed the pre-test.

Education and income had a range from the lowest to the highest option. The education level ranged from 8th grade or less, to a doctorate. The annual household income ranged from under $20,000 to more than $120,000.

This study used Cronbach's alpha as an indicator of inter-item reliability or consistency of a measurement (Cronbach, 1951). The pre-test examined the Cronbach's alpha on the measurement for the following variables—web literacy (.89), technology characteristics (.68), perceived popularity (.79), media engagement (.83) and internet word of mouth value (.89). The Cronbach's alpha on the D.V. in the pre-test (19 items) was .89. These values were all above the acceptance level of .60 in exploratory research (Agresti & Finlay, 1997). The pre-test also discovered some issues with the questionnaire language. For example, the race/ethnicity question asked if the respondent was "Black, African American or Negro." Though the item was borrowed from the 2010 Census data, some respondents found the term "Negro" offensive and that term was removed from the final survey. Other necessary changes were made to consolidate the content, increase clarity and facilitate the flow of the questionnaire.

Sampling

Sample Composition

This study examined people's usage of interactive features on online video websites, so the logical sample should be composed of users of online video. If this study conducted a random online survey, because of the nature of online consumer panel survey and the fact that it gives incentives such as virtual currency, it is likely to obtain a sample that has a large percentage of young respondents and heavy internet users. The results would not be representative of the broadband population in the United States. So to create a sample that matches the current broadband video users, some quota control is called for.

To create a sample that mirrors the current online video user population in the United States, this study used the The Nielsen Company's Three Screen Report (Nielsen, 2010). The Nielsen Company is a well-established authority in measuring television audiences. In recent years it has started to provide measurement on internet websites and audiences. The Three Screen Report is published quarterly to investigate consumers' media consumption habits. It provides information on what percentages of the demographics in terms of age and gender watch videos on the Internet. It has a section on the current demographic breakdown for broadband video viewers in the America. Because the sample of this study is broadband video viewers in the United States, the researcher used the Three Screen Report as the basis for quota control in this survey.

The researcher averaged the figures from the fourth quarter report of 2009 and the first quarter report of 2010 to generate a current sample. Because the original breakdown included children between the age of 2 and 17, and this study focuses on adults only, this percentage breakdown was redistributed according to only the adult population in the report. The following table details the age and gender breakdown for this survey based on the Nielsen Three Screen Report (Nielsen, 2010). When conducting the survey, quota control was applied to secure the exact number of individuals in each age and gender category with a sample of 200.

Table 3-1. Sample composition based on Nielsen's Three Screen Report

Quarter	K2 - 11	T12 - 17	18 - 24	25 - 34	35 - 49	50 - 64	65+		female	male
2009-4th	6	8	9	15	30	23	9		54	46
2010-1st	6	6	8	17	30	23	10		54	46
Average %	6	7	8.5	16	30	23	9.5		54	46
% within adults			9.8	18.4	34.5	26.4	10.9		54	46
Person count within a sample of 200			19	37	69	53	22		108	92

An online consumer panel survey was conducted between July 24 and July 29, 2010. For quota control reasons, the survey invitations were sent in waves. Consumers were randomly selected from a combination of national consumer panels maintained by USamp and contacted via email with the survey link. The sample included U.S.-based consumers who opted to participate in a consumer panel for small premium rewards. In each round, a wave of invitations was sent to potential respondents, the data were collected and cleaned, and based on the age and gender groups that still needed more respondents, more rounds of invitations were sent.

To secure a sample that is similar to the broadband online video viewing population in the U.S., and to improve the external validity of the survey, data were examined in each round and the following cases were then excluded: those who spent less than five minutes on the survey (on average it took 10-12 minutes to complete the survey and those who spent too little time usually had many missing data and provided suspicious or inconsistent answer patterns); those who answered negatively-worded questions the same as the positively worded questions; and those who had too many missing answers. After the data were cleaned and recorded in the survey system, an updated quota in each age and gender category was calculated and only people in categories that needed additional respondents qualified for the next round.

Response Rate

Altogether 6500 emailed invitations were sent to people on the consumer panels. To secure a sample based on specific demographic breakdowns, this study used a quota control function on the survey website Qualtrics. This device allows only people in segments that still need additional respondents to complete the survey. Between July 24th and 27th, the quota control device had a malfunction that resulted in all clicks being recorded as overquota during that time. A total of 1607 invites were rejected during this period. After excluding these invalid invitations caused by system failure, a total of 4800 invitations were sent out for this survey.

A total of 676 people clicked on the survey link in the email invitation and accessed the survey site. Among them, 73 were disqualified after the three filtering questions, 251 were over quota, and 69 failed to complete the survey during the time frame. Among the 283 that completed the survey, 83 were excluded because some had too many missing answers or provided unreliable answers on reversely worded questions. Overall, this survey generated 200 usable cases with exactly the same demographic breakdown based on the broadband online video viewers in the United States, as reported in the Three Screen Report.

Because this survey had to match a specific demographic composition, the number of invitations sent out was higher than a regular web survey. The click rate for this study was 10.4% (676/6500), meaning 10.4% of the invitations sent responded by clicking on the survey site. The response rate was 4.1% (200/4800) for the survey. Other factors should be considered regarding this response rate, and this discussion follows.

Toward the end of the survey, in order to fill the quota in a specific age and gender segments—65+ male, this study needed an additional 8 respondents. Nearly 800 invitations were sent to senior consumers to fill this quota. In survey methodology, senior aged men have a notoriously low response rate (Wimmer & Dominick, 2006), and it was more difficult to find those above the age of 65 who watch online video and have broadband service. Thus, the extremely low response rate in this age segment (1%) influenced the overall response rate of this study.

This survey only sent invitations via email to people on the consumer panels. The marketing company provided a specific ID in each email in order for people to access the survey. In some other consumer panel surveys, marketing firms may use techniques such as dashboards or fresh traffic invitations to ask people to participate, where they put the invitation in a banner

ad on a random website where everyone can access, thus people who are not on the consumer panel might participate as well. But this survey was strictly limited to inviting people on the consumer panel and only those who received the email invitation could participate. This way it is a truer representation of online consumers, but likely had a negative impact on the response rate.

Measurement

Proposed Model

The following model displays the independent and dependent variables in this study and their relationship. The dependent variable is people's usage of interactive features on internet video websites. The independent variables include audience factors (demographics, media consumption, web and technology experience variables) and technology factors (technology characteristics of interactive features). They are selected based on the diffusion of innovation theory and literature of audience's online behaviors.

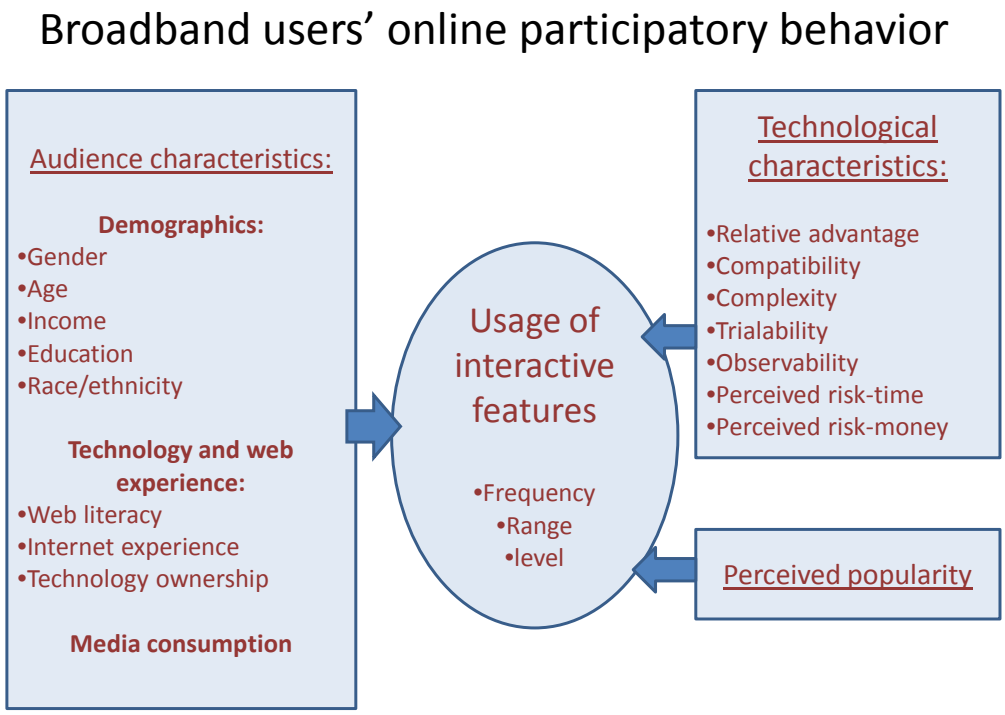

Figure 3-1. Proposed model for people's interactive features usage on online video sites

Dependent Variable

A list of independent and dependent variables, their operational definitions, measurements and sources are presented in Table 3-2. The dependent variable in this study is people's frequency in using interactive features on internet video web sites. This single measurement approach of the dependent variable was selected for study manageability. Each respondent was asked how frequently they used the 19 interactive features on a 7 point scale, "1" being never and "7" being always. There was an N/A option which means the person never used the interactive feature because it was never available to them. Those people who selected N/A were later recoded as "1" (never), because they never used the interactive features (because it was not provided to them). The average frequency on all 19 features is the frequency of usage for each respondent. This dependent variable is a continuous variable that can be examined in t-test, ANOVA, simple linear regression and multiple regression tests.

Independent Variables

Demographics

Respondents were asked about their demographic information such as age, gender, level of household income, race/ethnicity and education. A ratio scale was used for age and a categorical scale for gender and race/ethnicity. Ordinal scales were used for education and household income level. Education ranges from "1=eighth grade or less" to "7=post-graduate" and "8=other." Those who answered "other" were asked to specify their education levels and were later examined and regrouped into one of the seven categories. Household income response categories ranged from "1=$15,000" to "7= $90,000 or above" (Kang, 2003).

Media consumption

The respondents were asked to give an estimate of how much time they spend on the following media on an average day— TV, newspapers, magazines, radio, Internet, DVD, video

games and movie theaters. These media were selected because they represent both traditional media and new media. The respondents' answers to each question constituted a continuous variable for each medium. For the regression test between media consumption and interactive feature usage, all eight items were included. In the all-inclusive prediction model, to reduce the number of predictors included, a principal component analysis was conducted on the eight items to extract fewer principal components to include in the final model.

Web literacy

This variable was measured by a composite variable of digital literacy. It is the summary of people's self-reported ratings of their understanding of the following items: MP3, preference setting, refresh or reload, newsgroup, PDF, advanced search, and download (Hargittai, 2005). This continuous variable is the average of people's rating on the seven items and each item weighs the same in the equation. This survey measure of web-oriented literacy served as proxies for observed digital skill measures (Hargittai, 2005).

Internet experience

Internet experience was measured by several items that predict digital mastery. The first item was how long an individual has been using the Internet, measured in number of years. The second item was people's formal technology education. Respondents were asked "How many formal computer, software, and/or web application classes have you taken?" The last item was about autonomy of use, which refers to being able to use the internet whenever and wherever without physical limitation (Correa, 2009). It was measured by home access to a computer, home access to high-speed Internet, and whether one has a computer in his/her own room (Livingstone & Helsper, 2007). One thing to note was that since only people with broadband service and access to a computer can qualify for this study, autonomy of use was measured by whether one has a computer in his/her own room (e.g. in their home office, dorm or bedroom).

Technology ownership

Rogers (1995) indicated that technology cluster has an impact on people's adoption behaviors. This study used two composite variables to measure technology ownership—digital technology ownership and web account ownership. In the case of interactive features, the technology cluster should include technologies that enable users to perform interactive tasks on the web. Some digital technologies serve as a platform for consumers to utilize interactive features—video game consoles, digital video recorder, and interactive television. As for interactive television, there are several levels of interactivity—the simplistic one offers interactivity with the TV set where users can control the viewing of that content (such as pause, fast-forward and rewind) but does not change the content (Consumer Electronics Show, 2010). An example of such interactive TV service is the digital video recorder (DVR). Another type of interactive television allows users to interact with the program content, such as Two Screen Solutions where people can vote while watching TV (Kunert, 2009). There are also some digital gadgets that enable people to access interactive content on the Internet, such as portable media players with video functions (e.g. ipod), and mobile phones with internet access (e.g. iPhone).

To measure digital technology ownership, respondents were asked whether they own any of the following six digital services—video game console (e.g. Xbox, Wii), Video On Demand via cable or satellite, digital video recorder (e.g. TiVo, ReplayTV), portable media player with video functions (e.g. ipod, Zune), cellphone with internet access, and interactive TV that enables users to interact with program content (e.g. Two Screen Solutions). The number of items owned was then summed to represent digital technology ownership and each item weighs the same in the calculation.

Web account ownership is another proxy variable for technology ownership. According to Rogers (1995), people are likely to adopt innovations that have commonality or are in the same

technology family. In the case of interactive features, audiences can use them not only on internet video sites, but also on news sites, social networking sites, online bulletin board, online chat websites, etc. So whether people use interactive features on other sites may have an influence on their decision to adopt on internet video sites. Since many websites now require an account in order to utilize the interactive functions, (e.g. an account to chat online), this study developed an account ownership variable to measure the total number of internet accounts a person has. These accounts may include those on news sites, iTunes®, social network sites, instant messenger, chat rooms, bulletin board system, and internet video sites to view premium content. Respondents were asked to indicate whether they owned the following types of accounts. The number of items owned was then summed to represent account ownership.

- News sites (e.g. nytimes.com, cnn.com)
- Video download service sites (e.g. iTunes®, Unbox®)
- Social network sites (e.g. Facebook®, MySpace®, Twitter)
- Instant messenger (e.g. AIM™, msn messenger)
- Chat rooms
- Bulletin board system (BBS)
- Personal blog
- Personal website
- Video rental service (e.g. Netflix®)
- Paid internet video account to view premium content (e.g. sports, financial, adult content)
- Channel subscription of online video (e.g. on YouTube™)
- Online game account

Technology characteristics

According to Rogers and Shoemaker's (1971) model, five characteristics have general relevance to the concept of perceived characteristics of a new technology: relative advantage, compatibility, complexity, trialability, and observability. Scholars have added additional variables to measure the perceived risk of an innovation—perceived risk on time and perceived risk on money (Ostlund, 1974; Chang et al., 2006). To measure these seven items, this research used 12 statements adapted from studies conducted by Chang et al. (2006) and Chan-Olmsted and Chang (2006). Respondents are asked about their attitude toward 12 statements (seen in Table 3-2) on a seven-point scale, 1 being "strongly disagree" and 7 being "strongly agree."

Perceived popularity

Scholars have measured perceived popularity by the technology's popularity among family members, primary group members, in the occupation, in the general population (Zhu & He, 2002), among friends (Chang et al., 2006) and classmates (Yang, 2009a). In synthesis of the literature, respondents rated their agreement with four statements about the perceived popularity of interactive features among family members, friends, people in one's occupation, and the general public. There was also a "Don't know" answer item, which was coded as missing data. The average perceived popularity for each item for each respondent was calculated based on valid data.

Media engagement

Syndicated market research defines "engaged people" as those who "visit the site often, spend substantial time on the site, or have many page views" (Calder et al., 2009). The Nielsen Company's "Quad Study" valued viewers who watch a program regularly and in its entirety because such audiences have a high engagement level (Weissman, 1999). This study combines the measurement in those two empirical studies to define a viewer's media engagement level on

internet websites. It asks respondents how likely they are to watch online video programs in their entirety, how likely they are to watch online advertisements in their entirety, how long they stay on their favorite online video websites on an average day, and how many dimensions of interactivity they are engaged in on internet video websites.

