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Understanding Internet Participation and Enjoyment: Identifying Salient Perceptions and Abilities

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Understanding Internet Participation and Enjoyment: Identifying Salient Perceptions and Abilities

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Thesis

Presented to the Faculty of the Graduate School of

The University of Texas at Austin

in Partial Fulfillment

of the Requirements

for the Degree of

Master of Arts

The University of Texas at Austin

May 2013

Dedication

I dedicate this thesis to my parents; my inspiration.

Acknowledgements

I want to thank Professor Cicchirillo for his exceptional guidance throughout the process of this thesis, his support and interest in my decision to pursue a career in academia and for his ability to tolerate and satisfy my incessant need for understanding. I also want to thank Professor Dudo for opening my eyes to a career path that embraces my passion for knowledge, for continuously showing a genuine interest in my progress and for giving me multiple opportunities to grow in the field of academia. I look forward to their continued guidance and support in the coming years.

Abstract

Understanding Internet Participation and Enjoyment: Identifying Salient Perceptions and Abilities

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The University of Texas at Austin, 2013

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The internet is a vast and ever-changing medium, and with that comes much discussion of its users and their capabilities to adopt and use the internet. This study aims to advance the digital native vs. digital immigrant discussion and present a theoretically-driven understanding of the adoption process by evaluating individuals on their internet usage behaviors over that of mere demographics. This study found that by looking at users' breadth of use, ease of use and internet self-efficacy, online participation in various forms is more accurately predicted. Through the Diffusion of Innovation Theory and the Social Cognitive Theory researchers can better understand this process as it relates to changing digital media and thus harness tools that will enable users to adopt more quickly.

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Introduction

Due to the rapid growth of digital technology, the way in which people use the internet has become a topic of interest for researchers within the past few decades. It has been studied in multiple contexts, such as online learning (Autry Jr. & Berge, 2011; Prensky, 2001) and social networking (Hu, Poston, & Kettinger, 2011; Williams, Crittenden, Keo, & McCarty, 2012). A common theme in this research area deals with individuals' capacity for adopting new practices online. While differences amongst generations in the usage and adoption of the internet are most prevalent (Helsper & Eynon, 2009), research shows that these differences can be attributed to various factors such as one's perceived ability to use the internet (Eastin & LaRose, 2000), how useful or easy one finds it (Hu et al., 2011) or one's overall accessibility to the internet (Wei, Teo, Chan, & Tan, 2011). While this discussion began as one of mere demographics to decipher between digital natives, those who are fluent internet users, and digital immigrants, those who are not, it has now become one of individual capacity and participation. Therefore, despite initial conclusions, individuals demonstrate digital nativeness not only based on his or her age, but on a combination of various other factors. This study will show that individuals' habits, abilities and perceptions are better determinants of internet use and enjoyment than age alone.

Literature Review

Background

Digital nativeness was initially thought to be determined solely by ones birth year as it coincided with the emergence of the internet or other digital technology. According to Prensky (2001) digital natives are individuals who grew up in a society with widespread accessibility to digital technology such as computers, cell phones and videogames; and digital immigrants are those who did not grow up with such technologies but adopted the use of some or all technologies later in life (Prensky, 2001). Because of the differences observed in the habits of digital natives, he contended that "today's students think and process information fundamentally differently from their predecessors" (p. 1). He noted that digital natives and digital immigrants had distinct traits that identified them as either an immigrant or native; he called these "accents." A digital native accent was made up of behaviors such as multi-tasking, using the internet as a primary source of information, preferring instant gratification and constant connectivity to others through instant messaging and online networks. Furthermore, Prensky identified the digital immigrant accent as an individual using the internet as an extension of his or her already existing habits, such as printing out an e-mail to view it better or talking about a website over the phone or in person when it could be shared electronically. He states that these accents are established because older generations learn differently and have a different way of socializing than younger generations.

In a recent study, these accents were evaluated in the context of online learning by surveying 100 graduate students by Ransdell, Kent, Gaillard-Kenney, and Long (2011). The sample represented students from four different generations: millennials, individuals born in 1982 and sooner; generation X individuals born between 1971 and 1982; younger

boomers, individuals born between 1961 and 1972; and older boomers, individuals born between 1951 and 1962. The study aimed to identify whether digital nativeness, defined in this study as an individual's self-reported feeling, description and behavior of his or her online activity, or age was a more significant factor in determining online behaviors. The study found that the older boomers had the highest proportion of digital immigrants, and they also demonstrated behaviors that Prensky (2001) suggested were those of a digital immigrant accent, such as imitating face-to-face communication online, just as they would offline.

The study conducted by Ransdell et al. (2011) demonstrated that digital nativeness is related to age and the corresponding behaviors that make up its accent. However, the study also found that older boomers are more active participants online than generations that had more digital natives. In the study, older boomers demonstrated higher social reliance, which correlated with high interaction with peers and connectedness. These factors can be used to predict online behaviors in other contexts as well, such as social networks or online communities that rely on an individual's ability to interact with others, and there may be great potential to reach digital immigrants online as their peer-to-peer interaction is high.

Just as Ransdell et al. (2011), determined digital nativeness to be more accurately based on the individual's self-reported feeling, description and behavior toward his or her online activity, other researchers have also determined that age should not be the only factor in distinguishing between digital natives and digital immigrants (Helsper & Eynon, 2009; Hu et al., 2011). According to Helsper and Eynon (2009) “breadth of use, experience, self-efficacy and education are just as, if not more, important than age in explaining how people become digital natives” (p.1). This conclusion lead to them defining digital nativeness as having access to technology, using the internet as a primary

source of information, multi-tasking using multiple devices and using the internet for multiple activities.

In order to determine whether an individual meets these criteria, they looked at three elements: age, experience and breadth of use. Age was determined directly by birth year as it coincides with the emergence of digital technology, and they identified individuals born between 1983 and 1990 as the first generation of digital natives and teenagers born after 1990 as the second generation of digital natives. This is an update to the initial definition by Prensky (2001), who defined digital natives as anyone born after 1980. Experience was determined by length of time in years using the internet, and breadth of use was determined by how often or how much the internet is integrated in the individual's everyday life. Using the 2007 Oxford Internet Survey (OxIS), a survey with 2,350 respondents, Helsper and Eynon (2009) focused on the 1,578 respondents who reported they were internet users and looked at responses related to types of online activities and behaviors, such as social networking and multi-tasking, as well as self-efficacy.

