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There's an app for that: the ways young adults access digital information

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THERE'S AN APP FOR THAT: THE WAYS YOUNG ADULTS ACCESS DIGITAL
INFORMATION

A Thesis

Submitted to the Graduate Faculty of the
Louisiana State University and
Agricultural and Mechanical College
in partial fulfillment of the
requirements for the degree of
Master in Mass Communication

in

Theanship School of Mass Communication

by
Cydney Lauren Palmer
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ABSTRACT

Despite the popular use of smartphones and mobile applications (apps) and their potential impacts in the near future, only scant academic attention has been paid to mobile apps, especially in respect to the gratifications sought from accessing digital information via apps. This exploratory study investigated the relationship between young adults and their use of mobile apps in accessing digital information, particularly in comparison to the current go-to digital information access device, Internet browsers. In addition, this study examined how levels of perceived privacy concern influence digital information use and how the use of digital information access modalities and the level of privacy concern interact in seeking digital information.

To examine these relationships, this study conducted an online survey with 201 young adults, and the data were analyzed using a two-way mixed repeated analysis of variance (ANOVA). The independent variables in this analysis were digital access modality (Internet browsers and mobile apps) and perceived personal privacy (high and low). The dependent variable in this study was digital information use, measured in five frequent purposes of accessing digital information: information, communication, convenience, entertainment, and commercial/purchase.

This study found significant main effects of digital access modality in using digital information. The results indicate that young adults are likely to use Internet browsers more than mobile apps for gratifying their purposes, except for a convenience purpose for which mobile apps were more likely used. However, the degree of perceived personal privacy was not found to be directly associated with the use of online information. Similarly, the interaction between

digital information access modality and perceived privacy toward online information use was not significant across five purposes.

In summary, the use of mobile apps was surprisingly large, and the gap between the two digital accessing modalities was not remotely distant. Based on this finding, it can be projected that mobile apps will become a primary device for young adults to access digital information in the near future. Regarding perceived privacy, before concluding the given results, more research should follow to gain a better understanding of the role of perceived privacy in digital information use.

CHAPTER 1

INTRODUCTION

The constant innovation of communication technology continuously creates new needs. Media use also shifts throughout time to meet these needs and purposes created by technology. For example, prior to the late nineteenth century, people relied heavily on printed communication for information. Then, by the end of the 1800s, the invention of the telegraph allowed information to travel long distances at increased speeds and also created the desire for convenience. The following century even furthered communication technology, introducing the radio, the television, and the Internet. Along with those innovations came new needs, including entertainment, escapism, convenience, and instant communication.

This structure remains the same in the 21st century. As the Internet grows out of its infancy stage, people increasingly access the online world to satisfy their needs. However, while the Internet is still used pervasively and developed consistently, the introduction of a new communication device, the smartphone, a handheld computer-based communication device, threatens Internet browsers' position as a primary digital information access choice.

Currently, 43% of mobile phone owners in the U.S. use a smartphone, and the use of this device is expected to grow rapidly (Purcell, Entner, & Henderson, 2010). Arguably, one of the factors that boosts the use and popularity of smartphones is mobile applications, or mobile apps, which are software applications designed for mobile devices to expand user abilities to perform particular tasks, such as check the weather, receive directions, send emails or purchase movie tickets. As the use and popularity of smartphones increase, consequently, the use of mobile apps also skyrockets. Based on this market change, Miller (2010) predicts that mobile app downloads will increase, from seven billion in 2009, to over 50 billion in 2012.

Indeed, empowered by high-speed technology and useful mobile apps, the smartphone becomes a powerful tool, more than a communication tool, and a part of everyday life. For instance, instead of using Internet browsers, smartphone users have started using mobile apps to access and acquire information. As a result, Internet content accessed through a computer browser represents less than one fourth of Internet traffic, and even that number is declining (Anderson & Wolff, 2010). On the other hand, mobile apps on smartphones, in lieu of browsers, are increasingly used to access web information and represent a considerable, growing portion of the remaining three fourths of Internet access (Anderson & Wolff, 2010).

However, the use of new technology, especially those implementing Internet use, creates a new level of privacy concern for the public. As the public accesses the Internet through a wide variety of communication tools (e.g. Internet browsers, mobile apps), information found on the Internet, including personal information, also grows. As a result, Internet consumers are becoming increasingly wary of personal privacy rights. The increasing use of smartphones furthers this concern, as this new mobile device holds a significant amount of individual, personal information.