Internet word of mouth value

This variable is measured by the audience's likelihood of spreading the word about their online viewing experience. It is comprised of three items: Likelihood of telling others about online video programs, likelihood of telling others about online video sites, and likelihood of telling others about interactive features they use.

Online video consumption

This study asks specific questions about people's online video consumption in both duration and frequency. The duration questions were "How many hours do you spend watching online video on an average day" and "When visiting your favorite online video website, how much time do you spend on average for each visit." The measure was borrowed from Lin's (2006) "one-time continuous web-surfing time." The frequency question was "How often do you watch online video" on a 7-scale ratio, ranging from "Never" to "Several times a day."

Preferences on interactive features, advertising model and payment method

This project explored people's preferences on various functions on internet video sites—interactive features, advertising model and business format. For interactive features, the survey asked about people's most and least favored interactive functions and what new features they wished to have. For advertising model, this study borrowed the measurement from a case study of top 20 cable networks' online video sites (Yang, 2009b). It asked people about their preferred advertising format among pre-roll, post-roll, embedded commercial breaks, and embedded ads throughout the video. For business format, it was measured by the payment method for online

video (Yang & Chan-Olmsted, 2008). It asked people whether they have paid for online video content, and if yes, for what kind of content (open-ended question). It also asked the respondents what type of payment method they prefer, ranging from pay-per-view, subscription-based, combination of the two, and others.

Statistical Analysis

Various statistical tests were used to answer the research questions. A multiple regression test was conducted to identify the significant predictors of people's usage of interactive features. Prior to that, the researcher conducted a principal component analysis on media consumption to reduce the items included in the multiple regression model. To compare the value of interactive audiences and non-interactive audiences, a series of simple linear regression tests and t-tests were conducted. For the last questions on people's preferences on website features and internet video sites, this study presented only descriptive statistics because no hypotheses were formed.

Multiple Regression

Multiple regression tests were used to identify which of the explanatory variables of interactive feature usage were significant. This is a multivariate technique that evaluates the relationship between multiple continuous independent variables and one continuous dependent variable (Agresti & Finlay, 1997). It estimates both the direction and strength of the relationship. The goal of multiple regression analysis is to explain the variation in the dependent variable as much as possible using a set of independent variables. This study chose multiple regression tests because it allows scholars to detect the relationship between variables while controlling other factors. The partial contribution of certain variables can be evaluated when other covariates are included in the model (Agresti & Finlay, 1997).

Multiple regression analysis has four assumptions: independence, linearity, conditional normality and equal conditional variance (Agresti & Finlay, 1997). To make sure these

Table 3-2. Complete list of variables

Variable	Operational definition	Measurement	Sources
Medium interactivity	Rely on the technology to allow users to exert control	Choose a program or content for viewing Choose an advertisement (format and content) Search functions Download a podcast (video/audio) View photo galleries	Chung & Yoo, 2006
Medium-human interactivity	Utilize characteristics of medium interactivity and allow partial human-to-human communication (e.g. expression one's own opinion)	Leave comments Rank a video Send a video link via email Subscribe to a show or a channel Embed a video/video link Click on recommended relevant content (e.g. "You might also like…") Participate in online surveys, polls, quizzes, and feedback Send updates to mobile gadgets Upload pictures Upload video or audio	Chung & Yoo, 2006
Human interactivity	The exchange of ideas between senders and receivers	Write letters to editors/producers Participate in a discussion forum/BBS Use online chat features or instant messenger (e.g. AIM™, Skype™…) Follow links to social networking website (e.g. Facebook®, MySpace®)	Chung & Yoo, 2006
Usage of interactive features	The frequency of use	Measured by frequency of using interactive features: How often do you use the following interactive features on video websites?	Chung & Yoo, 2006
Age	Age of a person	How old are you? _____	Census 2010 data categories
Income	Household income	What is your household income? 1). Under $15,000, 2). $15,000-$29,999	Census 2000 data; Kang, 2003

Table 3-2. Continued

Variable	Operational definition	Measurement	Sources
Income	Household income	3). $30,000-$44,999 4). $45,000-$59,000 5). $60,000-$74,999 6). $75,000-$89,999 7). $90,000 or above	
Gender	Male or female	Are you male or female?	Census 2010 data categories
Race/ethnicity	Racial or ethnic origin(s)	1. Are you of Hispanic, Latino or Spanish origin? Yes/No 2. What is your race? White; Black or African American, American Indian or Alaska native; Asian or Pacific islander; Other or mixed	Census 2010 data categories
Education	Terminal degree obtained	What is your highest level of education? 1). Post graduate (e.g. Ph.D., MD, ED, JD…) 2). Master's degree 3). Bachelor's degree 4). Attended/attending college 5). Graduated high school 6). Attended high school 7). Eighth grade or less 8). Other (please specify _____)	Census 2000 data; used in Kang, 2003
Web literacy	Evaluation of one's capability of locating specific information online and troubleshooting web related problems (Eastin & LaRose, 2000)	Summary of people's self-reported ratings (on a 7-point scale) of their understanding of the following items: MP3, preference setting, refresh or reload, newsgroup, PDF, advanced search, and download.	Hargittai, 2005
internet experience (3 items)	Previous and current experience in using the web	Measured by three items: • years of experience using the web • formal technology education • whether one has a computer in his/her own room (yes/no)	Correa, 2009; Hargittai & Hinnant, 2008; Livingstone & Helsper, 2007

Table 3-2. Continued

Variable	Operational definition	Measurement	Sources
Media consumption (8 items)	Media usage time	The amount of time a person spends on the following media on an average day (8 items): TV, radio, newspaper, magazine, Internet, DVD, video games and movie theater	Lin & Jeffres, 1998; Yang & Chan-Olmsted, 2009
Technology ownership	how many functionally similar technologies people own	Digital technology ownership (6 items): • video game console • digital video recorder • Video On Demand via cable or satellite • Interactive TV that enables users to interact with program content (e.g. Two Screen Solutions) • mobile phone with internet access • Portable media player with video functions Web account ownership (12 items): • News sites (e.g. nytimes.com, cnn.com) • Video download service sites (e.g. iTunes®, Unbox®) • Social network sites (e.g. Facebook®, MySpace®, Twitter) • Instant messenger (e.g. AIM™, msn messenger) • Chat rooms • Bulletin board system (BBS) • Personal blog • Personal website • Video rental service (e.g. Netflix®)	

Table 3-2. continued

Variable	Operational definition	Measurement	Sources
		• Channel subscription of online video (e.g. on YouTube™)	
Technology ownership	how many functionally similar technologies people own	• Paid internet video account to view premium content (e.g. sports, financial, adult content) • Online game account	
Relative advantage (3 items)	Degree to which an innovation is perceived superior to the one it will replace.	1-7 Likert scale on agreement: • Websites with interactive features are better than those without. • Using interactive features fulfills my entertainment needs better. • Using interactive features improves my lifestyle.	Chan-Olmsted & Chang, 2006
Compatibility (2 items)	Degree to which an innovation is consistent with existing values and the past experience of the adopter.	• Using interactive features is compatible with my lifestyle. • Using interactive features is compatible with the way I use media.	Chan-Olmsted & Chang, 2006
Complexity (2)	Degree to which an innovation is difficult to understand or to use	• Interactive features are easy to use.* • Interactive features are easy to learn to use.*	Chan-Olmsted & Chang, 2006
Trialability (1)	Degree to which an innovation may be tried by consumers on a limited basis	• It's easy to try interactive features without spending too much time or money.	Chan-Olmsted & Chang, 2006
Observability (2)	Degree to which an innovation is visible to others	• I can easily see the benefits of using interactive features.* • I can easily explain the benefits of using interactive features to my friends.*	Chan-Olmsted & Chang, 2006
Perceived risk-time (1)	The perceived risk in adopting the innovation in terms of time	• Using interactive features does not need much time.*	Chang, et al., 2006
Perceived risk-money (1)	The perceived risk in adopting the innovation in terms of money	• Using interactive features does not need much money.*	Chang, et al., 2006

Table 3-2. Continued

Variable	Operational definition	Measurement	Sources
Perceived popularity (4 items)	The perceived popularity of the technology	Likert scale of agreement (1-7) 1. My family members use interactive features on internet video sites. 2. My friends use interactive features on internet video sites. 3. People in my occupation (e.g. classmates, co-workers) use interactive features on internet video sites. 4. People in our society use interactive features on internet video sites.	Chang, et al., 2006
Media engagement	Media involvement entails six dimensions including inspirational, trustworthy, life enhancing, social interaction, personal timeout and advertising attention and receptivity (Simmons, 2008)	1. Likelihood of watching programs in entirety 2. Likelihood of watching online ads in entirety 3. Average time spent on one's favorite online video site 4. Dimensions engaged on an online video sites (medium interactivity, medium-human interactivity, human interactivity)	Calder et al., 2009; Chung & Yoo, 2006; Weissman, 1999
internet word of mouth value	Disseminating information about online goods (De Vany & Lee, 2001)	• Likelihood of telling others about online video programs • Likelihood of telling others about online video sites • Likelihood of telling others about the interactive features they used	De Vany & Lee, 2001
Advertising format	Advertising format and characteristics	Ad format: pre-roll, post-roll, embedded commercial breaks, embedded throughout the program	Yang & Chan-Olmsted, 2008
Business model	The rationale of how an organization creates, delivers, and captures value	Payment format: Subscription-based, usage-based, combination of the two, others	Yang & Chan-Olmsted, 2008

*This statement is reversely worded in the survey to ensure more accurate responses from the participants.

assumptions are supported, a multicollinearity check among all the independent variables was conducted using variance influence factor (VIF) and tolerance. This study also conducted tests to eliminate outliers that may have otherwise skewed the regression results. It employed tests using both studentized residuals and standardized DFBetas to detect outliers and made sure no case had too substantial an influence on the regression model.

Principal Component Analysis

Principal component analysis is a multivariate analysis used for a variety of purposes: "1) revealing patterns of interrelationships among variables; 2) detecting clusters of variables, each of which contains variables that are strongly intercorrelated and hence somewhat redundant; 3) reducing a large number of variables to a smaller number of statistically uncorrelated variables, the factors of factor analysis, that are each linearly related to the original variables" (Agresti & Finley, 1997, p. 630). A principal component analysis was conducted because it can partially solve the multicollinearity problem among the independent variables and reduce the number of variables included in the regression model. This study conducted a principal component analysis on media consumption and extracted several principal components to include in the multiple regression model based on the factor loadings and communalities. For the dependent variable, this study averaged people's answers on the 19 items instead of doing a principal component analysis because principal components can only retain a certain percentage of the variance in the variable while an average contains all of the information. Also, there was not sufficient literature to provide a theoretical foundation for conducting a principal component analysis on the 19 items.

T-tests, ANOVA, and Simple Linear Regression Tests

To test the differences in interactive feature usage among different demographic groups, t-tests, ANOVA and simple linear regression tests were employed depending on the nature of the

variable. This study conducted t-tests to examine the difference in interactive feature usage between different gender, ethnicity and age groups. It ran linear regression tests between interactive feature usage and three continuous demographic variables—income, education and age. Because multiple ethnic groups are examined in this project, a series of ANOVA tests were run between ethnicity and interactive feature usage to see if ethnic groups had differences in their web behavior.

Chapter 3 has described the study design, data collection method, variable measurement, questionnaire development and the statistical tests used, as well as justifications for all of the above. It summarized the pre-test and revisions based on the pre-test. It provided a complete list of variables and their measurement in this study. The results are reported in Chapter 4.

CHAPTER 4
RESULTS

This chapter consists of five parts. First, a description of the collected data is provided. Second, the sample composition is described. Third, the regression tests on predictors of interactive feature usage are analyzed. Fourth, ANOVA, t-tests and simple linear regressions on the differences between interactive and non-interactive audiences were conducted. And last, some additional test results are presented.

Sample and Descriptive Statistics

Demographics

Table 4-1 shows the demographic composition of this study's sample of 200. It represents the current demographic composition of broadband users who watch online video. This sample is based on Nielsen's Three Screen Reports which is an authoritative source of broadband audience analysis in the U.S. (Nielsen, 2010). Among them, there are more female (54%) than male (46%) users. Regarding the age distribution, 34.5% were in the 35-49 age group, followed by 26.5% in the 50-64 group and 18.5% in the 25-34 group. This shows some demographic differences from the general population based on 2000 Census data.

As for education, 99.5% of the respondents have graduated from high school, which is different from the 2000 Census data where 80.4% of the American population finished high school. It seems the broadband video respondents in this study sample have a higher education level than the general population. Among them, 33% had an associate degree or some college education, followed by 31.5% who had finished four years of college. The sample had more people with an advanced degree (14.5%) than the general population (8.9%). It seems people with a postgraduate degree are more likely to consume online video than those without.

As for race, Caucasian and Asian/Pacific Islanders represented a higher percentage of the sample than in the general population, while African Americans represented a lower percentage. While this may indicate that in terms of race, online video audiences in this study are more likely to be Asian/Pacific Islander than the general public and less likely to be African American than the general public, it could also mean that some ethnic minorities are less likely to participate in surveys.

As for income, the study was able to make some rough comparisons. However, because the categories were not identical to the 2000 census, and because the census data had not updated at the time of the study to know whether the income distribution may have changed, interpretations should be made with caution. More than 15% of the sample had a household income of more than $100,000, while only 12.3% of the general population did. Twenty-eight percent of the sample was from low income households, making less than $40,000 annually, while 41.4% of the general population made less than $34,999 a year. It seems the sample had more people from high income families than the general population, and less people from low income families than the general population.

The differences between the sample and the general population may be due to several factors. First, the sample only included broadband video viewers. This group has a higher level of income because they need to afford broadband service; and there may be fewer African Americans because the broadband penetration among this group lags behind other groups (Fox, 2009). Second, the respondents were recruited via online consumer panels. They used online gift certificates and virtual currency as recruiting incentives, so this group could include more avid web surfers and game players than the general population. Scholars need to be cautious in projecting conclusions from this study to the general population.

Table 4-1. Demographic composition of the sample vs. the general population

Category		Frequency	Percentage	2000 Census data percentage
Age	18-24	19	9.5	9.6
	25-34	37	18.5	14.2
	35-49	69	34.5	N/A
	50-64	53	26.5	N/A
	65 or older	22	11.0	12.4
	Total	200	100.0	100
Gender	Male	92	46.0	49.1
	Female	108	54.0	50.9
	Total	200	100.0	100
Education	Attended high school	1	.5	19.6
	Graduated high school	40	20.0	28.6
	Some college, associate degree	66	33.0	27.4
	Bachelor's degree	63	31.5	15.5
	Master's degree	22	11.0	5.9
	Doctorate	7	3.5	3
	Missing System	1	0.5	N/A
	Total	200	100.0	100.0
Race	White, Caucasian	172	86.0	75.1
	Black, African American	14	7.0	12.3
	Asian or Pacific Islander	11	5.5	3.7
	American Indian and Alaska native	0	0	0.9
	Mixed	2	1.0	2.4
	Other	1	.5	5.5
	Total	200	100.0	100.0

Web and Technology Experiences

Web literacy was measured by people's self-reported ratings in their understanding of seven web-related terms on a scale of 1 to 7. The average was 5.75 out of 7, indicating a high level of web literacy. All items had an average above five, and three items had an average above 6: the understanding of "refresh or reload," "advanced search," and "download." The item people had the lowest understanding of was "newsgroup," but still showed an average of 5.12. The high level of web literacy may be because all respondents are broadband users who watch videos online and they have a fair understanding of web functions on the Internet.