The research showed that younger individuals use the internet as a first reference for information and learning, are multi-taskers and have higher overall self-efficacy, but younger individuals with a high breadth of use had even greater demonstration of traits inherent to digital nativeness. Due to these findings, Helsper and Eynon (2009) determined that younger individuals are more likely to be digital natives, but so too are individuals who have greater experience using the internet. This indicates that older individuals may be digital natives as well based on their experience using the internet. While this research primarily relates to online learning and demonstrated that older and younger generations may not have as difficult a time relating as once was thought, a measure of digital nativeness that incorporates experience and breadth of use may be

used to assess differences in online participation. While their research suggests there is no definitive line between digital natives and digital immigrants in relation to age, research conducted by the Pew Research Center (Zickuhr, 2010) showed that there are some differences in how older and younger generations use the internet, but those differences are disappearing rapidly. They found that social networking site usage among 74 and older quadrupled between 2008 and 2009, despite younger generations still being most likely to use social networking sites. They also found that information seeking, an activity once most performed by older adults, was the third most popular online activity across all ages in 2009. Additional activities that have become common practices across generations are e-mail, listening to music and e-commerce.

Further research is needed to identify what additional criteria, which will be explored in this study, is more indicative of the internet adoption process. In order to do this, one must understanding the adoption process on an individual, as well as a societal, basis through the application of the diffusion of innovations theory.

Theoretical Underpinnings

Diffusion of Innovations Theory

The Diffusion of Innovations is a process that helps us explain how new information is spread over time within a group of individuals in a social system (Rogers, 2003). This process has been applied to research in many topics from rural sociology to communication to education (Carlson, 1965; Robertson, 1971; Ryan, 1943). With the rise of the internet and digital technology, this research has expanded to include such concepts as the critical mass; the point at which innovation adoption becomes self-sustaining (Rogers, 2003), and has been applied more recently to Management Information Science research that focuses on the likelihood of adopting a single

innovations and technology acceptance (Davis, Bagozzi, & Warshaw, 1989; Vishwanath & Chen, 2006).

According to Rogers (1995), diffusion is defined as the communication of an innovation within social systems, and it occurs through specific channels and sometimes over great lengths of time. Understanding the diffusion of innovations process aids in the understanding of how society adopts technology, and at which level it becomes accepted within a community (Valente & Davis, 1999). There are four key elements that are present within all diffusion research. They are innovation, communication channels, time and social systems (Rogers, 1995). All of these elements play a key role in understanding how technology or a specific innovation is adopted. In this process, online communication channels may help with the rate at which individuals learn about these innovations, and because of its reliance on connections within a community, reaching the critical mass is extremely pertinent when dealing with online communication channels (Rogers, 2003).

The first element, innovation, is a subjective term attributed to the perceived newness of an idea or practice expressed in the form of knowledge, persuasion or adoption decisions (Rogers, 1995). What is considered an innovation to someone in the late stages of the adoption process may no longer be considered an innovation to someone who has long adopted that technology, idea, or process. These differences can be further explored to encompass the perceived advantages or consequences of innovation adoption (Wejnert, 2002). According to Wejnert (2002), there are two types of innovations in context of their perceived consequences; public, which have an effect on individuals other than the adopter i.e. entire countries or states, and private, which affect an individual within a small collective group i.e. a community or social group (Wejnert, 2002). These may vary greatly depending on the perceived costs and benefits relative to

the individual (Wejnert, 2002). These characteristics, among others, may group innovations based on attributes individuals associate to innovations, such as compatibility and network inclusion (Rogers, 2003), and may lead to accurate prediction of adoption of a given innovation (Valente, 2005).

Communication channels, the second element of the process of diffusion, are the means through which information is shared or exchanged between individuals (Rogers, 2003). Traditionally, individuals receive information, are influenced by, and mimic the behaviors of, their peers within social networks (Valente, 2005) and because technology allows for rapid and mass transmission of communication across many platforms, online communication channels take on a different form than traditional communication channels (Danowski, Gluesing, & Riopelle, 2011). Specifically, new media such as social networks can be used to share information from one individual to another or to a group and have the capacity to reach an audience of many in a herd-like process that garners little discussion before adoption or without the need for interpersonal communication (Danowski et al., 2011).

The third element, time, can be explored on a level of individual adoption, which includes four steps; knowledge, forming an attitude, adopting or rejecting, implementing and confirming (Rogers, 2003). It can also be looked at on the level of adoption of an innovation within a system, which includes the five categories of innovativeness; innovators, early adopters, early majority, late majority and laggards (Rogers, 1983). Individuals are classified into one of these categories based on their adoption time in relation to others within the system, and the amount of individuals within each category follows the form of a gradually progressing S-curve in a traditional view of the diffusion of innovations process (Rogers, 2003). There are various factors that influence the rate through which an individual moves through the adoption process, such as the influential

power of opinion leaders or whether interpersonal communication is necessary (Valente & Davis, 1999), and in recent years, the process has seen a drastic change due to the emergence of new media (Danowski et al., 2011).

In order to assess the rate of adoption of innovations, Danowski et al. (2011) conducted a study through monitoring e-mail communications between 2,000 staff members of an automobile company's global network. They found that individuals made quicker adoption decisions in a herd-like manner, and that new media produced a convex r-curve, instead of the traditional S-curve that signifies a change from gradual adoption to rapid adoption over time. E-mail, and other online innovations, such as social networks, allow users to passively view others involved in messages or those who have already adopted an innovation, without the need for direct communication. This shift in communication needs is changing the rate at which individuals choose to adopt innovations, as well as the time in which an innovation is adopted by society.

A social system is the last element in the diffusion of innovations and is individuals or groups that join together for a common goal according to Rogers (2003). He identifies three innovation-decisions that determine adoption: optional, collective and authority. An optional innovation-decision is one made by an individual to adopt, separate from that of other members of within his or her social system. However, these decisions may still be influenced through means of persuasion or influence from others or from social norms. This type of innovation-decision may be seen in an individual deciding to purchase an iPhone after looking up and finding positive reviews online.

A collective innovation-decision is one made by a group as a whole, and typically calls for adoption by all members within the group (Rogers, 2003). This type of innovation-decision may be seen in a group of students who decide, collectively, to conduct all communications via their Facebook page rather than e-mail.