The brief history of smartphones and mobile apps lends itself to an unforeseen future. Despite the popular use of smartphones and mobile apps, and their potential growth and impact in the near future, only scant academic attention has been paid to mobile app use, especially in comparison to the current go-to digital information access device, the Internet browser. These two digital access modalities are popular, especially within the young adult demographic. More directly, 79% of 18-29 year-olds who have mobile apps use them (Purcell, Entner, and Henderson, 2010), and 93% of young adults use Internet browsers (Rainie, 2010). Thus, important questions in this field remain unanswered: How do young adults use digital

information access devices (e.g., Internet browsers and mobile apps) differently? How does the level of privacy concern influence the use of digital information? How does the use of digital information access devices and the level of privacy concern interact with each other in seeking digital information?

The primary goals of this study are: developing a better conceptual understanding of digital information use, understanding privacy concern and digital information access devices, and producing useful scholastic and marketing implications. In order to achieve these goals, this study explores digital information access modalities (information access through Internet browsers or mobile apps) and privacy concerns on using digital information.

CHAPTER 2

LITERATURE REVIEW

Smartphones and Mobile Apps

Following the communication technology trend of the 19th and 20th centuries, the mobile phone serves primarily as an extension of the landline telephone (Goggin, 2009). By the 1980s, mobile telephones developed a standard set of features, such as a large solid body and antenna. At this time, use of the mobile phone as a portable voice communication device became prominent. By the end of the 20th century, mobile phones became infused with contemporary culture, providing fast, customized and relevant services to each individual user (Mort & Drennan, 2002). In addition, mobile communications became an almost ubiquitous resource for maintaining relationships and coordinating daily activities between friends and family members (Castells, 2009). As the fastest diffusing technology in the history of communication (Castells, 2009), about 82% of U.S. adults currently own a mobile phone (Purcell, Entner, & Henderson, 2010).

The technology of mobile phones has improved dramatically over the past three decades. While earlier models were solely driven by analog transmission for voice communication, modern phones provide four types of services as a standard: rich voice capabilities, Internet access, instant messaging and retrievable content (Steinbock, 2005). Hence, using various mobile functions, users are capable of gaining instant access to a vast amount of information in addition to advanced communication technologies, such as sophisticated audio and text message services.

The most recent type of mobile phone mirrors a personal computer, and has been titled the “smartphone.” A smartphone is defined as a mobile device that offers advanced capabilities, including Internet access and an operating system similar to a personal computer (Smith, 2009).

Smartphones are used in a variety of ways. In addition to telephone and text message capabilities, smartphones are known for their abilities to access digital information conveniently.

The first smartphone, the IBM Simon introduced in 1992, contained features similar to today's smartphones. The IBM Simon was a mobile touch screen phone with personal digital assistant (PDA) capabilities, pager and fax machine capabilities as well as calendar, calculator and address book apps (Ha, 2010). Although apps could be downloaded using mobile Internet sites through a wireless access point (WAP), the process was not user friendly and not well adopted by mobile users in comparison to smartphones today (Goggin, 2009).

In general, mobile phone apps require special software and/or hardware features to function properly. For instance, activities such as gaming and e-mail exchanges often rely on software programming, while photo taking and text messaging rely on hardware programming. However, regardless of their programming reliance, each of these activities used on a mobile phone is considered an app (Purcell, Entner, & Henderson, 2010). Purcell, Entner and Henderson (2010) defined mobile apps as "...end-user software applications that are designed for a cell phone operating system and which extend the phone's capabilities by enabling users to perform particular tasks" (p. 2).

Currently, 43% (or 35% of the U.S. population) of mobile telephone users (82% of U.S. adults) have either downloaded an app to their mobile device and/or purchased a mobile phone with preloaded apps. Of those who have mobile apps, about two-thirds (68%) report using the apps, representing roughly 24% of the total U.S. population (Purcell, Entner, & Henderson, 2010). In response to the growth of smartphone users, the mobile apps industry has also expanded, from eight app stores to 38 stores in 2009 (Miller, 2010). In short, the continuous growth of mobile apps allows smartphone users to remain engaged and their mobile phones to

remain a necessary tool. This trend to produce better functioning mobile apps furthers the development of the smartphone as a communication medium.

The use of mobile apps seems to be inversely related to age demographics. According to Purcell, Entner and Henderson (2010), 79% of 18-29 year-olds who have mobile apps reported using mobile apps, while 76% of 30-49 year-olds and 50% of 50 year-olds and older use mobile apps. Purcell, Entner and Henderson also detected that young mobile users are more actively engaged in downloading apps than their older counterparts. About 39% of 18-29 year-olds downloaded mobile apps regularly, compared with one in ten of all U.S. adults with a smartphone (Purcell, Entner, & Henderson, 2010).