Three items were collected to measure internet experience—computer classes taken, computer access in one's own room, and number of years using the web. All respondents have

access to a computer in their own rooms, so this item was removed from the regression tests. The results showed a wide range of former computer classes taken—about one third had never taken any computer class, one third had taken three or more classes, and another one third said they had taken one or two classes. As for years of web experience, respondents averaged 14.5 years of experience using the web.

Technology ownership was measured by how many technologies and web accounts one owns. On average, the respondents owned 2.74 of 6 technologies, and 3.35 of 12 accounts, as shown in Table 4-2. The most commonly owned account was an SNS account where about three fourths of the respondents had one. Several technologies were quite common among the sample: about 60% of them owned a video game, had Video On Demand, or a cellphone with web service.

Table 4-2. Technology and account ownership among the sample

Account-news	Account-Video Download	Account-SNS	Account-IM	Account-Chat	Account-BBS
25%	38%	72.5%	49.5%	12%	10.5%
Account-Blog	Account-Personal Site	Account-Video Rental	Account-Video Premium	Account-Video Channel	Account-Online Game
16%	17%	28%	7.5%	32.5%	26%
Tech-Video Game	Tech-VOD	Tech-DVR	Tech-Portable Media	Tech-Cellphone with web access	Tech-Interactive TV
62%	58.5%	49%	41.5%	56.5%	6.5%

Media Consumption

Among the eight media examined, people spent the most time on the web, averaging 4.8 hours daily (S.D.=2.63), followed by television at 3.4 hours daily (S.D.=2.14). On average, people spent between one and 1.5 hours on other electronic media—1.6 hours on music (S.D.=1.68), 1.2 hours on radio (S.D.=1.29), 1.1 hours on video or computer games (S.D.=1.49), and one hour on movies (S.D.=1.2). Respondents spent the least amount of time on print media—only 0.6 hours on newspapers (S.D.=.57) and 0.4 hours on magazines (S.D.=.49). It is

important to note that people may multitask when using different types of media, such as watching TV while surfing online, so the total daily media time may be higher than expected and there may be some confounding among variables.

Technology Characteristics

Overall, the respondents had a slightly positive attitude toward all seven technology characteristics of interactive features as shown in Table 4-3. Among them, people agreed most with the ease of use (*M*=4.92) and the small amount of money needed to use interactive features (*M*=4.91). They were least impressed with the relative advantage of interactive features (*M* =4.35). This survey found that people believe interactive features are quite popular among their acquaintances and in the society (*M*=5.27).

Table 4-3. Respondents' attitude on interactive features' technology characteristics

Statement	Mean	S.D.	Percentage in each answer category*						
			1	2	3	4	5	6	7**
Relative advantage (*M*=4.35)									
Websites with IF are better than those without.	4.57	1.28	1.0	6.5	7.5	33.5	28.0	16.5	6.5
Using IF fulfills my entertainment needs better.	4.43	1.48	5.5	7.0	8.5	27.0	28.0	18.5	5.5
Using IF improves my lifestyle.	4.06	1.29	5.5	9	8	39.5	29	7.5	1.5
Compatibility (*M*=4.44)									
Using IF is compatible with my lifestyle.	4.43	1.34	3.5	5.5	10.5	30	29	17	4.0
Using IF is compatible with the way I use media.	4.45	1.41	4.5	5.5	9.5	30	27	18.5	5.0
Complexity (*M*=4.92)									
IFs are easy to use.	4.95	1.28	0	2.5	12	21	28	24.5	11.5
Ifs are easy to learn to use.	4.89	1.25	0	4.5	7.5	25.5	28	25.5	9
Trialability (*M*=4.78)									
It's easy to try IF without spending much money.	4.78	1.26	1.5	3.5	7	28.5	29	23	7
Observability (*M*=4.42)									
I can easily see the benefits of using IF.	4.71	1.37	1.5	4.5	10	29	26.5	17.5	11
I can easily explain the benefits of using IF to my friends.	4.13	1.54	6.5	10.5	16	20	28	15.5	3.5

Table 4-3. Continued

Statement	Mean	S.D.	Percentage in each answer category*						
			1	2	3	4	5	6	7**
Perceived risk in time (*M*=4.48)									
Perceived risk in time--Using IF requires little time.	4.48	1.28	1.5	3.5	14.5	35.5	21.5	18	5.5
Perceived risk in money (*M*=4.91)									
Perceived risk in money--Using IF requires little money.	4.91	1.33	0.5	3	9.5	28.5	22.5	22.5	13.5
Perceived popularity (*M*=5.27)									
My family members use IF.	4.86	1.76	4.5	11.5	3	11	21.5	24.5	16
My friends use IF.	5.33	1.48	2.5	3	3.5	12.5	20	26	21
People in my occupation (classmates, coworkers) use IF.	5.13	1.61	3	4	5	13	16	22.5	17.5
People in our society use IF.	5.72	1.15	1	.5	0	13	22	30	28

*Some of the percentage may not total 100% because of missing data.
**: 1: Strongly Disagree; 2: Disagree; 3: Somewhat disagree; 4: Neither disagree or agree; 5: Somewhat agree; 6: Agree; 7: Strongly agree

Media Engagement

Media engagement was measured by the following items: likelihood of watching online videos in their entirety, likelihood of watching online ads in their entirety, average time spent on one's favorite online video site, and levels engaged on an online video site (medium, medium-human, human).

Table 4-4. Results on media engagement

Statement	Mean (scale 1-7)	S.D.	Answer categories (in percentage)						
			Never	Rarely	Occasionally	Sometimes	Frequently	Almost every time	Every time
I watch online videos in their entirety.	4.54	1.2	1.0	4.5	11.6	29.1	33.7	16.1	4.0
I watch ads in online videos in their entirety.	3.41	1.56	10.1	26.1	15.1	22.1	16.1	9.0	1.5

As Table 4-4 shows, one third of the respondents said they watched online videos in their entirety frequently, another 16% said they watched the entire program almost every time, and 4% said they did so every time, so more than half of the respondents would watch online videos in

their entirety regularly. As for ads in online videos, 51% of respondents said they never, rarely, or occasionally watched online commercials in their entirety. About 27% said they watched complete online commercials frequently, almost every time, or every time.

On average, respondents spent 1.5 hours watching online video every day. As Table 4-5 shows, one third of the respondents watched online video several times a week, 25% did so daily, and another 10% watched online video multiple times a day. Altogether 68% of respondents watched online video quite frequently. As for the time spent on their favorite online video websites, 23.6% spent less than 15 minutes on an average day, 26% spent 15 to 29 minutes, and 32% spent between half an hour and one hour. So it seems that people watch online video quite frequently, but for short periods of time. They accessed these websites often, but usually spent less than an hour per visit. It is curious that though only broadband video viewers qualified for the study, two people reported that they never watch online video when asked about their frequency. An explanation is simply that respondents are not always consistent in their replies, which is a limitation of research.

Table 4-5. Frequency and time spent on online video websites

Frequency of watching online video	Percent	Cumulative percent	Daily time on favorite video site	Percent	Cumulative percent
Never	2.0	2.0	Less than 15 minutes	23.6	23.6
Once a Month	6.5	8.5	15 minutes—less than half an hour	26.1	49.7
2-3 Times a Month	13.0	21.5	Half an hour—less than1 hour	32.2	81.9
Once a Week	9.5	31.0	1 hour—less than 2 hours	12.6	94.5
2-6 Times a Week	33.5	64.5	2 hours-less than 3 hours	4.5	99.0
Daily	25.5	90.0	3 hours- less than 4 hours	.5	99.5
Several times a day	10.0	100.0	4 hours or more	.5	100.0

As for the dimension of interactive features people have used, only two out of 200 respondents have never used any of the medium interactive features, only three never used any of the medium-human interactive features, and 22 never used any of the human interactive features, as shown in Table 4-6. This shows that the respondents used medium and human-medium interactive features more often than human interactive features. Since over 90% of the respondents have used all three levels of interactive features, there is not enough variation in the "dimension of interactive features" variable, so this item was removed for later tests on media engagement.

Table 4-6. Results on internet word of mouth value

Statement	Mean	S.D.	Answer categories (in percentage)						
			Never	Rarely	Occasionally	Sometimes	Frequently	Almost every time	Every time
I tell others about the online videos I watched.	3.9	1.29	4	11.5	19	30.5	28	5	2
I tell others about the websites where I watch online videos.	3.93	1.29	4.5	10.5	15.5	36.5	25	6	2
I talk to others about the interactive features on video websites.	3.14	1.41	15	22.5	16	32	10.5	3	1

Internet Word of Mouth Value

Generally speaking, people are vocal in telling others about the online videos they watch. Sixty-five percent of the respondents talk to others about the video they saw sometimes or frequently, 70% of them talk about the online video websites they use, and 46.5% talk about the interactive features they use. It seems people are more likely to tell others about the online video or website than the interactive features they use online.

Interactivity

This study classified interactive features into three categories—medium interactive features, medium-human interactive features and human interactive features. Among the five

medium interactive features, search functions and selecting a program were used the most, while selecting an advertisement was used the least, as shown in Table 4-7. Among the 10 medium-human interactive features, online survey/quizzes, recommending videos and uploading pictures were used most frequently, while signing up for mobile updates, embedding videos in emails, or subscribing to a video channel were used the least frequently. Among the four human interactive features, respondents used online chat and SNS links most frequently, and the "write to the editor" function the least frequently.

Table 4-7. Usage of interactive features

Interactive feature	Mean	Never (%)	Rarely (%)	Occasionally (%)	Sometimes (%)	Frequently (%)	Almost every time (%)	Every time (%)
Medium interactive features								
Choose a program	4.05	7.1	9.1	16.8	23.9	28.4	11.2	3.6
Choose an ad	2.35	36	24	20	12.5	5.0	2.0	0.5
Search	4.06	7.5	12.0	14.0	23.0	26.0	12.0	5.5
Download	3.29	17.0	13.5	23.0	22.0	19.5	4.5	0.5
View photos	3.93	6.0	8.5	22.0	25.0	28.5	8.5	1.5
Medium-human interactive features								
Comments	3.03	18.0	25.5	19.0	17.0	15.0	4.0	1.5
Rank videos	2.92	26.5	16.5	19.5	19.5	12.5	5	0.5
Send links	3.01	21.5	19	18.5	23	14.5	2.5	1
Subscribe	2.36	38.5	22	17	12	9	1	0.5
Embed videos	2.26	45.5	18.5	12.5	12.5	9	1	0.5
Recommend	3.49	11	12.5	26	26.5	15	7	1.5
Online survey and quizzes	4.20	7	9	13.5	19	34.5	12.5	4.5
Mobile update	2.19	49.5	17	10	13	8	1.5	0.5
Upload pics	3.41	18.5	16	9.5	24.5	26.5	3	2
Upload AV	2.77	27.5	20.5	18.5	17.5	13	2.5	0.5
Human interactive features								
Letter to editor	1.89	52	24.5	9	10.5	3	0.5	0
Discussion	2.47	36	22.5	12.5	18.5	9	1.5	0
Online chat	3.14	26.5	18.5	11	16	17	6.5	4
SNS	3.43	21.5	10	17	21.5	19	7.5	3.5

Regression Analysis of Prediction Model

One of the main purposes of the study was to identify predictors of people's usage of interactive features on internet video websites. First, a regression test was conducted for each set of variables to identify the significant factors influencing interactive features usage in each set—demographics, media consumption, web and technology experiences, and technology characteristics. Second, a complete all-inclusive regression model with 26 predictors was tested. Finally, to find a parsimonious model, a regression test based on only predictors that showed significant results from each set of tests were included and presented.

Demographics

This study developed a series of research questions on the relationship between demographic variables and people's interactive feature use. The following hypotheses were posed:

H1: Age is negatively related to people's frequency in using interactive features.

H2: Income is positively related to people's frequency in using interactive features.

H3: Males use interactive features more frequently than females.

H4: Caucasians use interactive features more frequently than non-Caucasians.

H5: Education level is positively related to people's frequency in using interactive features.

A multiple regression test was conducted between demographics and people's frequency of using interactive features. After excluding missing data, 199 out of the 200 respondents qualified for this test. A test of standardized DFBetas showed that all cases are within the (-2, 2) interval, meaning no case had a too substantial an influence on the regression model. A multicollinearity test was run using tolerance and VIF and both showed satisfactory results.

The test showed a moderate correlation between demographics and people's frequency in using interactive features. It was based on the linear regression model with five independent

variables—age, gender, education level, race/ethnicity and income level (r=.38). Twelve percent of the variance of the dependent variable can be explained by the independent variables. The result is statistically significant (F (5, 193) =6.54, p <.05).

When examining the five variables in demographics, Table 4-8 showed significant results for two variables—age and income (p<.05). There is a negative relationship between age and frequency of use, meaning the older a person is, the less frequently he or she uses interactive features. There is a positive relationship between income and frequency, meaning the higher income people have, the more frequently they use interactive features. Hypotheses 1 and 2 were supported and hypotheses 3, 4 and 5 were not supported. When examining the size or magnitude of the standardized coefficients of each variable, it seems age and income made the most significant contribution to explaining the variance in people's usage of interactive features.

Table 4-8. Multiple regression results between demographics and interactive feature frequency

Model	Mean	S.D.	Unstandardized Coefficients	Standardized Coefficients	t
			B	Beta	
(Constant)			3.78		9.24
gender	1.54	.500	-.18	-.09	-1.36
Age	44.11	14.52	-.02	-.29	**-4.12***
Education	4.43	1.06	.04	.047	.64
Race: White/Non-white	.86	.35	-.17	-.061	-.86
Income	3.63	1.69	.10	.179	**2.42***

*p<.05, N=199

Media Consumption

This study then launched an exploration on the relationship between media consumption variables and interactive feature use. The following hypotheses were developed:

H6: Media consumption level is positively associated with people's frequency in using interactive features.

H6a: The more time people spend reading newspapers, the more frequently they use interactive features.

H6b: The more time people spend reading magazines, the more frequently they use interactive features.

H6c: The more time people spend listening to radio, the more frequently they use interactive features.

H6d: The more time people spend watching television, the more frequently they use interactive features.

H6e: The more time people spend surfing on the Internet, the more frequently they use interactive features.

H6f: The more time people spend watching movies (DVD and movie theaters), the more frequently they use interactive features.

H6g: The more time people spend playing video or computer games, the more frequently they use interactive features.

H6h: The more time people spend listening to music, the more frequently they use interactive features.

A multiple regression test was run between media consumption and people's frequency of using interactive features. Of the 200 respondents, 199 qualified for this test. A test using studentized residuals revealed one case that was out of the (-3, 3) range. After using a method that reduced the weight given to outlying data points, the results were very similar to the original results. So no case was eliminated. A test of standardized DFBetas also showed that all cases were within the (-2, 2) interval, meaning no case had too significant an influence on the

regression model. A multicollinearity test was conducted using tolerance and VIF and both showed satisfactory results.

The test showed a correlation between people's media consumption and their frequency in using interactive features based on the linear regression model with eight independent variables. Seventeen percent of the variance of the dependent variable can be explained by the independent variables (adjusted R^2=.17). The result is statistically significant (F (8, 190) =6.05, p <.05).