An authority innovation-decision is one made by the opinion leaders, and usually mandates all members within the social system adopt the process, with little to no input according to Rogers (2003). This type of innovation-decision may be seen through the Chief Operating Officer of a company deciding to go paperless with all future communications. While authority innovation-decisions often produce the most rapid rate of adoption in society, optional innovation-decisions are the most prevalent in online adoption due to the rapid transmission of information that requires little to no interpersonal communication between individuals (Danowski et al., 2011). One may seek out and find information quickly online, aiding in the speed and ease of adoption decisions. Warschauer and Matuchniak (2010) attribute this increase in adoption speed to the simultaneous shift in the economy from one of industrial-focus to an information-focus, as well as the emergence of interactive features that allow mass communication regardless of time and space.

Optional innovation-decisions regarding technology adoption are made on the basis of an individual evaluating the technology's perceived usefulness and ease of use, and thus creating a behavior intention. These are the key elements that make up the Technology Acceptance Model (TAM) (Davis, 1989). Davis (1989) describes perceived usefulness of a given technology as being determined by the individual evaluating whether or not the innovation will aid in the completion of a task or obtaining of a skill, and ease of use as being determined by the individual's perceived capacity for using.

This model is primarily used to explain computer usage behavior and was developed in relation to Management Information Science technology. However, it has been applied to other fields, such as communication technology and online social network services (Hu et al., 2011). The model has also taken on many adaptations and

expansions to include concepts of enjoyment, social norms and self-efficacy (Venkatesh, Morris, Davis, & Davis, 2003; Venkatesh & Davis, 2000; Venkatesh & Bala, 2008).

While there may be differences in the way in which digital natives and digital immigrants perceive the internet to be easy to use or useful, these elements are pertinent to bridging the gap between those types of users, which was explored by Hu et al. (2011) with a slightly adapted version of the TAM. They surveyed 1,365 undergraduate and graduate students to further understand the relationships between perceived usefulness, perceived ease of use, perceived enjoyment, behavioral intentions, and social norms and found that individuals will consider adopting a new technology if they enjoy using it, find it easy to use and if friends have recommended it. Furthermore, this research showed that those who have yet to adopt a technology, such as social networking services, may do so if the perceived gratifications meet the individuals needs, a concept supported by the Uses and Gratifications perspective, which states that individuals will partake in a given behavior to satisfy a need (Peters, 2011). In addition, the study found that with positive outcomes observed, individuals are more likely to model the behavior of others, a concept explained by the Social Cognitive Theory by Bandura (1986), which aids in the explanation of how others may impact the rate of adoption.

Social Cognitive Theory & Adoption

In the context of mass communication, modeling has traditionally been viewed as a two-step diffusion process where an individual gains knowledge from a media source and transfers that knowledge through personal influence to others (Bandura, 2001). Individuals may be reluctant to try new innovations without viewing the benefits early adopters received, and social diffusion is thus accelerated. Modeling plays a large role in adoption, which reflects the idea that social networks spread information. Because the

internet allows individuals to communicate across time and space it is an ideal place for knowledge and skill to be spread and adopted (Wellman, 1997). Through the understanding of the TAM, with added measures of enjoyment and gratification sought through understanding of the Social Cognitive Theory, further research may be able to uncover the motivations on an individual basis of adoption and identify ways to attract laggards of technology adoption.

According to Bandura (1986), the Social Cognitive Theory states that individuals process information, learn, form beliefs and act based around their biological predisposition, their environment and their behaviors, which are made up of self-regulation and motivations. Bandura (2008) states that the Social Cognitive Theory can be used to explain three processes in the diffusion of innovations; the acquisition, adoption and the spread of information and skills. He states that with large scale innovations, such as the internet, two pathways for communication are present; the first is a direct pathway in which media informs and motivates to promote change and the second is a socially mediated pathway in which participants are linked to social networks, much like in online communities. The acquisition of knowledge comes not only in the form of obtaining information, but also includes an individual's perceived ability to use the skills obtained, or their self-efficacy. The greater the perceived benefit, the more likely an individual is to adopt that skill. Also, when adopting a new technology, individuals will evaluate their own reactions in relation to their personal beliefs, as well as those of society (Peters, 2011), and they will anticipate self-satisfaction (Bandura, 2008). An individual will set a goal for himself that will produce a desired outcome, and satisfaction will be based upon achieving the desired action and avoiding undesired ones (Bandura, 2001).

Self-efficacy has also been related to anxiety surrounding technology usage by Conrad and Munro (2008), and this relationship has been shown to affect how well new technologies are adopted and used. They found that anxiety has a negative impact on self-efficacy and the level of that anxiety may determine whether it can be overcome through experience or not. In the context of internet adoption, or of adoption related to specific internet usage, technology-related anxiety may have an impact on one's overall efficacy.

Eastin and LaRose (2000) developed the concept of Internet Self-Efficacy (ISE) as the idea that an individual's adoption of the internet takes into account personal motivations and perceived self-satisfaction, past experiences with the medium, as well as the experiences and observations of others. The study surveyed 171 undergraduate students to determine whether usage, experience and outcome expectancies played a role in developing ISE. They found that ISE was positively correlated to all three and, as suggested by Social Cognitive Theory, it also negatively correlated with internet stress and self-disparagement. In addition, Eastin and LaRose (2000) found that ISE is most positively correlated to experience, which demonstrates that experience is indeed an integral part in identifying digital nativeness as discussed by Helsper and Eynon (2009), and that it is not just a matter of age.

By combining the constructs of experience and breadth of use (Helsper & Eynon, 2009), technology-related anxiety (Conrad & Munro, 2008), ease of use and usefulness (Davis, 1989) and ISE (Eastin & LaRose, 2000) one can understand the adoption process on a more comprehensive level. This study will conceptualize and test this theoretically-driven model of internet adoption in relation to the outcomes indicative of internet adoption: enjoyment, social, entertainment and information-related participation, as described by Hu et al. (2011).

Hypotheses

Based on the discussed research, it has been identified that an individual's experience and breadth of use (Helsper & Eynon, 2009), technology-related anxiety (Conrad & Munro, 2008), perceived usefulness, ease of use (Davis, 1989) and ISE (Eastin & LaRose, 2000), in combination with their self-reported digital nativeness (Ransdell et al., 2011), should yield a preliminary understanding of internet participation for social, entertainment and information purposes. Each of these factors adds an element to the understanding of individuals' internet use and level of enjoyment, in turn, furthering the understanding of the potential differences in adoption behaviors among digital natives and immigrants. This study was based on three main hypotheses related to these factors and their perceived effect on overall internet use and enjoyment. Each hypothesis can be broken out into three steps that demonstrate the effects each of the above element has on the correlation.

Hu et al. (2011) explored the idea of enjoyment related to the TAM and found that individuals who experience greater joy related to their uses and desired gratifications are more likely to adopt or continue using the internet. This study aims to explore that concept within the context of individuals already using the internet, who can be classified as digital natives. Because individuals experience greater joy when their perceived gratification is in line with their obtained use (Eastin & LaRose, 2004), and when their anxieties do not overcome their experience (Conrad & Munro, 2008), it is predicted that individuals who find the internet useful will enjoy it more (H1).

In a study measuring age, experience and breadth of use of the internet, younger generations were found to use the internet for information purposes more than older generation, as well as had higher self-efficacy (Helsper & Eynon, 2009). However, it was

also found that experience, not only age, indicated a higher level of nativeness. Therefore it is predicted that individuals who have greater experience, as well as greater breadth of use and ISE will be more likely use the internet for information-related activities, including e-commerce and advertising (H2).

While research has shown that digital nativeness is not determined solely by age (Helsper & Eynon, 2009), Ransdell et al. (2011) found that Babyboomers were more likely to use the internet for social interaction and connectedness than younger generations. In addition, Hu et. al. (2011) found that individuals with greater perceived ease of use are more likely to adopt the use of social networking sites. Based on this combination of demographic and behavioral determinants it is predicted that individuals with greater age and thus more experience, and greater perceived ease of use will be more likely to use the internet for social purposes (H3).

H1: Individuals who identify as digital natives are more likely to enjoy using the internet.

- H1(a): Greater breadth of use will be positively associated with enjoyment.
- H1(b): Greater perceived usefulness will be positively associated with enjoyment.
- H1(c): Lesser technology related-anxiety will be positively associated with enjoyment.

H2: Individuals who identify as digital natives are more likely to use the internet for information-related purposes (information, e-commerce and advertising.)

- H2(a): Greater breadth of use will be positively associated with all three levels of information use.
- H2(b): Greater experience will be positively associated with all three levels of information use.

- H2(c) Greater ISE will be positively associated with all three levels of information use.

H3: Individuals who identify as digital immigrants are more likely to use the internet for social and entertainment-related purposes.

- H3(a): Greater age will be positively associated with social and entertainment use.
- H3(b): Greater experience will be positively associated with social and entertainment use.
- H3(c): Greater ease of use will be positively associated with social and entertainment use.

Methodology

Participants and Procedures

Using an online survey administered via Qualtrics software and distributed online through the contract crowdsourcing website, Amazon's Mechanica Turk (AMT), a population of 287 participants was reached. This method of data collection was chosen for it's accessibility to a large population of varying demographics, especially age. In a series of five studies and almost 3,000 unique workers, Mason and Suri (2012) found that 45% of workers on AMT were female and 55% male, and the median and mean age of workers was 30 and 32 respectively. Also, they found it to be a reliable research tool by checking internal consistency of the demographics across the various studies with the same participants and found only one participant who changed their self-reported demographics. Beyond having access to over 100,000 workers of varying demographics, Mason and Suri (2012) also found AMT to be low-cost, and time-efficient.

Human Intelligence Tasks (HITs) were posted according to AMT guidelines and participants were compensated $.50 upon successful completion of the survey, a rate-of-pay in-line with AMT best practices (Mason & Suri, 2012). Initially, no restrictions beyond being a legal adult were indicated. However, in order to obtain the desired sample of an approximate mix across the three generations, Babyboomers, Generation X and Generation Y, it was necessary to post sets of HITs with limiting age ranges toward the end of data collection.

Data collection began in mid February 2013 and continued through early March 2013. A total of 313 HITs were completed, but 26 were rejected based on duplicate attempts, missing information or inaccurate responses indicative of automated survey completion. On average, it took respondents 15 minutes and 20 seconds to complete the

survey. Before reaching this population, IRB approval was granted by the University's Institutional Review Board.

Measures

In order to test for the outlined hypotheses, the following measures were integrated into the survey.

The study measured eight demographic variables: age, gender, ethnicity, marital status, children and their ages, annual household income, education level and state of residence. Age was measured as a continuous variable in years (*M*=38.55*, SD*=12.60*, Min*=18*, Max*=67) and later recalculated into three generational categories with Babyboomers (26.1%) Generation X (34.1%) and Generation Y (39.7%). The sample consisted of 52% males and 47.4% female, with Caucasian (76.3%), Asian (11.5%), African American (4.5%), Hispanic (1.4), Native American (1.0%), Pacific Islander (.3%) and other (1.7%). Respondents' annual household income was assessed using an 11-point ordinal measure ranging from 0 (US $0 to $9,999) to 11 (US $100,000 or over) (M = 5.49 [$50,000 to $59,999], SD = 2.90, Min. = 1, Max. = 11) Education level was assessed using a 7-point measure ranging from 1 = some high school to 7 = received doctorate (M = 4.29 [4-year college degree], SD = 1.19, Min= 0, Max. = 7).

Digital Nativeness

In order to assess participant's self-reported digital nativeness, three multiple choice questions were asked. These three questions make up the digital nativeness scale used by Ransdell et al. (2011), and had been adapted to reflect the subject of the study. However, in adapting one of the questions to fit the needs of the study, a multiple choice responses was omitted from the third question, ultimately affecting the scale reliability. Due to this error, the third question was omitted, increasing the scale reliability from α=.424 to

α=.590 (*M*=7.09, *SD*=1.05). Despite the error, this measure remained to be used as it was an integral part in assessing differences among digital natives and digital immigrants. The first question asked respondents to select one of four answers that best answered the statement "When I use the internet, I..." These responses were mutually exclusive and ranged from "find myself feeling that this is the way I interact with information all the time" to ″find myself feeling that using the internet is still often very challenging." The second question asked the respondents to select one of four mutually exclusive responses that best describes them ranging from ″Someone who grew up with computers and finds it very natural to use them" to ″Someone who did not grow up with computers and still finds it hard to use them."

Experience

Experience was determined by the reported length of time an individual has been using the internet with the continuous variable of years (*M=15.04*, *SD=4.69*).

Breadth of Use

Breadth of use was measured using a five-point Likert scale from 1 [never] to 5 [all of the time] that assessed respondents frequency of use of the following four general internet-related activities: to keep up with current issues and events, to find information that is useful for making a decision or completing a task, for entertainment and to pass time (α=.752, *M*=16.00, *SD*=2.88).