Table 4-9. Multiple regression test between media consumption and interactive feature frequency

Model	Mean	S.D.	Unstandardized Coefficients	Standardized Coefficients	T
			B	Beta	
(Constant)			2.56		14.74
Daily TV hours	3.36	.98	-.10	-.22	**-3.12***
Daily Newspaper hours	.60	2.15	.08	.04	.62
Daily Magazine hours	.41	.57	.20	.10	1.37
Daily Radio hours	1.17	.49	.02	.03	.39
Daily Web hours	4.81	1.29	.11	.29	**4.05***
Daily Movies hours	.98	2.63	.20	.25	**3.36***
Daily Game hours	1.04	1.20	-.04	-.06	-.84
Daily Music hours	1.54	1.45	.001	-.00	-.02

*p<.05, N=199

When examining the eight variables measuring media consumption, Table 4-9 showed significant results for three variables—daily TV hours, and daily web hours and daily movie hours (DVD or movie theaters) (p<.05). This means that among all media, how much time a person spends on TV, web and movies are the most influential in predicting how frequently they use interactive features. The more time they spend online, the more frequently they use interactive features. The more they play or watch DVDs or go to movie theaters, the more

frequently they use interactive features. As for television, the test showed a negative relationship, meaning the more television people watch, the less frequently they use interactive features. However, it is important to note that people multitask when using media. Since the questionnaire did not ask respondents to specify whether they consumed multiple media at the same time, there may be some confounding among those three variables. Hypothesis 6e and 6f were supported and other sub-hypotheses were not supported.

Technology and Web Experiences

This study tested the relationship between technology/web experience variables and people's use of interactive features. The following hypotheses were posed:

H7: Web literacy is positively associated with people's frequency in using interactive features.

H8: internet experience is positively associated with people's frequency in using interactive features.

H9: Technology ownership is positively associated with people's frequency in using interactive features.

H10: Account ownership is positively associated with people's frequency in using interactive features.

A multiple regression test was conducted to analyze the relationship between technology and web experience variables and people's frequency of using interactive features. This set of variables included technology ownership, account ownership, web literacy and internet experience. One of the measurement items for internet experience was primary access to a computer in one's "own room," as operationally defined by the survey. All respondents answered yes to this question, so this item was removed in the measurement of internet experience. One hundred ninety-three out of the 200 respondents qualified for this test after

excluding missing data. A test of standardized DFBetas showed that all cases were within the (-2, 2) interval, meaning no case had a too significant influence on the regression model. A multicollinearity test was run using tolerance and VIF and both showed satisfactory results.

As Table 4-9 shows, the test found a correlation between technology/web experience and people's frequency in using interactive features. Forty-six percent of the variance of the dependent variable can be explained by the independent variables (adjusted R^2=.46). The result is statistically significant (F (5, 187) =33.48, p <.05).

When examining the five variables in technology/web experience, Table 4-10 showed significant results for four variables—web literacy, account ownership, technology ownership, and technology education (p<.05). There is a positive relationship between these four predictors and interactive feature usage frequency, meaning the greater web literacy one has and the more technology classes one has taken, the more frequently one uses interactive features. Also, technology ownership and account ownership seemed to be influential in predicting interactive feature usage. The more digital technology accounts one has, and the more internet accounts one has, the more one uses interactive features. Based on this, hypotheses 7, 9 and 10 were supported and hypothesis 8 was not supported.

Table 4-10. Multiple regression test between technology/web experience and interactive feature frequency

Model	Mean	S.D.	Unstandardized Coefficients	Standardized Coefficients	t
			B	Beta	
(Constant)			1.74		6.39
Web Literacy	5.74	1.23	.10	.12	**2.00***
Web years	14.55	5.73	-.02	-.10	-1.74
Account ownership	3.33	2.59	.15	.40	**5.89***
Technology ownership	2.72	1.68	.10	.18	**2.81***
Computer class taken	1.71	1.62	.12	.21	**3.34***

*p<.05, N=193

Technology Characteristics

This study then tested the following hypotheses on the relationship between technology characteristics and interactive feature use:

H11: Perceived characteristics of interactive features are positively associated with people's frequency in using interactive features.

H12: Perceived popularity of interactive features are positively associated with people's frequency in using interactive features.

A multiple regression was conducted testing technology characteristics and people's frequency of using interactive features. This study included eight variables measuring technology characteristics: relative advantage (measured by 3 items), compatibility (2 items), complexity (2 items), trialability (1 item), observability (2 items), risk in terms of time (1 item), risk in terms of money (1 item), and perceived popularity (4 items). To reduce the number of variables, this study calculated the mean of the four items measuring perceived popularity to represent popularity. The regression model has 13 predictors.

Four cases out of 200 had missing data for this test, so after excluding the four, 196 out of the 200 respondents qualified for this test. A test using studentized residual showed that all remaining cases were within the (-3, 3) range. A test of standardized DFBetas also showed that all cases were within the (-2, 2) interval, meaning no case had a too significant influence on the regression model. A multicollinearity test was conducted using tolerance and VIF and both showed satisfactory results.

Overall, the respondents think positively about the technology characteristics of interactive features. On a scale of 1 to 7, people's average attitude scores toward all technology characteristics were above 4 and the mean was 4.62. Respondents thought most highly of interactive features' ease of use, low financial investment, and perceived popularity, and thought

least highly of how interactive features can improve one's lifestyle and how they can explain the benefits of using them to others. The perceived popularity score of interactive features was 5.3 out of 7, demonstrating a positive reputation in the online world.

The test showed a correlation between people's attitude toward technology characteristics and their frequency in using interactive features on internet video sites based on the linear regression model with 13 independent variables. Just over half of the variance (adjusted R^2=.53) of the dependent variable can be explained by the independent variables. The result is statistically significant (F (13, 182) =16.17, p <.05).

When examining the 13 variables measuring technology characteristics, Table 4-11 showed significant results for three variables—trialability, observability, and perceived popularity (p<.05). The easier people think it is to try interactive features, and the more they see the benefits of using interactive features, the more they use interactive features. In addition, the more they think interactive features are popular, the more frequently they use them. Hypothesis 11 was not supported and hypothesis 12 was supported.

Table 4-11. Regression results for technology characteristics and interactive feature use

Model	Mean	S.D.	Unstandardized Coefficients	Standardized Coefficients	t
			B	Beta	
(Constant)			.333		
RelativeAd1	4.58	1.28	0.09	0.11	1.61
RelativeAd2	4.41	1.49	0.07	0.11	1.20
RelativeAd3	4.06	1.29	0.05	0.07	0.88
Compatibility1	4.43	1.34	0.04	0.05	0.56
Compatibility2	4.44	1.42	0.10	0.15	1.58
complex1	4.95	1.28	-0.08	-0.10	-1.19
Complex2	4.89	1.26	0.07	0.10	1.22
Trialability	4.77	1.27	0.12	0.16	**2.30***
Observe1	4.72	1.37	0.10	0.14	**2.04***
Observe2	4.13	1.54	0.09	0.15	1.89
Risktime	4.50	1.26	-0.09	-0.11	-1.72
Riskmoney	4.92	1.33	-0.06	-0.08	-1.33
Popularity	5.25	1.26	0.10	0.13	**2.31***

*p<.05, N=196

Test of Complete Regression Model

A multiple regression test was conducted to test the proposed model between webcasting frequency and four sets of variables—demographics, media consumption, web/technology experience and technology characteristics.

RQ 1: What are the predictors of people's usage of interactive features on websites with video functions?

Principal component analysis

To reduce the number of variables, a principal component analysis was conducted on media consumption. Based on Bartlett's test of sphericity, there was enough common variance among the variables for a principal component analysis. Three principal components were extracted to include in the complete regression model. As Table 4-12 shows, the three principal components explained 58.6% of total variance in the data. In this case, there is enough variance for PCA. This study used the Kaiser-Guttman rule to select the number of principle components, meaning it will retain all principal components that had an Eigenvalue larger than 1. According to the Varimax rotated model, the three rotated principal components were: media factor 1—traditional entertainment consumption, including daily radio hours, daily movie hours and daily music hours; media factor 2—electronic and new media consumption, including daily TV hours, daily web hours and daily game hours; and media factor 3—print media consumption, including daily newspaper hours and daily magazine hours. The variables were grouped in each principal component based on: their eigenvalues, the sign of the eigenvalue, and interpretation power. For example, even though daily movie time had similar eigenvalues in principal component 1 and 2, it was still grouped with the principal component that had the higher eigenvalue.

Table 4-12. Results of principal component analysis on media consumption

Variables	Unrotated (variance=58.6%)			Varimax rotated (variance=58.6%)			Commu-nality
	P.C.1	P.C.2	P.C. 3	P.C. 1	P.C.2	P.C.3	
	Eigen value =1.97 (24.7%)	Eigen value =1.52 (19%)	Eigen value =1.2 (15%)	Eigen value =1.62 (20.2%)	Eigen value =1.54 (19.3%)	Eigen value =1.53 (19.1%)	
Daily TV hours	0.12	0.53	0.54	-0.44	0.49	0.39	0.59
Daily Newspaper hours	0.16	0.79	-0.21	-0.04	-0.04	0.83	0.69
Daily Magazine hours	0.32	0.64	-0.29	0.17	0.01	0.76	0.60
Daily Radio hours	0.56	-0.03	-0.47	0.69	0.03	0.23	0.53
Daily Web hours	0.54	0.02	0.57	0.02	0.78	0.02	0.62
Daily Movies hours	0.71	-0.03	-0.02	0.52	0.46	0.16	0.51
Daily Game hours	0.61	-0.23	0.36	0.28	0.67	-0.15	0.56
Daily Music hours	0.59	-0.38	-0.33	0.75	0.15	-0.12	0.60

KMO=.553, Bartlett's test of sphericity (x^2=184.2*, *df*=28, **p*<.05).

Complete regression model

A multiple regression test was conducted with all four sets of independent variables to identify predictors of people's usage of interactive features. The variables included were: demographics (5): age, gender, income, race, education; media consumption levels (3): traditional entertainment, print media, electronic and new media; technology and web experience (5): web literacy, web experience, technology education, technology ownership, account ownership; and technology characteristics (13): perceived popularity, relative advantage, compatibility, complexity, trialability, observability, perceived risk in time, and perceived risk in money. Thirteen out of 200 cases had missing data for this test and were excluded, and 187 cases qualified for this test. A test using studentized residual showed that all remaining cases were

within the (-3, 3) range. A test of standardized DFBetas also showed that all cases were within the (-2, 2) interval, meaning no case had too significant an influence on the regression model. A multicollinearity test was run using tolerance and VIF and both showed satisfactory results.

Table 4-13. Regression results for all IVs and interactive feature use

Model	Mean	S.D.	Unstandardized Coefficients	Standardized Coefficients	T
			B	Beta	
(Constant)			0.70		1.44
computer class taken	1.70	1.63	0.09	0.15	**2.61***
gender	1.56	0.50	-0.02	-0.01	-0.18
Relative Advantage 1	4.56	1.25	0.06	0.08	1.24
Relative Advantage 2	4.39	1.49	0.00	0.00	0.04
Relative Advantage 3	4.03	1.28	0.05	0.07	0.99
Compatibility1	4.41	1.32	0.00	0.01	0.07
Compatibility2	4.44	1.42	0.10	0.14	1.63
complex1	4.93	1.27	-0.05	-0.07	-0.79
Complex2	4.86	1.28	0.00	0.00	-0.03
Trialability	4.73	1.26	0.09	0.13	1.90
Observability 1	4.71	1.35	0.11	0.16	**2.62***
Observability 2	4.11	1.53	0.05	0.07	1.00
Risktime	4.48	1.26	-0.03	-0.04	-0.67
Riskmoney	4.94	1.33	-0.08	-0.12	-1.89
Age	44.28	14.54	0.01	0.07	1.05
Education	4.43	1.05	-0.03	-0.04	-0.62
Race	0.87	0.34	-0.04	-0.02	-0.30
Income	3.64	1.70	0.01	0.02	0.29
Account ownership	3.32	2.57	0.10	0.27	**4.05***
Technology ownership	2.71	1.68	0.05	0.09	1.46
Web experience in years	14.61	5.68	-0.02	-0.11	**-2.00***
Web Literacy	5.74	1.25	0.05	0.07	1.08
Traditional Entertainment	-0.02	1.00	0.02	0.02	0.33
Electronic and New Media	-0.03	1.02	0.10	0.11	**2.07***
Print Media	0.00	0.99	0.07	0.07	1.30
Perceived popularity	5.24	1.26	0.06	0.08	1.51

*p<.05, N=187

A correlation was found between the 26 predictors and people's frequency in using interactive features. Almost 61% of the variance of the dependent variable can be explained by the independent variables (adjusted R^2=.61). The result is statistically significant (F (26, 160) =11.99, p <.05). When examining the 26 variables included, Table 4-13 showed significant results for five variables—technology education, observability, account ownership, web experience and electronic and new media consumption (p<.05). The more computer classes they've taken, the more they can see the benefits of using interactive features, the more web accounts they own, the fewer years they've been using the web, and the more frequently they use electronic and new media, the more frequently they use interactive features.

Relative contribution and influence of predictors in all-inclusive model

Among the 26 variables, several variables made unique contributions to the prediction line more than others. Based on each variable's standardized coefficient, the following variables had a unique contribution to predicting people's interactive feature usage: computer classes taken, compatibility with other media, relative advantage on lifestyle, observability of benefits, and account ownership (see Table 4-12). Interestingly, none of the demographic variables seemed to have made a unique contribution to the variance in the dependent variables, nor did the media consumption variables. On the other hand, technology and web experience variables seem to have a big influence on the prediction model, especially account ownership, which made the greatest contribution among all predictors. Technology characteristics variables seem to have a substantial impact on the prediction line overall, as three of five most influential predictors come from this set of variables.

Simplified regression model

When incorporating 26 predictors into one regression, the multicollinearity among variables may prevent some variables from emerging as significant predictors. To obtain a more

accurate model, this study ran a simplified regression test, including only variables that had significant results in each of the previous sets of regression tests. The variables included were: demographics (2): age and income; media consumption levels (3): traditional entertainment, print media, electronic and new media; technology and web experiences (4): web literacy, technology education, technology ownership, account ownership; and technology characteristics (3): perceived popularity, observability of benefits, and trialability. So this model had 12 predictors.

Four cases out of 200 had missing data for this test, so after excluding them, 196 cases qualified for this test. This result was based on a regression model with 12 independent variables. Almost 57% of the variance of the dependent variable can be explained by the regression line (adjusted R^2=.57). The result is statistically significant and we can project the regression model to the population (F (12, 183) =22.38, p<.05). Comparing the simplified model with the original model, they had almost the same adjusted R-square and explained similar percentage of variance in the model. The simplified model seems to be a more parsimonious model to apply. Among the 12 variables, the following variables had a unique contribution to predicting people's interactive feature usage: computer classes taken, trialability, observability of benefits, account ownership, perceived popularity, and electronic/new media consumption. As Table 4-14 shows, this study would recommend the following proposed reduced model for predicting people's use of interactive features:

Y=0.477+0.09TechnologyEducation+0.115Trialability+0.162Observability1-0.002Age+0.04Income+0.102AccountOwnership+0.043TechnologyOwnership+0.02WebLiteracy+0.093PerceivedPopularity+0.048TraditionalEntertainment+0.132Electronic/NewMedia+0.085PrintMedia. A typical interactive audience member who uses interactive features frequently would have taken multiple computer courses, owns a variety of web accounts, spends much time

on electronic media (TV) and new media (web and video games), thinks it is easy to try interactive features and observe the benefits of using them, and believes that interactive features are popular among his/her acquaintances.