Technology-Related Anxiety

Technology-related anxiety was assessed using a scale by Conrad and Munro (2008) that uses a five-point Likert scale from 1 [very uncomfortable] to 5 [very comfortable] on the following 15 items: learning a software package, using a computer, programming a video recorder, using a mobile phone, using a fax machine, programming a stereo, using an automatic banking system, programming a microwave, learning about

computers, using video conferencing, using the internet, finding that all electrical appliances are computerized, computer technology is changing very quickly, reading a computer manual and deciding which computer to purchase (α=.912, *M*=27.66, *SD*=10.29).

Perceived Ease of Use

Using the TAM (Davis, 1989), perceived ease of use was measured using a five-point Likert scale from 1 [strongly disagree] to 5 [strongly agree] on the following six items: learning to operate the internet is easy for me, I find it easy to get the internet to do what I want it to, I would find the internet to be flexible to interact with, my interaction with the internet is clear and understandable, I find it takes a lot of effort to become skillful at using the internet, overall, I find the internet easy to use (α=.813, *M*=26.25, *SD*=3.82).

Perceived Usefulness

Perceived Usefulness is also a variable of the TAM by Davis (1989). It was measured using a five-point Likert scale from 1 [strongly disagree] to 5 [strongly agree] on the following items: the internet enables me to accomplish tasks more quickly, using the internet increases my productivity, using the internet improves my job performance, using the internet enhances my effectiveness on the job and using the internet makes it easier to do my job (α=.878, *M*=20.99, *SD*=4.28).

Internet Self-Efficacy

ISE was measured by a series of questions related to the individual's self-reported feelings and behaviors regarding internet usage according to the scale created by Eastin and LaRose (2000). It was measured using a five-point Likert scale from 1 [strongly disagree] to 5 [strongly agree] on the following items: understanding terms/words related to internet hardware, understanding terms/words related to internet software, describing

functions of internet hardware, troubleshooting internet problems, explaining why a task will not run on the internet, using the internet to gather data, learning advanced skills with a specific internet program, turning to an online discussion group when help is needed and interacting with others on social networking sites or in online communities (α=.893, *M*=35.03, *SD*=7.20).

Perceived Enjoyment

In order to assess an individual's level of enjoyment using the internet a five-point semantic-differential scale derived from the study by Hu et al. (2011) was used. It measured five variables from 1 [unfun] to 5 [fun], 1 [uninteresting] to 5 [interesting], 1 [boring] to 5 [exciting], 1 [unenjoyable] to 5 [enjoyable] (α=.825, *M*=18.20, *SD*=2.32).

Participation

In order to measure individuals' internet participation, five motivations for use were identified: social, information, entertainment, e-commerce and advertising participation. Each was a five-point Likert scale from 1 [never] to 5 [all of the time].

Social usage measured the frequency of instant messaging, participating in chat rooms/online forums, making or receiving phone calls online, posting messages on discussion or message boards, posting pictures or photos, and updating a profile on a social networking site (α=.767, *M*=15.38, *SD*=5.12).

Entertainment participation measured the frequency of getting jokes, cartoons or other humorous content, playing online games, downloading music, listening to music, downloading videos, watching videos online, uploading videos or music files and surfing or browsing the web (α=.800, *M*=24.09, *SD*=6.04).

Information participation measured the frequency of looking up local, national or international news, getting information about local events, looking up sports information,

making travel plans, looking for jobs online and finding health or medical information (α=.681, *M*=19.43, *SD*=4.26).

E-Commerce participation measured the frequency of looking up information related to a product, buying a product online, making travel reservations, paying bills, using online banking services, comparing products and prices and selling items online (α=.782, *M*=26.12, *SD*=4.93).

Advertising participation measured the frequency of clicking on sponsored ads when searching the internet, searching the internet for coupons before purchasing an item, going to a company's website when it is mentioned on television or the radio, visiting a company's social networking page and clicking a link to a company's website through a social networking site (α=.812, *M*=12.73, *SD*=4.19).

Results

Hypotheses Testing

The hypotheses were initially looked at with a zero-order correlation. The results in Table 1 show that some correlation between variables exist. In order to further explore these relationships, a hierarchical regression was used.

Table 1. Correlations between variables

	Enjoyment	Social Use	Information Use	Entertainment Use	E-Commerce Use	Advertising Use
Age	.003	-.279**	-.050	-.398**	-.093	-.127*
Generation	-.004	-.238**	-.027	-.352**	-.087	-.129*
Gender	.104	-.037	-.114	-.109	-.019	.144*
Digital Nativeness	.209**	.087	.110	.218**	.291**	-.003
Experience	.017	-.033	.131*	-.066	.108	.021
Breadth of Use	.290**	.265**	.304**	.397**	.308**	.115
Technology-Related Anxiety	-.329**	-.152**	-.180**	-.240**	-.435**	-.123*
Perceived Ease of Use	.396**	.014	.085	.121*	.285**	-.094
Perceived Usefulness	.412**	.124*	.236**	.146*	.337**	.104
Internet Self-Efficacy	.333**	.304**	.160**	.342**	.347**	.139*

[a] Gender: 0= male, 1=female. *p>.01; **p<.001

In order to further understand the impact each of these variables has on enjoyment and various internet participation purposes, six hierarchical regression models were run. The six outcomes tested were enjoyment, social participation, entertainment participation, information participation, e-commerce participation and advertising participation. This regression allowed for analysis of multiple variables across several blocks to identify those that accounted for the largest variance of the outcome. Four blocks were used across all outcomes.

The variables within each block and the subsequent order were based on previous research and the elements that have previously been related to the predicted outcomes. In order to measure the effect basic demographic information has, the first block encompassed gender, age and generation. While these elements were found to have some influence on internet usage by Helsper and Eynon (2009), they were not the only determinants of digital native behaviors.

The second block contained a combined score of the two digital nativeness questions used by Ransdell et al. (2011). These questions measured how much a person thought themselves to be a digital native. Because these questions take more into account than demographics, they are important to determining the measured outcomes. However, they do not take into account actual behaviors.

While Helsper and Eynon (2009) found that age was significant, they explored elements of experience and breadth of use, and found them to be more significant predictors of digital native behaviors. These variables made up the third block, along with technology-related anxiety, as studied by Conrad and Munro (2008). They found that technology-related anxiety is a significant contributor to negative attitudes about technology, thus hindering their participation.

The fourth block contained perceived ease of use, perceived usefulness, elements of the TAM by Davis (1989) and ISE by Eastin and LaRose (2000). Hu et al. (2011) found these variables to be significant in determining an individual's adoption and enjoyment of using the internet. Because of this, they are predicted to be the most significant elements in determining internet usage and enjoyment.

The first hierarchical regression measured enjoyment (See Table 2). Block three had an adjusted R-squared value of 16.7% and was significantly predicted by breadth of use (β=.220). and technology-related anxiety (β=.268), supporting hypotheses H1(a) and

H1(c). The most significant predictor variable block was block four, with an adjusted R-squared value of 26.1%. Significant predictors in this block were perceived usefulness (β=.252) and ISE (β=.184), supporting hypotheses H1(b). The demographic information in block one did not yield any significance, and the second block only made up 4.9% of the variance where digital nativeness was a significant predictor (β=.245).

Table 2. Hierarchical regression analysis for predicting internet enjoyment

Enjoyment		
Dependent var. Independent var.	Standardized Beta	Adjusted R^2
Block One		.001
Age	.039	
Generation	-.046	
Gender[a]	.104	
Block Two		.049
Digital Nativeness	.245**	
Block Three		.167
Experience	-.047	
Breadth of Use	.220**	
Technology-Related Anxiety	-.268**	
Block Four	.	.261
Perceived Ease of Use	.133	.
Perceived Usefulness***	.252**	
Internet Self-Efficacy**	.184*	
Total R^2		.287

[a] Gender: 0= male, 1=female. *p>.01; ***p<.001

The second hierarchical regression measured social participation (See Table 3). While the first block only made up 7.2% of the variance, age was a significant predictor

(β=-.434), which supported hypothesis H3(a) for the social component. Block three had an adjusted R-squared value of 11.7% and was significantly predicted by breadth of use (β=.213), however, experience was not a significant predictor. Therefore, H3(b) was not supported in social participation. The most significant predictor variable block was block four, with an adjusted R-squared value of 20.1%. Significant predictors in this block were perceived ease of use (β=.279), supporting hypothesis H3(c) in terms of the social component and ISE (β=.372) Block two did not yield any significance.

The third hierarchical regression measured entertainment participation. The first block made up 15.9% of the variance, and age was a significant predictor (β=-.528), which supports the entertainment component of hypothesis H3(a). Block three had an adjusted R-squared value of 26.8% and was significantly predicted by breadth of use (β=.310), but not experience, thus H3(b) was not supported in entertainment participation. The most significant predictor variable block was block four, with an adjusted R-squared value of 30.7%. Significant predictors in this block were perceived ease of use (β=-.210), supporting the entertainment component of hypothesis H3(c) and ISE (β=.256) Block two did not yield any significance.

Table 3. Hierarchical regression analysis for predicting social and entertainment internet participation

Use	Social		Entertainment	
Dependent var. / Independent var.	Standardized Beta	Adjusted R^2	Standardized Beta	Adjusted R^2
Block One		.072		.159
Age	-.434*		-.528**	
Generation	.168		.145	
Gender[a]	-.017		-.082	
Block Two		.069		.163
Digital Nativeness	-.012		.088	
Block Three		.117		.268
Experience	-.005		-.053	
Breadth of Use	.213**		.310**	
Technology-Related Anxiety	-.092		-.105	
Block Four		.201		.307
Perceived Ease of Use	-.279**		-.210*	
Perceived Usefulness	.023		-.002	
Internet Self-Efficacy	.372**		.256**	
Total R^2		.229		.331

[a] Gender: 0= male, 1=female. *p>.01; **p<.001

The fourth hierarchical regression measured information participation (See Table 4). Block three had an adjusted R-squared value of 9.9% and was significantly predicted by breadth of use (β=.270), partially supporting hypothesis H2(a). Experience was not significant and therefore H2(b) was not supported. The most significant predictor variable block was block four, with an adjusted R-squared value of 13.0%. Significant predictors in this block were perceived ease of use (β=-.200) and perceived usefulness (β=.185), but

not ISE. Therefore H2(c) was not supported. The first and second blocks did not yield any significance.

The fifth hierarchical regression measured e-commerce participation (See Table 4). Block three had an adjusted R-squared value of 21.9% and was significantly predicted by breadth of use (β=.186), partially supporting hypothesis H2(a) and technology-related anxiety (β=-.338), but experience was not significant, thus H2(b) was not supported. The most significant predictor variable block was block four, with an adjusted R-squared value of 24.4%. Significant predictors in this block were perceived ease of use (β=-.145) and perceived usefulness (β=.173), but not ISE. Therefore, H2(c) was not supported. The first block did not yield any significance. Block two made up 7.3% of the variance and was significantly predicted by digital nativeness (β=.300).

The sixth hierarchical regression measured advertising participation (See Table 4). Block three had an adjusted R-squared value of 5.5% and was significantly technology-related anxiety (β=.188), but not breadth of use or experience. Therefore neither H2(a) nor H2(b) were supported. The most significant predictor variable block was block four, with an adjusted R-squared value of 13.6%. Significant predictors in this block were perceived ease of use (β=-.401) and ISE (β=.188), partially supporting H2(c). The second block did not yield any significance, however, while block one made up only 3.0% of the variance, gender was a significant predictor (β=-.153).

Table 4. Hierarchical regression analysis for predicting information-related internet participation

Use	Information		E-Commerce		Advertising	
Dependent var. Independent var.	Standardized Beta	Standardized Beta	Adjusted R^2	Adjusted R^2	Standardized Beta	Adjusted R^2
Block One		.007		-.002		.030
Age	-.179		-.094		-.071	
Generation	.146		.001		-.071	
Gender[a]	-.110		-.013		.153**	
Block Two		.014		.073		.029
Digital Nativeness	.111		.300***		-.058	
Block Three		.099		.219		.055
Experience	.099		.038		.055	
Breadth of Use	.270***		.186***		.086	
Technology-Related Anxiety	-.077		-.338***		-.152*	
Block Four		.130		.244		.136
Perceived Ease of Use	-.200*		-.145*		-.401***	
Perceived Usefulness	.185**		.173**		.084	
Internet Self-Efficacy	.009		.074		.188*	
Total R^2		.161		.271		.166

[a] Gender: 0= male, 1=female. *p<.05; **p>.01; ***p<.001

Discussion

Due to an ongoing discussion surrounding the digital realm there have been many theories and attempts to categorize individuals based on their digital aptitude. A common classification is that of age, making up the very first distinction of digital natives and digital immigrants (Prensky, 2001). This definition, however, failed to take into account individual or behavior differences among individuals, thus limiting behavior predictions based on demographics alone. As the internet and technology has progressed, so have individuals. They are able to move beyond limitations of age and learn through experience, and since the emergence of the digital native/digital immigrant discussion, there has been research conducted to expand to a definition that includes such elements as experience and breadth of use (Helsper & Eynon, 2009) These additional elements have demonstrated that it is not simply a matter of age that determines whether an individual will use the internet or not, but it is more about their experience level and how individuals use the internet, thus allowing researches to predict participation on a more individual level. In addition, measures such as perceptions of usefulness and ease in using the internet (Davis, 1989), along with technology-related anxiety (Conrad & Munro, 2008) and ISE (Eastin & LaRose, 2000), have played a major role in the discussion of what makes an individual digitally fluent.