Table 4-14. Regression results based on the simplified model

Model	Mean	S.D.	Unstandardized Coefficients	Standardized Coefficients	t
			B	Beta	
(Constant)			0.48		1.21
Computer class taken	3.06	0.95	0.09	0.15	**2.80***
Trialability	1.71	1.62	0.12	0.15	**2.68***
Observability of benefits	4.77	1.27	0.16	0.23	**4.36***
Age	4.71	1.36	0.00	-0.03	-0.51
Income	43.84	14.64	0.04	0.07	1.39
Accounts owned	3.64	1.70	0.10	0.28	**4.49***
Technologies owned	3.34	2.60	0.04	0.08	1.27
Web Literacy	2.73	1.66	0.02	0.03	0.44
Perceived popularity	5.74	1.25	0.09	0.12	**2.36***
FAC1TraditionalEntertainment	5.25	1.26	0.05	0.05	0.99
FAC2ElectronicNewMedia	0.005	1.01	0.13	0.14	**2.70***
FAC3PrintMedia	-0.003	1.01	0.09	0.09	1.72

*p<.05, N=196

Relative contribution and influence of predictors in simplified model

Based on each variable's standardized coefficient, it seems technology-related and experience-related variables made the most contribution to explaining the variance in the dependent variables. Two out of the four technology/web experience variables showed significant results—account ownership and technology education, and account ownership made the greatest contribution among all predictors. Technology characteristics variables seem to have a big impact on the prediction line as well, as two of the five most influential predictors come from this set of variables. None of the demographic variables made a unique contribution and the only media consumption variable that had a substantial impact was the time a person spends on electronic and new media (TV, web, and video games).

T-test and Regression Tests on Comparison of Interactive and Non-interactive Audiences

The second main research question of this study was whether interactive audiences are more valuable than non-interactive audiences. Based on audience valuation literature, the study explored the question from three perspectives: are interactive audiences more valuable than non-interactive audiences in terms of demographics, media engagement level and internet word-of-mouth value?

RQ13: Are interactive audiences more valuable than non-interactive audiences in terms of demographics?

H13a: The younger the audiences are, the more frequently they use interactive features.

H13b: The higher income audiences have, the more frequently they use interactive features.

H13c: Male audiences use interactive features more frequently than female audiences.

H13d: The more educated audiences are, the more frequently they use interactive features.

H13e: Audiences in the 18-49 age group use interactive features more frequently than audiences in other age groups.

H13f: Interactive audiences are less valuable than non-interactive audiences in terms of ethnicity.

To explore the differences between people who use interactive features frequently and those who do not, linear regression tests were conducted between age, income, education and usage frequency; and t-tests between gender, ethnicity and age group and usage frequency. As Tables 4-15 and 4-16 showed, test results supported all hypotheses except for education level. Males had a significantly higher frequency in using interactive features than females; non-Caucasians used interactive features more often than Caucasians; and people in the highly coveted 18-49 group used such features more often than people in other age groups. Table 4-16

showed that the younger people were, and the higher income they had, the more frequently they used interactive features. Based on these results, hypothesis 13a, 13b, 13c, 13e and 13f were supported. Hypothesis 13d was not supported.

Table 4-15. T-tests between demographics and interactive feature use frequency

Variable	Comparison				
	N	Mean	S.D.	df	t
Gender					
Male	92	3.21	0.98	(1, 198)	**1.99***
Female	108	2.94	0.98		
Ethnicity					
Caucasian	172	3.0	0.96	(1, 198)	**2.02***
Non-Caucasian	28	3.41	1.07		
Age group					
18-49	126	3.26	0.96	(1, 198)	**3.86***
Non 18-49	74	2.73	0.94		

*p<.05.

Table 4-16. Linear regression tests of demographics and interactive feature use frequency

Variable	r	r^2	Unstandardized Coefficients (B)	Standardized Coefficients (b)	df	F
Age	0.29	0.081	-0.02	-0.29	(1, 198)	**18.65***
Education	0.1	0.005	0.01	0.10	(1, 197)	1.44
Income	0.185	0.029	0.11	0.19	(1, 198)	**2.65***

*p<.05.

H14: Interactive audiences are more valuable than non-interactive audiences in terms of media engagement level.

H14a: The more audiences watch online programs in their entirety, the more frequently they use interactive features.

H14b: The more audiences watch online advertisements in their entirety, the more frequently they use interactive features.

H14c: The more dimensions of interactive features audiences use, the more frequently they use interactive features.

H14d: The longer audiences stay on their favorite online video sites, the more frequently they use interactive features.

H15: Interactive audiences are more valuable than non-interactive audiences in terms of internet word of mouth value.

H15a: The more frequently people use interactive features, the more likely they are to tell others about the programs they watched.

H15b: The more frequently people use interactive features, the more likely they are to tell others about the websites they went to.

H15c: The more frequently people use interactive features, the more likely they are to tell others about the interactive features they used.

Table 4-17. Simple linear regression tests of media engagement and internet word-of-mouth value vs. interactive feature use

Media engagement							
IV	Mean	S.D.	r	r^2	df	N	F
Watch program in entirety	4.54	1.2	0.31	0.09	1, 197	199	**21***
Watch online ads in entirety	3.41	1.56	0.29	0.08	1, 197	199	**17.53***
Average length of stay on favorite video site	2.52	1.19	0.3	0.09	1, 197	199	**19.77***
Internet word-of-mouth value							
Tell others about programs	3.9	1.29	0.47	0.21	1, 198	200	**54.93***
Tell others about video site	3.93	1.29	0.49	0.23	1, 198	200	**61.1***
Tell others about IF	3.14	1.41	0.64	0.41	1, 198	200	**140.4***

*p<.05

A series of simple linear regression tests were conducted between usage frequency and media engagement measurements, and between usage frequency and internet word of mouth value items, to see if there is a positive correlation. All tests showed significant results as shown in Table 4-17 (p<.05). In terms of media engagement, the more frequently people use interactive features, the more likely they are to watch programs in their entirety, the more they watch online ads in their entirety, and the longer they stay on their favorite video websites. In terms of internet word of mouth value, the more often people use interactive features, the more they tell others

about the programs they saw, the video sites they visited, and the interactive features they used. Based on these results, hypothesis 14a, 14b, 14d were supported. Hypothesis 14c was not tested because of the limited range of dimensions people engaged in with interactive features. Hypothesis 15a, 15b and 15c were supported. Hypothesis 14 and hypothesis 15 were supported.

Summary of All Tested Hypotheses

To summarize all the hypotheses tested in this study, below is a table that lists all the test results on individual hypotheses.

Table 4-18. Summary of all hypotheses and results

	Hypothesis	Supported
H1	Age is negatively related to people's frequency in using interactive features.	Yes
H2	Income is positively related to people's frequency in using interactive features.	Yes
H3	Males use interactive features more frequently than females.	No
H4	Caucasians use interactive features more frequently than non-Caucasians.	No
H5	Education level is positively related to people's frequency in using interactive features.	No
H6a	The more time people spend reading newspapers, the more frequently they use interactive features.	No
H6b	The more time people spend reading magazines, the more frequently they use interactive features.	No
H6c	The more time people spend listening to radio, the more frequently they use interactive features.	No
H6d	The more time people spend watching television, the more frequently they use interactive features.	No
H6e	The more time people spend surfing on the Internet, the more frequently they use interactive features.	Yes
H6f	The more time people spend watching movies (DVD and movie theaters), the more frequently they use interactive features.	Yes
H6g	The more time people spend playing video or computer games, the more frequently they use interactive features.	No
H6h	The more time people spend listening to music, the more frequently they use interactive features.	No
H7	Web literacy is positively associated with people's frequency in using interactive features.	Yes
H8	internet experience is positively associated with people's frequency in using interactive features.	No

Table 4-18. Continued

	Hypothesis	Supported
H9	Technology ownership is positively associated with people's frequency in using interactive features.	Yes
H10	Account ownership is positively associated with people's frequency in using interactive features.	Yes
H11	Perceived characteristics of interactive features are positively associated with people's frequency in using interactive features.	No
H12	Perceived popularity of interactive features are positively associated with people's frequency in using interactive features.	Yes
H13a	The younger the audiences are, the more frequently they use interactive features.	Yes
H13b	The higher income audiences have, the more frequently they use interactive features.	Yes
H13c	Male audiences use interactive features more frequently than female audiences.	Yes
H13d	The more educated audiences are, the more frequently they use interactive features.	No
H13e	Audiences in the 18-49 age group use interactive features more frequently than audiences in other age groups.	Yes
H13f	Interactive audiences are less valuable than non-interactive audiences in terms of ethnicity.	Yes
H14	Interactive audiences are more valuable than non-interactive audiences in terms of media engagement level.	Yes
H14a	The more audiences watch online programs in entirety, the more frequently they use interactive features.	Yes
H14b	The more audiences watch online advertisements in entirety, the more frequently they use interactive features.	Yes
H14c	The more dimensions of interactive features they use, the more frequently they use interactive features.	Not tested
H14d	The longer audiences stay on their favorite online video sites, the more frequently they use interactive features.	Yes
H15	Interactive audiences are more valuable than non-interactive audiences in terms of internet word of mouth value.	Yes
H15a	The more frequently people use interactive features, the more likely they will tell others about the programs they watched.	Yes
H15b	The more frequently people use interactive features, the more likely they tell others about the websites they went to.	Yes
H15c	The more frequently people use interactive features, the more likely they tell others about the interactive features they used.	Yes

Descriptive Analysis on Audience Preferences

The study then sought some qualitative information regarding audience preferences. The following research question was posed:

RQ16: What are the audiences' preferences on interactive features on internet video sites—favorite, least favorite and anticipated new features?

Among the 19 interactive features, the most commonly used ones were "Viewing photo gallery" (with 94% having used the feature), "Choose a program to watch" (93%), and "Participate in online surveys, polls, quizzes and feedback" (93%). The least commonly used ones were "Writing a letter to the editor" (48%) and "Send updates to mobile devices" (50% have used it). Some new features audiences proposed were: 3D video of news, the ability to add notes to a specific part of the video, controlling video quality, an automatic web cam click function for social networks, automatic virus detectors, a "Notify Me of New Episodes/Content" function, live chat, and MediaRing talk (making internet phone calls).

Another research question regarding audience preferences of ad formats was then posed:

RQ17: What kind of advertising format do interactive audiences prefer—pre-roll, post-roll, embedded commercial breaks, or embedded ads throughout the video?

As Table 4-19 shows, 60% of the respondents watched online ads during internet video sometimes, frequently, almost every time or every time. This implies that most audiences are accustomed to watching online ads. Pre-roll is the most popular ad format with 57% saying they preferred ads displayed before the video. One third of the respondents liked post-roll ads where the ads play automatically at the end of the video. Only 5.5% preferred having commercial breaks and 4.5% liked embedded ads throughout the program.

Table 4-19. Audience's frequency in watching online advertisement

	Never	Rarely	Occasionally	Sometimes	Frequently	Almost every time	Every time
Percentage	7.0	17.1	16.1	24.6	18.1	15.6	1.5

The last research question on audience preferences was about their opinions on the payment method for online video. The following research question was posed:

RQ18: What payment method for online video do audiences prefer—pay-per-view, subscription based, combination of the two, or other?

Out of 200 respondents, only 28 people (14%) have ever paid for online video. Among them, 12 paid for Netflix® streaming service, five for movies online, two for Amazon Unbox® content, and others have paid for Video On Demand, Xbox content, adult programming, and MLB programs. As for payment method, pay-per-view was the most popular choice (42.5%) followed by subscription based (26%) and a combination of the two (21.5%), as shown in Table 4-20. Almost 8% said they'd prefer some other payment method, but didn't give any specific suggestions. Interestingly, nine people made a clear statement that they would not watch online video if they had to pay for it.

Table 4-20. Audiences' preferred advertising format and payment method for online video

Advertising format		Payment method	
Format	Percentage preferred	Method	Percentage preferred
Pre-roll	57%	Pay-per-view	42.5%
Post-roll	33%	Subscription based	26%
Commercial break	5.5%	Combination	21.5%
Embedded	4.5%	Other	7.5%

Additional Findings—ANOVA and T-tests on Ethnicity

This study ran a series of ANOVA tests between ethnicity and all the IVs in this study to see if ethnic groups differed in their web behaviors, but no significant result was found except for technology ownership. African Americans (M=3.93) owned many more technologies than Caucasians (M=2.65) (F (2, 194)=4.00, p <.05), as shown in Table 4-21. To explore the difference between Hispanic and non-Hispanic audiences, a series of t-tests was conducted between "being Hispanic" and all the independent variables in this study, but there were no significant differences. It implies that at least in this study, Hispanics and non-Hispanics did not

differ in terms of other demographic traits, media consumption, web experience or perception of interactive features.

Table 4-21. Interactive feature usage and technology ownership differences among ethnic groups

Interactive feature use			
Ethnic groups	Mean	S.D.	Number of cases
Caucasian	3.01	.96	17
African American	3.64	1.16	14
Asian/ Pacific Islander	3.24	1.05	11
Hispanic	3.45	.84	20
Non-Hispanic	3.02	.99	180
Technology ownership			
African American	3.93	1.33	14
Caucasian	2.65	1.67	172

Chapter 4 has presented the results of this study. It described the sample composition and some descriptive statistics on the data in the consumer panel survey. It presented the results on each individual hypothesis and provided answers to the research questions. It also included some additional tests conducted in the study. The theoretical and practical implications of the results are discussed in Chapter 5.

CHAPTER 5
DISCUSSION AND CONCLUSION

This chapter summarizes the predictors of audiences' use of interactive features on internet video websites and valuable discoveries on newly tested variables. It synthesizes findings on the value of interactive audiences and proposes additions to the audience valuation literature. Based on the findings, theoretical and practical implications are presented, as are limitations and suggestions for future research.

Summary of Findings

This study consisted of two rounds of regression tests. First, the researcher ran regression analyses between interactive feature usage and four individual set of variables—demographics, media consumption, web/technology experiences and technology characteristics. Significant predictors in each set were identified. The researcher then included these significant predictors in a final model to test the variables that made unique contribution to the dependent variable. The most valuable findings come from the final model. First, audiences' technology/web experience and perception on technology characteristics had the most influence on interactive feature usage. It seems they are the primary driving forces behind consumers' online participation activities. Second, demographic variables did not have a significant impact on interactive feature usage as was suggested by the Diffusion of Innovation theory. It seems the influence of demographic variables are diminished when combined with more powerful predictors such as experiential and competency variables. Finally, competency and experiential variables are part of an audience's psychographics. Since psychographics are more strongly related to audiences' online behavior than demographics, it may be time to revive psychographic measurement in audience evaluation and develop metrics on these predictors.

Given the preceding overview of the simplified model for predicting broadband users' usage of interactive features on video web sites, the following interpretations of predictor findings from the individual variable sets (which led to the final model) are analyzed.

Interpretations of Predictor Findings in Each Set of Variables

Demographics

When just the five demographic variables are included as predictors of interactive feature usage, this study found a positive relationship between income and usage frequency. It seems many of the frequent users of interactive features have a moderate to high income. For advertisers who value such affluent audiences highly, online may be the place to capture such audiences. This study confirmed a negative relationship between age and frequency of interactive feature use. This is good news to marketers who invest in online marketing using interactive features because advertisers value younger audiences (i.e., 18-49) more than older members (i.e., 50+). The younger segment uses interactive features more frequently than the older peers, so the internet seems an effective venue to reach the young demographics. Also, the universally agreed upon most valuable audience segment is the 18-34 age bracket (Salamon, 2001), which was the youngest age group in this study. Based on the results of the study, they are the group that uses interactive features most frequently.

This study didn't find a significant difference in usage between males and females. One possible explanation may be that the gender gap is disappearing in online participation. This has been confirmed in the case of uploading online video when a 2007 survey found that men were twice as likely as women to post video online, but the gap was nonexistent in 2010 (Purcell, 2010). This study has provided additional support for the disappearance of a gender divide. When controlling for age and income, the influence of gender, education and ethnicity

(Caucasian vs. minority) on usage frequency disappears. It may imply that these demographic variables' influence on web participation comes secondarily after age and income.

Media consumption

When only media consumption variables are included as predictors of interactive feature usage, this study found that the time people spend on TV, web and movies are significant predictors of people's usage of interactive features. Time spent surfing the web has a logically positive impact on people's use of interactive features. However, the more time people spend watching television, the less frequently they use interactive features. This may be because TV and online video are competing for people's time. On the other hand, the result from this study echoed Yang and Chan-Olmsted's (2008) finding that online video is not a threat to newspapers or magazines. This seems to imply that the displacement effect exists between television and online media, but not print media and the web. It seems there is still no definitive answer on whether the audience has given up traditional media consumption in favor of online platforms, and more research is needed to investigate the displacement effect in people's online media consumption.

Technology and Internet experience

This set of variables showed the strongest relationship with usage frequency compared with the other three sets. It confirms that internet competency is an important factor in predicting people's online activities. The two variables measuring internet experience—web literacy and formal technology education—are both competency related. The two variables measuring technology cluster—technology ownership and account ownership—have shown to have a significant linear relationship with how frequently people use interactive features. This is consistent with Rogers' (1995) diffusion theory that technology cluster has an impact on a person's adoption behavior—in this case, the more functionally similar or complementary

technologies one owns, the more frequently he uses interactive features. This study pioneered in adopting a proxy variable for internet related technology cluster—internet account ownership, which measures how many web-related accounts a person has. This variable had a significant role in predicting one's use of interactive features, which may be because it not only measures one's technology competency, but also one's interest in owning a variety of technology. Future scholars may develop more detailed metrics to analyze this variable, and its contribution to people's online activity.

Technology characteristics

When only technology characteristic variables were included, three variables showed significant results—trialability, observability, and perceived popularity of interactive features—and they were the same three variables that made substantial contribution in the final simplified model. This is consistent with Yang's (2009a) study that emphasized the importance of perceived popularity in web-related technology adoption. This shows that the theory of planned behavior (Ajzen, 1985) holds true in the case of interactive feature usage, and that the online behaviors of the social network around an individual have a big impact on their own web feature adoption. Practically speaking, website developers should develop features that enable users to communicate with others about their experiences in using interactive features.

As previously stated, the significant predictors of each individual variable set discussed above were used to conduct a parsimonious model for predicting interactive feature usage. The final simplified model was thus identified.

Proposed Model for Prediction of Interactive Feature Use

Simplified model

This study examined 26 variables in predicting people's interactive feature use. To obtain a more parsimonious model, this study completed several rounds of regression tests and

proposed a simplified regression model for predicting people's interactive feature use with. The reduced model has 12 variables: Interactive Feature Use =0.477+0.09TechnologyEducation+0.115Trialability+0.162Observability1-0.002Age+0.04Income+0.102AccountOwnership+0.043TechnologyOwnership+0.02WebLiteracy+0.093PerceivedPopularity+0.048TraditionalEntertainment+0.132Electronic/NewMedia+0.085PrintMedia. It is a more parsimonious model to apply than the original model with 26 predictors.

Three out of five technology/web experience variables were included in the final reduced model and two were found to be significant—former technology education and account ownership, confirming the importance of competency and experiential predictors. The more technology education people have or responded to surveys about them and the more digital accounts they own, the more they use interactive features. This result is consistent with social cognitive theory which states that people are more likely to participate in activities when they believe they have the competency to perform the behaviors (Bandura, 1997). However, web literacy didn't emerge as a significant predictor. This may be because this variable was measured by self-evaluation, not the actual web competency of users. Future scholars might consider using more refined measurement in testing competency variables.

This project was innovative in using two new variables to measure technology ownership—technology ownership and account ownership, and account ownership was a significant predictor in the final model. This confirmed Rogers' (1995) statement that "technology cluster" has an impact on people's adoption behavior and demonstrated the significance of these variables in predicting audiences' online behaviors.

Among technological characteristic variables, three emerged as significant predictors in the final reduced model—observability of benefits, trialability and perceived popularity of

interactive features. This provides support for Rogers and Shoemaker's (1971) five-item model on perceived characteristics of new technologies and confirms these variables' importance in people's adoption decision making. The results echo Wei's (2006) finding that how much people can observe the benefits of using new technology was important in digital technology adoption. Thus for website developers, they need to promote the advantage of using interactive features and encourage people to be more vocal about the benefits of using them.

As for media consumption variables, both electronic/new media and print media showed positive influence on people's usage of interactive features in the final model. The findings support Rogers' (1995) diffusion of innovation theory that earlier adopters "have greater exposure to mass media communication channels than do later adopters" (Rogers, 1995). The study found a positive correlation between web consumption and new media usage, which is consistent with previous studies' results (Chan-Olmsted et al., 2005; Yang, 2009a). Future scholars should continue to include web consumption in online media adoption research. However, scholars need to be cautious about drawing conclusions on the relationship between each individual medium and the usage of interactive features, because the test results are based on a principal component analysis where each principal component included several media consumption time. Thus for the relationship between individual media consumption and interactive feature usage, please refer to the conclusion drawn from the regression tests based on only media consumption variables and the usage.

Relative roles and influence of predictors

Based on the final simplified model, this study showed that the four sets of variables (see Table 2-1) made different levels of contribution to the prediction line. Among them, audiences' technology/web experience and their perception on technology characteristics had a greater influence on their use of interactive features on video web sites than their demographics or media

consumption habits. It seems technology-related variables had a much bigger impact than the individual-related variables (seen in Figure 3-1).

None of the demographic variables was found to be significant predictors in the final reduced model. This may be because demographics are related to people's media consumption and web behaviors, and when those variables are included, the influence of demographics becomes diminished. Past studies have confirmed such correlations between age, gender and media consumption (Koschat & Putsis, 2000), and between age, gender, ethnicity and online participation (Correa, 2009; Hargittai & Walejko, 2008). Results from this project showed that although it is important to include demographics in online behavior studies, scholars should also consider experiential, technological and media consumption variables to evaluate the real impact of demographic variables on people's adoption. The findings also call for more in-depth studies on the correlation between demographics and experiential/media consumption factors.

The results also helped scholars to identify the driving theories underlying broadband audiences' interactive feature use on video sites. It is interesting that demographics variables did not have a significant impact on the prediction line as was suggested by the Diffusion of Innovation theory. It seems the influence of these personal variables diminished when combined with more powerful predictors. Traditional media consumption didn't seem to have an impact on people's interactive feature usage, while new/electronic media consumption did. This is consistent with Roger's (1995) proposition on technology cluster that people are likely to use technologies that have similar functionality. Technology and web experience, along with technology characteristics factors seem to be the stronger driving predictors than the commonly expected demographics and media consumption variables. This finding encourages scholars to not dwell on classic theoretical frames such as the Diffusion of Innovation, but also incorporate

other diverse literature, such as the digital divide and the knowledge gap, in the study of consumer online behavior.

Summary of Other Findings

Ethnicity: Further explored

This study didn't find significant usage differences among ethnic groups except between African Americans and Caucasians. African Americans owned more technologies than Caucasians. This result challenged early literature that considered being in an ethnic group a disadvantage in web adoption (Hoffman, Novak & Schlosser, 2001). The trend is changing in recent years that the gap in internet use has shrunk significantly among ethnic groups. The Pew Research Center found that from 2006 to 2008, people's web use has increased 10% among Latinos, 4% among Caucasians and 2% among African Americans. Minority groups are getting more access to the web and have demonstrated more interest and enthusiasm in utilizing the internet (Fox, 2009). Though Latinos continue to lag behind whites, the gap in internet use has shrunk considerably.

As for Hispanics, they showed no significant difference in web behaviors from the general population. The lack of significant results on ethnicity may be due to the small number of cases in minority groups. Because of the uneven number of people in Hispanic and non-Hispanic categories (20 vs. 180), the chances of detecting differences was slim. For future studies, when a larger sample is available, such nuances may emerge as trends and lead to meaningful results.

Technology characteristics

Overall, the respondents think positively about the technology characteristics of interactive features. They were most impressed by interactive features' ease of use, little risk of money for using and popularity among users. Websites should promote such characteristics of interactive features by keeping them free of charge and easy to use. The respondents thought

least highly about how interactive features can improve one's lifestyle and how they can explain the benefits of using them to others. It seems people cannot quite see or convey the comparative advantage of using interactive features. There are two possible explanations: One, they may not think websites with many interactive features are necessarily better than those without. If that's the case, websites need to make the relative advantage of using interactive features more obvious and visible. The other explanation is that even though people do feel the benefits, they are not vocal about it. Though there is no academic research on this topic, an industry study by Comcast found that the addition of interactive features on Video On Demand has doubled people's video consumption on their Fancast service (Pegoraro, 2010). So the addition of interactive features on online video sites may have increased people's video consumption even though people are not admitting it. If this is the case, websites need to invent more effective ways to encourage users to advocate using interactive features.

This study found that three technology characteristics significantly influence people's usage of interactive features. The easier people think it is to try out interactive features, the more they see the benefits of using interactive features. In addition, the more popular they think interactive features are, the more frequently they use them. In order to engage people in using interactive features, developers need to continue enhancing interactive features and make the benefits of using them more tangible for consumers.

Media engagement

A little over half of the respondents say they watch online videos in their entirety at least "frequently." One explanation for this is that people are goal-oriented when watching online video—they would search for specific videos and watch the complete episode. Research has found that people consider streaming videos a way to watch missed episodes and catch up with

the current TV schedule (Yang & Chan-Olmsted, 2009). The other reason is that people are engaged when watching online programs so they don't change channels or stop halfway through.

When comparing this result with how many people watch online commercials in their entirety, there were some interesting discoveries. Even though 53% of the respondents watch online videos in their entirety frequently, only 27% watch the online commercials in their entirety frequently. This shows that people are watching complete programs but skipping the commercials. They might pause the advertisements, get occupied with other things during commercial breaks, or not pay attention at all. So even though people's engagement level during the program is high, their attention to the commercials is lower. Website developers need to think of creative ways to engage users during the commercial break so they can expect acceptable advertising effectiveness. This implies that the engagement level for online programs and online commercials is different. Researchers need to develop different metrics to assess the program engagement level and advertising engagement level.

Taking a look at the time and frequency people watch online video, this study found that users access these websites quite often, but usually spend less than an hour for each visit, even on their favorite online video websites. It shows a "frequent access and short stay" tendency for consuming online video. This is different from how people watch television—they usually watch television at night, but for a longer period each time. This may imply that online video is a "quick shopping experience" for consumers.

Internet word of mouth value

Generally speaking, people are vocal in telling others about watching online video. More than half of the respondents would tell others about the online video they saw or the websites they used. Building a reputation online is important to the success of internet video websites because people can increase the "network externalities" of websites. The value of such network

increases when more people join the circle or exert pressure on others to do so. Internet word-of-mouth is a great source of promotion. Online video websites should encourage users to exchange information on accessing web videos. They might consider creating a discussion forum for users to communicate about their online experience, providing rewards to people who promote their websites, and creating an atmosphere for web experience sharing. This study also found that people are more likely to tell others about the online video or website than the interactive features they used online. It seems using interactive features is still secondary to watching the video.

Interactive features

This study showed that the respondents use medium interactive features the most among the three levels of interactive features. Among the medium-human interactive features, people are most fond of voting or recommending videos and uploading pictures, and among human interactive features they use online chat and SNS links often. This confirms that users like to use websites as a way to share online viewing experiences with others. Some least used functions include choosing an advertisement or signing up for mobile updates because not many websites provide them. For some new interactive features, respondents showed interest in trying them but are not frequently using them, such as subscribing to a video channel, embedding videos in emails, or joining an online discussion. Websites need to continue educating users about these new functions and promoting them among the users.

Interactive Audiences vs. Non-interactive Audiences

Interactive audiences are defined as those who use interactive features frequently and, based on the findings of this study, they are younger, more male-skewed and have higher income levels. Based on audience valuation theory (Napoli, 2003), interactive audiences are more valuable than non-interactive audiences in terms of age, gender and income. For interactive

audiences, though they are limited in numbers, they have high buying power. Websites or content providers could charge a higher price for online advertising based on online audience demographics.

This study confirmed a positive relationship between interactive feature use and media engagement. Those who use such features often have a higher media engagement level than those who don't. Because media engagement is positively associated with advertising effectiveness (Lynch & Stipp, 1999; Simmons, 2008), online advertising may be more effective on interactive audiences than non-interactive audiences. Scholars have found that the more dimensions a website can use to engage a user, the higher advertising receptivity and attention the site can get (Simmons, 2008). Because interactive audiences are engaged in medium, medium-human, and human interactive activities, they are more receptive and attentive to the online advertisements. Since advertising effectiveness and ROI (return on investment) are what many marketers are after, interactive audiences may be their best investment.

This study found a positive relationship between interactive feature use and audiences' internet word-of-mouth value, meaning those who use such features frequently are more likely to tell others about the programs they saw, the video sites they visited, and the interactive features they used. This project joins a series of empirical studies that confirmed the existence and power of informational cascade in online platforms. Interactive audiences are valuable to advertisers because they create "information cascade" and have more power influencing other web-surfers' decisions (Bikhchandani, et al., 1998). They also increase the "network externalities" of websites by advocating usage of interactive features (Soubeyran, Suzumura & Weber, 2007). Interactive audiences are the imperative initiators of building such externalities, thus website developers

should tend to the needs of this special group by offering more interactive functions to keep them connected online.

More importantly, the dissemination of information by such interactive audiences is critical to the success of online media platforms themselves. Using online media is an adoption decision that is under the influence of internet word of mouth. The more people tell their acquaintances about watching videos online, the more people are willing to try new platforms. Website developers should provide a forum for this group to get the word out about new media platforms, and consider offering incentives to the most active information-disseminators.

Audience Preferences

Generally speaking, people have used a variety of interactive features online. Even for the least popular feature, at least half of the respondents have used it. It seems people use these features mainly to make their viewing experience more enjoyable, by searching for shows, viewing photos relevant to the programs, or taking online quizzes. However, not many of them are motivated enough to make human interaction with the site editors or other users online. This implies that interactive features mainly serve as a fun addition to watching web videos, but haven't quite become an online forum for people to share their ideas or experiences. There may be psychological reasons why people are not used to sharing experiences online, and logistical reasons why interactive features may not be the best medium for such idea exchange. This finding encourages scholars to investigate the utilities people obtain from using interactive features, and how that may be different from other online activities.

The study did find potential in connecting people online via SNS; over half of the respondents said they would click on the SNS link on a regular basis. This confirmed the popularity of social networking sites among users. Websites may consider constructing SNS

pages relevant to their programs to get some feedback about the shows. It would be more effective than asking audiences to write to the editors directly.

Theoretical Implications

Diffusion of Innovation Theory

One of the main goals of this study was to examine the prediction of interactive feature usage based on the diffusion of innovation theory. Rogers (1995) identified factors that influence people's adoption decisions, including demographics, social status, personal characteristics, media consumption habits, technology ownership, and communication participation. A series of multiple regression tests confirmed that the diffusion of innovation theory is useful in predicting people's technology use, to some extent. Several variables didn't generate significant results, such as gender, race/ethnicity, and education in demographics and print media time in media consumption. This indicates that web technology may have its own adoption predictors not covered by the diffusion of innovation framework. Future scholars should continue testing the applicability of this theory in media innovation adoption.