In combining all of these elements, this research study was able to provide a more granular, theoretically-driven understanding of the internet adoption process, by identifying key predictors of internet adoption as defined by the Diffusion of Innovations Theory, Social Cognitive Theory and the Uses and Gratifications perspective. By using outcomes of enjoyment, information-related participation and social and entertainment

participation, it was able to assess motivations related to potential future and continued adoption among internet users.

By conducting a hierarchical regression this study found that perceived usefulness and ISE were the most significant predictors of enjoyment. Breadth of use and technology-related anxiety were also significant predictors of enjoyment. It was not predicted that self-efficacy would be a significant predictor of enjoyment, however, its significance is understandable given its relationship with, and the significance of technology-related anxiety. These findings further the research of Conrad and Munro (2008) and demonstrates their relationship in predicting internet enjoyment. Self-reported digital nativeness also showed to be a significant predictor in enjoyment, demonstrating that individuals who believe themselves to be digital natives will enjoy using the internet more. This may be in part due to the nature of the questions for the digital nativeness scale that inherently illicit a sense of comfort in using the internet. All of these findings confirm H1 and demonstrate that demographics alone are not a strong predictor of enjoyment of the internet and thus it can be concluded that individuals who identify as digital natives on a basis of having a wide breadth of use, a high perceived usefulness and high ISE will enjoy using the internet more.

The second hypothesis predicted that digital natives are more likely to participate online in information-related activities through showing that greater breadth of use, experience and ISE will all positively predict information-related use. This was partially supported by the data. In terms of information and e-commerce use, breadth of use was the only significant predictor; experience and internet-self-efficacy did not show any significance. This could be due, in part, to the low level of skill necessary to use the internet for information purposes, which coincides with the finding that perceived ease of use and usefulness both were the most significant predictors of information participation.

While the internet is a highly useful tool for information seeking, it is also fairly simple. This aids in the understanding that digital nativeness on a level of mere age or generation will not predict information participation, as was previously found by Helsper and Eynon (2009). Because of this, is determined that individuals who use the internet for a wide variety of uses and find it useful and easy to use are more likely to use the internet for information purposes. In terms of e-commerce use, digital nativeness is infact significant, as well as technology-related anxiety, perceived ease of use and usefulness. This demonstrates that individuals who self-identify with being a digital native, use it for a wide variety of purposes, have low technology-related anxiety, find the internet useful and easy to use are more likely to shop or conduct business online. This information could be valuable in creating easily navigated websites that emphasize security as both are elements relative to the variables.

Advertising participation was significantly predicted by ISE, as hypothesized. Due to the previously discussed connection between technology-related anxiety and ISE it is of no surprise that technology-related anxiety is also a significant predictor in regard to advertising. This, along with the results regarding e-commerce, show that individual differences and perceptions can be more important than demographics when determining how to reach individuals online. Based on these results, it may also not be accurate to categorize advertising and e-commerce as information-related uses, but rather as their own category that puts more emphasis on the participation level needed to perform these functions. Further exploration of motivations for online advertising and e-commerce participation could be useful in identifying just how to categorize these elements.

The third hypothesis predicted age, experience and perceived ease of use as digital native determinants to be positively associated with social and entertainment participation. This hypothesis was partially supported in that age and perceived ease of

use were significant predictors of both social and entertainment internet participation. However, experience was not a significant predictor, but instead, breadth of use was. In addition, ISE also significantly predicted social and entertainment use. Further supporting the research of Ransdell et al. (2011), age was negatively correlated, and thus older individuals were more likely to participate in these activities. With breadth of use being a significant predictor it is understood that social and entertainment participation are not the only uses of the internet among these individuals. These results are especially important in adding to the digital native and digital immigrant discussion as they show a breaking of traditional thoughts that older generations only use the internet for a few uses. The significance of perceived ease of use in determining social and entertainment use shows that finding the internet easy to use aids in the participation of social and entertainment activities online. Possible implications could be that social activities or easy-to-navigate online games are important in passing time.

While it is still difficult to classify exactly what makes an individual a digital native, due to the vast uses and capabilities of producing user-friendly online content, this study helped reveal the processes associated with different types of internet behavior. By looking across all six outcomes and assessing elements that repeatedly showed significance, an individual who has a wide breadth of use for the internet, finds the internet easy to use and has high internet-self efficacy is more likely to be a digital native.

Conclusion

With rapid change in the internet there still remain differences in the way in which individuals access and utilize the internet. While it was once though that those who grew up using the internet were the only ones capable of harnessing all it has to offer, it is now widely understood that anyone is capable of becoming an expert at using the internet, regardless of age. However, differences still remain among those have more have a wider breadth of use, higher self-efficacy and a greater ease in using the internet than those who do not. Because of these differences, adoption of the internet and its various uses is still important to explore in terms of the Diffusion of Innovations Theory. As previously stated, research has shown a change in the rate of adoption (Danowski et al., 2011; Warschauer & Matuchniak, 2010). With this rapid change, comes a drastic learning curve that could potential alienate certain individuals. Those individuals, identified in this study as digital immigrants, are lacking in ISE, varying use of the internet and ease of use. In order to reach the individuals who fall into this category certain societal influences may be particularly important. This study found that older individuals are more likely to participate in social and entertainment function of the internet. If indeed some of the laggards continue to be those outlying ages, social interaction and connection may be a potential way to reach them.

Also, by exploring the Social Cognitive Theory researchers are able to learn about motivations for different behaviors. While this study looked at social, entertainment and information related motivations, there may be others that affect internet participation and could be further researched. By assessing an individuals' sought gratification of using the internet and the ability to achieve said outcome through various measures such as

technology-related anxiety, ease of use and ISE, individual behaviors can be understood that go well beyond mere demographic measures.