It's also important to note that in the final reduced model when four sets of variables were included, demographics and some media consumption variables did not emerge as significant predictors. It seems they may be the secondary driving variables, not the primary driving force behind people's online behavior. This study confirms the applicability of the diffusion theory in the case of interactive features on internet video websites. For example, three technological characteristics seemed to have a direct impact on people's use of interactive features in the setting of internet video websites; future scholars could test if that still holds true in other settings such as business websites or online shopping sites when the platforms change. Also the result also showed that people's online adoption behavior may be related to factors not covered by the Diffusion of Innovation framework. This study was able to combine the Diffusion

of Innovation theory with the participation divide literature; future scholars should continue testing Diffusion of Innovation variables in combination with other predictors to evaluate the real predicting power of demographical, media consumption and technological variables as the technology matures.

Online video is a rapidly changing industry. Innovative applications, novel features and new business models emerge almost every day. It is important to keep in mind that with such changes, the adoption model may change as well. For example, although income was not found to be a significant factor in the final model, when paid content becomes more widely consumed, or if it becomes more commonplace as a business model, income is likely to play a more important role in people's adoption decisions. Technology is fluid by nature so that when the landscape of online video industry further changes, the adoption model will need to be adapted as well. Last but not least, one of the demographic factors, age, was found to have a negative relationship with interactive feature adoption in that the younger generation used it more often than the older ones. But as today's youth become tomorrow's middle aged group, it is difficult to say whether the conclusion will still hold true. To sum, scholars need to continue testing these variables as the industry advances and keep making adaptations to the model.

Variable Development and Future Use

One interesting finding was that when all variables were tested together, the significance of demographic variables disappeared. This implies that demographics may be associated with other variables in the diffusion model and their impact may be diminished when other predictors are present. Further research is needed to investigate the correlation between demographics and experiential/media consumption variables, and to more accurately evaluate each predictor's impact on adoption decisions.

One contribution of this study was creating a two-item measurement for "technology ownership"—technology ownership and account ownership. Both of them showed significant results among technology/web experience variables and account ownership was a significant predictor in the final model. This implies that when studying the adoption of a specific platform (e.g. online), scholars may develop a more accurate measurement to evaluate people's technology ownership on that platform. And future scholars of web technology adoption should consider incorporating such variables in their study.

Literature on Online Participation

This study confirms the existence of a participation divide among web users that some audiences use interactive features more than others. Some predictors useful in research on "the knowledge gap" seemed applicable to this study on the participation divide, such as socioeconomic status (Tichenor, Donohue & Olien, 1970), educational level (Wanta & Elliott, 1995), and media use (Griffin, 1990). This implies that participation divide is the more current version of the digital divide, and that scholars of participation divide could borrow digital divide literature to examine participatory audiences. This study shows that the assessment of people's online behavior is no longer about who has access, but who utilizes the access; and the key indicator of interactive audience is their level, range and breadth of web participation.

This study found proof for the importance of competency variables (e.g. perceived competence) and experiential variables (e.g. internet experience, computer classes) in people's online behaviors. Internet competency emerged as a strong predictor in the final model, confirming social cognitive theory, which states that people are more likely to participate in certain activities when they believe they have the competency to perform the behaviors (Bandura, 1997). This project joins a number of studies that included "digital literacy" in examining digital media consumption (Hargittai, 2002; Livingstone & Helsper, 2007; van Dijk,

2004). It supports Hargittai and Walejko's (2008) finding that web literacy is especially important in predicting the participatory internet activities.

This study confirms the theory of planned behavior (Ajzen, 1985) as a powerful theoretical framework in explaining people's web behaviors. According to the theory of planned behavior, a person's idea of subjective norms is based on the perceptions of whether they are expected by their friends, family and the society to perform certain tasks (Ajzen, 1985), which is usually measured by the perceived popularity of those tasks. Perceived popularity was found to be significant in predicting people's use of interactive features in this study, which demonstrated that people are influenced by the social network surrounding them when it comes to adoption decisions (Schmitz & Fulk, 1991). This study provides additional support for including such variables in future adoption research (Chang et al., 2006; Katz & Aspden, 1997; Yang, 2009a).

Audience Valuation Theory

To synthesize the findings, this study suggests that traditional demographic variables may not be the best predictors of audience behavior, and should be used in conjunction with psychographic variables. This project shows that competency and experiential variables are important predictors of audiences' online behavior. It advocates including these new variables as metrics in audience evaluation. This study also indicates that the measurement of audience value may be dependent on the media, and proposed new criteria for online audience evaluation.

This study confirmed the three traditional audience evaluation factors—age, gender and household income (Napoli, 2003)—are still the most important ones among demographic variables. However, when combined with technological, experiential and media consumption variables, the importance of demographic factors disappeared. Experiential and competency factors were the most significant predictors of interactive audiences. It implies that in audience evaluation, it is the psychographics that really matter, not demographics. Scholars may consider

moving from the demographic-based “who you are” to the competency-based “what you do” when evaluating audiences. After all, audience behavior determines their value to advertisers. This study shows that the psychographics of audiences are better indicators of their behavior than demographics. It may be time to revive the role psychographics play in audience evaluation and advance the metrics on such variables.

The participation divide literature also seems to have implications on audience evaluation. This study confirms that there is a usage gap between interactive audiences and non-interactive audiences, and that such gap no longer focuses on “the haves vs. the have nots,” but “the use vs. the use not.” It demonstrates that what really differentiates audiences is their interest and capability in utilizing the web and people’s competency and experience with the technology have a direct impact on their usage behavior. Thus this study suggests incorporating competency and experiential variables into audience evaluation in online media.

The results from this study prompted the researcher to ask meaningful questions: Does audience valuation vary by media platform? Do traditional audience evaluation criteria have the same applicability in evaluating online audiences? Are there new criteria to be added? This study found that media platform does play a role in audience valuation, and the valuation of online audiences is different from the valuation of traditional media audiences. For example, media consumption level is traditionally negatively associated with audience value (Napoli, 2003). The more people consume media, the less valuable they are to advertisers because they are always available (Koschat & Putsis, 2000). But in the online world, the more time people spend online, the more likely they are to use interactive features, and the more engaged they become. Because of the positive relationship between media engagement and advertising effectiveness (Calder et al., 2009), these audiences are more valuable to advertisers. This study challenges the traditional

proposition on the relationship between media consumption level and audience value and suggests adjustments to such a rule when evaluating online audiences. It advocates that, depending on what type of medium is examined, audience valuation variables should be used with more flexibility.

The results from this study also demonstrate the need to expand the audience valuation criteria to include some other variables, especially in the online world. Variables such as participation level and internet word-of-mouth value have been confirmed as important criteria in this study. Internet word-of-mouth value is a proxy variable for an audience's influence on other people. It helps to create an "informational cascade" that works in the online world. Online videos and interactive features are experience goods, which people need to experiment themselves to obtain the utilities (Hoskins, McFadyen & Finn, 2004). People's decision to use such features is under the influence of other users' comments and feedback. This study shows that interactive audiences are more likely to disseminate information about online participation, and have higher internet word-of-mouth value, and should be valued more by advertisers. This project becomes yet another study to confirm the existence and power of informational cascade in online platforms (Hanson & Putler, 1996; Huang & Chen, 2006; Salganik, Dodds, & Watts, 2006; Sim & Fu, 2009; Song & Walden, 2003; Sundar & Nass, 2001). Results from this study demonstrate the importance of assessing audiences based on their persuasion power, and suggest adding internet word-of-mouth value as a criterion for online audience evaluation.

Participation level is an indicator of people's activities online, such as their online participation, interaction and contribution. It is an important variable because it takes the measurement of internet activities to the next level—from the amount of use to the breadth of use (Livingstone & Helsper, 2007). Such breadth and frequency of usage has led to a new divide

between internet users—mere consumers vs. active contributors (Hargittai & Walejko, 2008). It is a shift from the simple dichotomy of “having” or “not having” to a deeper quest into the quality and depth of use on the Internet. This study demonstrates the existence of a “participation divide” among internet users, and confirms that participatory audiences are more valuable than non-participatory audiences in terms of factors known to be valued by advertisers and programmers. It encourages future scholars to focus on audiences’ ability to utilize the internet and include audience participation as a criterion for web audience assessment.

Practical Implications

For Content Providers

The million-dollar-question for traditional media outlets is where to find audiences nowadays. The major challenge with new media ventures is how to monetize them effectively, “so that we do not end up trading analog dollars for digital pennies” (Zucker, 2008). This study's results show the potential of such “digital pennies” as they reveal the high buying power and persuasive capabilities of interactive audiences online. This project found that the 18-49 age group—the most coveted TV audience—has made the leap from traditional media to online platforms, ahead of other age groups. Since advertisers are willing to pay a premium price for such core audiences, why not charge higher prices for these audiences online? Content providers may adopt more flexible advertising rates for popular shows online to take advantage of those loyal web followers. It will be rewarding to invest in these valuable audiences, who will help advertisers get their money’s worth in the long run.

It seems the advertising industry is following this leap to the web as well. According to a report by Barclays Capital’s internet Deal Book, online advertising is the fastest growing sector of the advertising industry (Barclays Capital, 2010). It is expected to reach $24.9 billion in 2010 and $37.5 billion by 2014. Within the online advertising sector, online video advertising is

expected to reach $3.7 billion by 2014, mainly due to advertisers' spending migration from traditional to digital media (Barclays Capital, 2010). Advertisers may have already intuitively seen the transition, and are now investing more money in digital platforms. This study confirms such trends and provides empirical affirmation and understanding for these new practices in the advertising industry.

For Advertisers

It's good news to advertisers that this study found that the highly coveted 18-49 age group uses interactive features much more than people in other groups. They are limited in numbers but have high buying power (Pomerantz, 2006). Advertisers are already taking advantage of them by promoting expensive consumer products online. Automobiles, electronics and luxury products were among the first to sponsor streaming video on TV networks' websites (Yang & Chan-Olmsted, 2008). High-end consumer products have increased their advertising spending in web platforms. The auto industry, the world's largest advertising category, has been pouring dollars into online, according to a report by online market research firm eMarketer (Halliday & Oser, 2006). A study by the Stern School of Business at NYU found that in 2008, only 33% of luxury brands were selling online, but that number increased to 66% in 2009 (Zmuda, 2009). These industry changes may be partially because advertisers have come to understand high-end customers' online behaviors. This project provides scholarly research to support such industry practices and confirms that these online advertising trends are not just "hunches," but are supported by social science research.

Now that this project has confirmed that online advertising reaches a lucrative audience, it may be worthwhile for advertisers to spend more money producing ads specifically for the web than just recycling TV commercials. A study by Dynamic Logic found that among 18- to-34-year-olds who saw an online ad with some customization or creative design, 2.8% were

influenced to make a purchase decision, compared to 1.1% for regular TV ads (O'Malley, 2010). It is time for advertisers to produce more creative and interactive online advertisements to maximize effectiveness. Some TV networks have adopted an interactive advertising format where viewers can choose an advertisement, a brand, or link to the product site. Studies have found that video content produced specifically for online is more effective among youth and female audiences (O'Malley, 2010). In the long run, the initial investment on producing high-quality online advertisement may be recouped by the increased advertising effectiveness.

For Web Site Developers

The new interactive features users proposed focus on two aspects—improving the viewing experience by providing functions like note-taking; notifying them when new episodes are available; control of video quality and 3D versions of video; and facilitating online interaction among users by offering live chat, automatic web camera click and features to make internet phone calls. Website developers should use these as guidelines in developing new online features. This study found that audiences do not like having commercial breaks or embedded ads when watching online video; they prefer watching pre-roll commercials and viewing the program uninterrupted. Ironically, having commercial breaks is the most common advertising format on broadcast and cable networks' website (Yang & Chan-Olmsted, 2008; Yang, 2009b). Based on this study, practitioners should experiment with offering pre-roll and post-roll commercials rather than having a single advertising format.

As Owen and Wildman (1992, p.91) stated, if "advertisers are willing to pay more for exposure to certain viewers, then the viewers who are worth more to advertisers will receive heavier weighting" in content creation decisions. Based on the findings of this study and from a marketplace perspective, interactive audiences who visit the sites more often and use the features more frequently should have a greater say in the content provision and design of a website than

non-interactive audiences. Their voices should be heard more and weighed more heavily in website development decisions. Producers need to provide more channels for interactive audiences to get their voices heard and preferences noticed (e.g. providing incentives to audiences who offer advice), and incorporate such feedback into future design.

Paying for online video is still not common or popular among audiences based on this study. People are willing to watch online commercials in exchange for free videos. Several respondents clearly stated that they would never pay for video content online. According to a study by Turner Broadcasting in the fall of 2010, online viewers spent approximately the same amount of time watching streaming video regardless of how many ads were embedded within (Stelter, 2010). Audiences' tolerance for online advertisements seems to be higher than for traditional television (Stelter, 2010). Content providers may wish to experiment by having more commercial breaks or longer advertising segments during streaming video.

As this project found out, the only times audiences are willing to compromise are when they subscribe to certain streaming services online (e.g. Netflix®), download commercial-free programs to view on their computers (e.g. Amazon Unbox®), or for premium content such as sports or adult programming. Considering the small number of people who are currently willing to pay, content providers may make a higher profit by offering free content to generate ad revenues than by collecting a subscription fee. They should only consider charging for premium content. And if they do charge, most people prefer pay-per-view over subscription because the former gives them more freedom in paying.

This study found that experiential and technological variables had more influence on people's use of interactive features than demographics and media consumption habits. This finding should encourage website developers to expand their criteria for evaluating target

audiences. They should not only target audiences based on their demographics and media consumption patterns, but also develop effective strategies to improve people's perception on technology and innovation. Because as this study shows, it is people's positive experience with technology that drives their decisions to adopt new features. So even though advertisers cannot change people's demographics, they can create opportunities to help users become familiar in using new technologies, which could have a more obvious impact on their future decisions to try out innovations.

Limitations and Future Research

This study has several limitations. The use of online consumer panel survey generated a sufficient sample for the purpose of this study, however, the response rate was low compared with other online surveys. Though it was mainly because this project mirrored a specific demographic breakdown based on broadband audience figures represented in Nielsen's Three Screen Reports, future studies may incorporate effective methods to increase the response rate. Also because of the demographic composition, it was not a completely random sample in terms of age and gender. Other scholars may consider using random respondent selection. Moreover, because of the nature of a survey, it didn't include many open-ended questions for the respondents to explain their motivations and preferences in using interactive features. In-depth interviews and focus groups can complement this research in the future.

Because of the nature of broadband users in America, the demographic data were not sufficient to analyze the differences in online behavior among ethnic groups. This study had a small number of participants representing various ethnic groups, only one significant result was found on this variable. Future scholars may compile a more diverse sample to discover the differences in ethnic groups' web behavior. This study may serve as part of a continuous investigation of consumers' adoption of digital technology online. When greater numbers of data

and observation periods become available, the results of this study should be further assessed as the online video industry continues to grow.

This study used multiple regression tests to examine the role demographic variables played in terms of predicting people's usage of interactive features. This study was not structured to test interaction effects among the variables. Future researchers may wish to launch an investigation into the interaction between individual-based variables (e.g. demographics, media consumption) and technology-based variables (e.g. technology ownership), to see whether there is an inherent relationship between them. Yet another study might try to identify the optimal combination of audience traits that most appeal to advertisers and programmers.