Limitations

There are a few limitations of this study. While research has shown that AMT is a reliable tool in academic research (Mason & Suri, 2012), there was no measure within the survey to test for reliability of participants. Some evidence of automated or repeated responses was identified and those responses were removed from the sample. Also, the use of AMT could pose an issue of discriminate validity. Individuals who do not participate in online activities were not reached.

Also, despite removing the third digital nativeness determinant question, this scale still had a low scale reliability. This could be due to the nature of the questions being asked being mutually exclusive.

The experience measure also had its limitations. Taking into consideration years using the internet alone, it is understood that older generations have greater potential to have been using the internet for many years. However, this measure does not take into account the amount of time actually spent using the internet. An addition to this measure could be daily or weekly usage to better gauge how often and individual actually uses the internet, thus creating a more comprehensive measure of experience.

Appendix

Measurement of Constructs

Digital Nativeness Determinants (Ransdell et al., 2011)
1. When I use the internet, I...
    a. find myself feeling that this is the way I interact with information all the time.
    b. find myself feeling like I am getting used to it and I am still mostly within my comfort zone.
    c. find myself feeling that using the internet is kind of familiar, but I am still surprised by some aspects of it.
    d. find myself feeling that using the internet is still often very challenging.

2. Which of the following descriptions best describe you?
    a. Someone who grew up with computers and finds it very natural to use them.
    b. Someone who might not have grown up with computers, but still finds it very natural to use them.
    c. Someone who probably did not grow up with computers, but can sometimes find it natural to use them.
    d. Someone who did not grow up with computers and still finds it hard to use them.

3. Which of the following descriptions related to new technology usage are most like your own?
    a. I prefer reading information in digital format over hard copy format, and almost never read instruction manuals.
    b. I have no preference for reading information in hard copy format over digital format, and sometimes read instruction manuals.
    c. I prefer reading information in hard copy format over digital format, and almost always read instruction manuals.

Experience (Helsper & Eynon, 2009)
How long have you been using the internet?
    Years

Breath of Use (Helsper & Eynon, 2009)
How often do you use the internet for the following general purposes? (5-point Likert scale; 1=Never, 5=All of the Time)
    1.. To keep up with current issues and events
    2. To find information that is useful for making a decision or completing a task
    3. For entertainment
    4. To pass time

Technology-Related Anxiety (Conrad & Munro, 2008)
Indicate how comfortable each of the following make you feel at this point in your life. (5-Point Likert scale; 1=Very uncomfortable 5=very comfortable)

1. Learning a software package
2. Using a computer
3. Programming a video recorder
4. Using a mobile phone
5. Using a fax macine
6. Programming a stereo
7. Using an automatic banking system
8. Programming a microwave
9. Learning about computers
10. Using video conferencing
11. Using the internet
12. Finding that all electrical appliances are computerized
13. Computer technology is changing very quickly
14. Reading a computer manual
15. Deciding which computer to purchase

Perceived Ease of Use (Davis, 1989)
Indicate your level of agreement with the following statements related to your personal perceptions of the internet's ease of use. (5-Point Likert scale; 1=Strongly Disagree, 5=Strongly Agree)

1. Learning to operate the internet is easy for me.
2. I find it easy to get the internet to do what I want it to do.
3. I would find the internet to be flexible to interact with.
4. My interaction with the internet is clear and understandable.
5. I find it takes a lot of effort to become skillful at using the internet.
6. Overall, I find the internet easy to use.

Perceived Usefulness (Davis, 1989)
Indicate your level of agreement with the following statements related to your personal perception of the internet's usefulness. (5-Point Likert scale; 1=Strongly Disagree, 5=Strongly Agree)

1. The internet enables me to accomplish tasks more quickly.
2. Using the internet increases my productivity.
3. Using the internet improves my job performance.
4. Using the internet enhances my effectiveness on the job.
5. Using the internet makes it easier to do my job.

Internet Self-Efficacy (Eastin & LaRose, 2000)

Indicate your level of agreement with the following statements related to your confidence with using the internet. (5-Point Likert scales, 1=Strongly Disagree, 5=Strongly Agree

I feel confident...

1. Understanding terms/words related to internet hardware
2. Understanding terms/words related to internet software
3. Describing functions of internet hardware
4. Troubleshooting internet problems
5. Explaining why a task will not run on the internet
6. Using the internet to gather data
7. Learning advanced skills within a specific internet program
8. Turning to an online discussion group when help is needed
9. Interacting with others on social networking sites or in online communities

Perceived Enjoyment (Hu et al., 2011)

Complete the following sentence with the responses that most closely resemble your opinion. (Semantic differential 1= 5=)

1. Unfun:Fun
2. Uninteresting:Interesting
3. Boring:Exciting
4. Unenjoyable:Enjoyable

Participation Scales (derived from the 2009 Oxford Institute Questionnaire used by (Helsper & Eynon, 2009)

Social Use

How often do you use the internet for the following communicative purposes? (5-Point Likert sale, 1=Never, 5=All of the time)

1. Instant message
2. Participate in chat rooms/online forums
3. Make or receive phone calls online
4. Post messages on discussion or message boards
5. Post pictures or photos on the internet
6. Update a profile on a social networking site

Entertainment Use

How frequently do you use the internet for the following leisure purposes? (5-Point Likert sale, 1=Never, 5=All of the time)

1. Get jokes, cartoons or other humorous content
2. Playing online games
3. Downloading music
4. Listening to music online
5. Downloading videos
6. Watching videos

7. Uploading videos or music files
8. Surfing or browsing the web

Information Use

How frequently do you use the internet for the following informative purposes? (5-Point Likert sale, 1=Never, 5=All of the time)

1. Look up local, national or international news
2. Get information about local events
3. Look up sports information
4. Make travel plans
5. Look for a job
6. Find health or medical information

E-Commerce Use

How frequently do you use the internet for the following purposes related to shopping and/or e-commerce? (5-Point Likert sale, 1=Never, 5=All of the time)

1. Looking up information related to a product
2. Buying a product online
3. Making travel reservations
4. Paying bills
5. Using online banking services
6. Comparing products and prices
7. Selling items

Advertising Use

Please indicate the frequency at which you perform the following activities related to advertising. 5-Point Likert sale, 1=Never, 5=All of the time)

1. Click on sponsored ads when searching the internet
2. Search the internet for coupons
3. Go to a company's website when it's mentioned on television or the radio
4. Visit a company's social networking page
5. Click on a link to a company's website through a social networking site

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