This study asked respondents questions about watching online video in general, however, people's answers may differ depending on what type of video they watch and on what websites they are watching them. It is possible that people get more involved with interactive features whey they watch a live sporting event as compared to viewing random videos on YouTube™. The purpose of their watching online video may a direct impact on their viewing behavior. It would be valuable to conduct future studies on the motivation for using different online video sites and compare users' behavior on them. Also, this study showed patterns in using different levels of interactive features. There may be other aspects of usage that matter as well, such as access time, access intention, familiarity, etc. Future scholars should continue to investigate the differences in interactive feature usage between interactive and non-interactive consumers.

Because of the scope of this study, it only included demographic, experiential, competency, technological and media consumption variables. It did not investigate some other factors that may contribute to people's interactive feature use, such as innovativeness, personality variables, uses and gratifications variables, etc. Future scholars may continue testing

the model with more variables. This study measured the variable web literacy by self-evaluation, which may be complemented by other methods such as competency tests. More refined tests on web literacy are needed in the future.

This study focused on one aspect of people's digital behavior—the use of interactive features. Scholars may use this study as a benchmark to compare audiences' use of other participatory functions on different types of websites, such as news websites, online shopping sites and social networking sites. Also this study approached the topic of audience valuation from the supply side by investigating audience behavior on web sites. It would be helpful to explore the demand side and obtain the advertisers' perspectives. Future scholars may consider conducting interviews or focus groups with advertisers about their perception of audience valuation in different media. Another extension of this study is to see whether the proliferation of consumer-controlled media consumption might threaten the existing broadcast television model. It would be interesting to see whether audiences perceive alternative platforms as substitutes or complements to traditional media, and if they are substitutable, how traditional media can find innovative ways to stay competitive in a new media landscape.

This project generated valuable findings on the influence of experiential and competency factors in people's adoption decisions, which are not examined enough in communication studies. Scholars may incorporate literature from other fields such as psychology, sociology and business to continue the inquiry on consumers' web behavior. This study provided useful information on people's likes and dislikes in interactive features. It would be helpful to explore the psychological, functional and experiential factors behind their preferences. After all, digital technology adoption and usage may be a multidisciplinary field of study and the incorporation of diverse literature will enhance the quality of this research.

APPENDIX: QUESTIONNAIRE

Informed Consent Page

July 23, 2010

Have you ever watched online videos? A funny video on YouTube™? Your favorite TV show on Hulu™? Or a news clip on cnn.com? If so, consider yourself part of a new generation of internet users. This study is about YOU, the online video viewer, and how you watch internet videos.

Besides watching your favorite programs, you can also take advantage of some interactive features on these websites, such as commenting on a video, sending it to a friend, or linking to a social network site. This survey is about how you watch online videos, and how you use—or don't use—some interactive features on these sites.

This survey takes 10 to 15 minutes. If you complete the survey, you will receive a reward such as an online gift card, virtual currency or in other formats. There is no known potential risk to you for taking this survey and your participation is completely voluntary. You have the right to withdraw from the study at anytime without consequence. The information you provide in this study is completely confidential. Your name will not appear on the questionnaire and your identity will be kept confidential to the extent provided by law.

If you have any questions about this survey, feel free to contact the principal investigator:

If you need more information about your rights as a research participant, you can contact:

We would appreciate your participation!

__ I have read the procedure above and agree to participate in this study.
__ I have read the procedure above and do not agree to participate in this study.

Filtering questions:

1. Do you have high-speed internet access (at home, work, school or other places)? Yes __ No __
2. Have you ever watched online video on any of the following sites? Yes __ No __

   - Commercial video sites (e.g. abc.com, discovery.com)
   - Video aggregator sites (e.g. AOL Video, Hulu, Google Video™)
   - News websites with video features (e.g. cnn.com, foxnews.com)
   - Television news station websites (e.g. NY1.com, local TV station sites)
   - User generated content websites (e.g. YouTube™, MetaCafe™, Veoh™)

3. Have you ever done any of the following on internet video sites? Yes __ No __

   - Searched for a show or programs, search functions
   - Rated, ranked, sent, embedded or commented on a video
   - Participated in online surveys, discussion forums, BBS (bulletin board system)
   - Uploaded pictures, videos, audios
   - Downloaded video/audio/pictures

Clicked links to social network sites (e.g. Facebook®)

Part I

We would like to learn about your use of different media, especially the Internet, and we'd like to learn a little about you. Please select the answers that best describe your situation.

1. How many computer, software or web application classes have you taken (including school classes, online tutorials, etc.)?
   a). 0 b). 1 c). 2 d).3 e). More than 3

2. Do you have primary or regular access to a computer (e.g. in your home office, dorm, or bedroom)?
   a). Yes b). No

3. How old were you when you first started using the Internet? _____years old.

4. Which age group are you in?
   a). 18-24 b). 25-34 c). 35-49 d). 50-64 e). 65 or older

5. What is your gender? __ Male __ Female

6. How many hours do you spend on the following activities on an average day?

Watching TV	_____hours
Reading newspapers	_____hours
Reading magazines	_____hours
Listening to radio	_____hours
Using the Internet	_____hours
Watching movies (DVD or movie theaters)	_____hours
Playing video or computer games	_____hours
Listening to music	_____hours

7. Some websites now offer subscriptions or account services. Please tell us whether you have any of the following web accounts.

a)	News sites (e.g. nytimes.com, cnn.com)	Yes No
b)	Video download service sites (e.g. iTunes®, Unbox®)	Yes No
c)	Social network sites (e.g. Facebook®, MySpace®, Twitter)	Yes No
d)	Instant messenger (e.g. AIM™, msn messenger)	Yes No
e)	Chat rooms	Yes No
f)	Bulletin board system (BBS)	Yes No
g)	Personal blog	Yes No
h)	Personal website	Yes No

i)	Video rental service (e.g. Netflix®)	Yes No
j)	Paid internet video account to view premium content (e.g. sports, financial, adult content)	Yes No
k)	Channel subscription of online video (e.g. on YouTube™)	Yes No
l)	Online game account (e.g. World of Warcraft™)	Yes No

8. Here are some digital technologies or services. Please tell us if you have any of them.

a)	Video game console (e.g. Xbox™, Wii™)	Yes No
b)	Video on Demand via cable or satellite	Yes No
c)	Digital video recorder (e.g. TiVo™, ReplayTV™)	Yes No
d)	Portable media player with video functions (e.g. ipod, Zune™)	Yes No
e)	Cellphone with internet access	Yes No
f)	Interactive TV that enables users to interact with program content (e.g. Two Screen Solutions™)	Yes No

9. Below are some Internet-related terms. Please tell us how familiar you are with these terms. Please rate your understanding on a 7-point scale.

Terms	I don't understand it at all			I have some understanding of it			I completely understand it
mp3	1	2	3	4	5	6	7
Preference setting	1	2	3	4	5	6	7
Refresh or reload	1	2	3	4	5	6	7
Newsgroup	1	2	3	4	5	6	7
pdf	1	2	3	4	5	6	7
Advanced search	1	2	3	4	5	6	7
Download	1	2	3	4	5	6	7

Part II

The development of internet technology has made online video viewing a reality. You can watch video on

- Commercial video sites (e.g. abc.com, discovery.com),
- News sites with video features (e.g. cnn.com, foxnews.com),
- Video aggregator sites (e.g. AOL Video™, Google Video™, Hulu™)
- Television news station websites (e.g. NY1.com, local TV station sites)
- user-generated content sites (e.g. YouTube™, MetaCafe™).

The following are some questions about your experience in watching video online.

10. a). How often do you watch online video?

Never	Once a month	2-3 times a month	Once a week	2-6 times a week	Daily	Several times a day
1	2	3	4	5	6	7

b). How many hours do you spend watching online video on an average day? (h=hour)

0 0.5 1 1.5 2 2.5 3 3.5 4 4.5 5 5.5 6 6.5 7 7.5 8 8.5 9 9.5 10 10.5 11 11.5 12 12+

c). When visiting your favorite online video website, how much time do you spend on average for each visit?

Less than 15 minutes	15—29 minutes	30—59 minutes	1 hour—less than 2 hours	2--less than 3 hours	3—less than 4 hours	4 hours or more
1	2	3	4	5	6	7

Part III

internet video websites offer many interactive features that you can use when watching online video, such as writing comments or linking to social network websites. These features enable you to interact with the website or with other people online. Here are some questions about how you use these interactive features.

11. Please tell us how frequently you use the following interactive features on internet video websites. If you have never used a feature because it was never provided to you, please choose N/A.

	Never	Rarely	Occasionally	Some times	Frequently	Almost every time	Every time	N/A
1. Choose a program or video	1	2	3	4	5	6	7	N/A
2. Choose an advertisement (format and content) when possible	1	2	3	4	5	6	7	N/A
3. Search functions (e.g. for a show or actor)	1	2	3	4	5	6	7	N/A
4. Download video/audio	1	2	3	4	5	6	7	N/A
5. View photo galleries	1	2	3	4	5	6	7	N/A
6. Leave comments	1	2	3	4	5	6	7	N/A
7. Rank a video	1	2	3	4	5	6	7	N/A
8. Send a video link via email	1	2	3	4	5	6	7	N/A
9. Subscribe to a show or a channel	1	2	3	4	5	6	7	N/A

10. Embed a video/video link (e.g. on your website or blog)	1	2	3	4	5	6	7	N/A
11. Click on recommended content (e.g. "You might also like…")	1	2	3	4	5	6	7	N/A
12. Participate in online surveys, polls, quizzes, and feedback	1	2	3	4	5	6	7	N/A
13. Send updates to mobile gadgets	1	2	3	4	5	6	7	N/A
14. Upload pictures	1	2	3	4	5	6	7	N/A
15. Upload video or audio	1	2	3	4	5	6	7	N/A
16. Write letters to editors/producers	1	2	3	4	5	6	7	N/A
17. Participate in a discussion forum or bulletin board system (BBS)	1	2	3	4	5	6	7	N/A
18. Use online chat features or instant messenger (e.g. AIM)	1	2	3	4	5	6	7	N/A
19. Follow links to social networking website (e.g. Facebook)	1	2	3	4	5	6	7	N/A

12. Besides the 19 interactive features mentioned, are there any interactive features or functions that you wish websites had? If yes, what feature(s)?

    1). Yes. I wish websites had _____.
    2). No.

13. Here is a set of statements about interactive features and the people around you. Please tell us how much you agree or disagree with the statements on a 7-point scale where "1" means strongly disagree and "7" means strongly agree. IF you do not know, please select "don't know."

	Strongly disagree						Strongly agree	
1. My family members use interactive features on internet video sites.	1	2	3	4	5	6	7	Don't know
2. My friends use interactive features on internet video sites.	1	2	3	4	5	6	7	Don't know
3. People in my occupation (e.g. classmates, co-workers) use interactive features on internet video sites.	1	2	3	4	5	6	7	Don't know
4. People in our society use interactive features on internet video sites.	1	2	3	4	5	6	7	Don't know

14. Here are some statements regarding your attitude toward <u>using interactive features</u>. Please tell me how much you agree or disagree with the statements on a 7-point scale where "1" means strongly disagree and "7" means strongly agree.

	Strongly disagree						Strongly agree
1. Websites with interactive features are better than those without.	1	2	3	4	5	6	7
2. Using interactive features fulfills my entertainment needs better.	1	2	3	4	5	6	7

3. Using interactive features improves my lifestyle.	1	2	3	4	5	6	7
4. Using interactive features is compatible with my lifestyle.	1	2	3	4	5	6	7
5. Using interactive features is compatible with the way I use media.	1	2	3	4	5	6	7
6. Interactive features are **difficult** to use.	1	2	3	4	5	6	7
7. Interactive features are **difficult** to learn to use.	1	2	3	4	5	6	7
8. It's easy to try interactive features without spending much money.	1	2	3	4	5	6	7
9. I **hardly** see the benefits of using interactive features.	1	2	3	4	5	6	7
10. I can easily explain the benefits of using interactive features to my friends.	1	2	3	4	5	6	7
11. Using interactive features **requires a lot of time.**	1	2	3	4	5	6	7
12. Using interactive features **requires a lot of money.**	1	2	3	4	5	6	7

Part IV

In the last section, we would like to learn more about your views on internet video in general. We appreciate your efforts in completing the survey.

15. a). Sometimes there are advertisements during online videos. Do you watch videos with advertisements in them (before, during, embedded in or after the video)?

Never	Rarely	Occasionally	Sometimes	Frequently	Almost every time	Every time
1	2	3	4	5	6	7

b.) If you are REQUIRED to watch these advertisements in order to view the video, which of the following advertisement formats do you prefer?
1). Advertisement displayed before the video (pre-roll)
2). Advertisement displayed after the video (post-roll)
3). Embedded commercial breaks (e.g. watch four 15-second commercials in the middle of the video)
4). Embedded ads throughout the video (e.g. a banner ad on top...)

16. Here are some statements about what you might do on internet video websites. Please tell us how frequently you do the following activities where "1" means never and "7" means most frequently.

	Never	Rare ly	Occasi onally	Some times	Frequ ently	Almost every time	Every time
1. I watch online videos.	1	2	3	4	5	6	7
2. I watch online videos in their entirety	1	2	3	4	5	6	7
3. I watch the advertisements in online videos.	1	2	3	4	5	6	7
4. I watch advertisements in online videos in their entirety	1	2	3	4	5	6	7
5. I tell others about the online videos I watched.	1	2	3	4	5	6	7
6. I tell others about the websites where I watch online videos.	1	2	3	4	5	6	7

7. I talk to others about the interactive features on video websites.	1	2	3	4	5	6	7

17. a). Have you ever paid for video content online?
    1). Yes For what content? _____
    2). No

    b). If you are REQUIRED to pay for online video content, which payment method do you prefer?
    1). Pay-per-view (e.g. pay for specific videos)
    2). Subscription based (e.g. pay a flat fee for a certain amount of service)
    3). Combination of the above two
    4). Other _____

18. How old are you? _____ years old.

19. What is your highest level of education (e.g. highest degree completed)?
    1). Doctorate (e.g. Ph.D., MD, ED, JD…)
    2). Master's degree
    3). Bachelor's degree
    4). Attended/attending college
    5). Graduated high school
    6). Attended high school
    7). Eighth grade or less
    8). Other (please specify _____)

20. a). Are you of Hispanic, Latino or Spanish origin?
    1). Yes 2). No

    b). What is your race?
    1) White 2) Black, African American
    3) American Indian or Alaska Native 4) Asian or Pacific Islander
    5) Mixed 6) Other _____

21. What is your annual household income?
    1). Under $20,000 2). $20,000-39,999
    3). $40,000-$59,999 4). $60,000-$79,999
    5). $80,000-$99,999 6). $100,000--$119,999
    7). $120,000 or above

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BIOGRAPHICAL SKETCH

Yan Yang was born in Hefei, China to Xinyuan Yang and Huifen Li. As the only child, she grew up in her hometown attending Hefei No. 1 High School, from which her parents also graduated. At the age of 18, Yan was selected as an exchange student by the Rotary Club and spent the summer with her host family in Bismarck, ND. She attended the Communication University of China in Beijing and obtained a B.A. in TV Editing in 2002. After graduation, she received an assistantship to study in the graduate program at the University of Nevada, Reno. Yan received her M.A. in Journalism in 2005. Between 2003 and 2005, she worked at KOLO News Channel 8 in Reno, NV as an associate producer.

In the summer of 2005, Yan received a fellowship from the International Radio and Television Society (IRTS) and completed an internship with the *Emmy*-winning documentary program *Wide Angle* at PBS in New York. She then worked as a programming assistant at America's largest TV rep firm—Katz Media Group, and a sales assistant at WOR-Radio in New York. Yan received her Ph.D. in Mass Communication from the University of Florida in the spring of 2011. She is now a tenure-track assistant professor in the School of Communication at High Point University in High Point, NC.