Nielsen, a media data service firm, surveyed smartphone users who downloaded an app within the last 30 days to determine the top downloaded mobile apps categories (The Nielsen Company, 2010). As shown in Table 1, the results indicate that games, news/weather and maps/navigation are the top categories for downloaded apps by smartphone users. This analysis also found that more than half (57%) of smartphone users, who recently downloaded an app, use mobile apps on a daily basis; 42% of them use apps multiple times a day. The most popular mobile apps reported in their study are: The Weather Channel, Google Map, Facebook, Urbanspoon, Pandora, and generic puzzle or strategy game apps (The Nielsen Company, 2010).

Table 1: Top Downloaded Mobile App Categories

Category	% of Users who downloaded an app
Games	60%
News/Weather	52%
Maps, Navigation and Search	51%
Social Networking	47%
Music	43%
Entertainment/Food	34%
Shopping	24%
Communication	21%
Travel/Lifestyle	18%

Note: Data obtained from The Nielsen Company (2010)

The Nielsen report also identified several interesting characteristics of mobile apps use. According to the report, 70% of recent downloaders use mobile apps when they are alone, and 53% use apps while awaiting something/someone. In addition, the use of mobile apps takes place throughout the day in various situations, including at work (47%) and commuting (36%) (Smith, 2009; The Nielsen Company, 2010).

Smartphone users implement mobile apps for various reasons such as convenience, instant information access, and relationship building and maintenance. Wheaton (2010) identified four behavior-shifting changes caused by mobile apps: instant information gratification (e.g., Google and Wikipedia apps), increased spontaneity (e.g., Urbanspoon app), never lost (e.g., GPS, map apps), and perpetual family reunion (e.g., Facebook and other social networking apps).

Miller (2010) added two additional purposes for mobile apps: entertainment and commercial/purchase. A large category of mobile apps provides games (e.g., board games, mind teasers) and entertainment information (e.g., sports scores, celebrity gossip). Mobile apps are also beneficial when searching for product information or purchasing products, and some mobile apps equipped in certain mobile phones (e.g., iPhone) are designed to link to specific stores for instant purchases (e.g., iTunes app).

Blossom (2009) defined four characteristics of mobile apps—functionality, virtual exchange, mobile-based, and multi-user interface. Functionality refers to the content design of an app, allowing each app to run on one or more mobile platforms. Virtual exchange addresses mobile app access, as mobile apps are downloaded from an electronic (or virtual) store. Mobile-based refers to the platform of apps, indicating a difference between mobile app interfaces,

designed for mobile phones, and web browsers. Lastly, multi-user interface explains how mobile app content can be shared with other users (e.g. sending and receiving a text message).

In sum, mobile technology allows for digital information use to take place throughout the day without relying on a location with an Internet-accessible computer. Instead, mobile technology allows users to access information from anywhere and at any time. Therefore, because mobile apps can gratify users' various needs, such as information, entertainment, communication, convenience and commercial/purchase, Zittrain (2008) predicted mobile technology itself has the potential to change people's media usage patterns, especially in regards to Internet use.

Previous Research on Mobile Apps

Three lines of research have been developed regarding mobile apps. The first line of research focuses on mobile advertising (Barnes, 2002; Dogac & Turner, 2002; Lee & Benbasat, 2004; Varshney & Vetter, 2002). The most common type of mobile app study in this line of research focuses on the strengths and limitations of mobile advertising. Bauer, Grether and Leach (2002) produced one of the first studies proposing acceptance factors that lead mobile apps users to approve of mobile advertising. They argued that mobile ads focusing on time, location, information, and customization are more accepted by consumers than irrelevant and untargeted mobile advertisements (Bauer, Grether, & Leach, 2002). A similar study on advertising effectiveness found that mobile consumers are more likely to accept mobile advertisements for certain products and services, including weather and traffic information, movie releases and job openings (Ma, Suntornpithug, & Karaatli, 2009).

Vantanparast and Asil (2007) found attitudes towards overall mobile advertising, including advertisements within mobile apps, were affected by three main factors: privacy (the

degree of personal information not known to others), purpose (the gratification sought by using a mobile app), and performance (consumer response toward a mobile advertisement). More specifically, mobile app users were found to prefer relevant, tailored advertisements without feeling a violation of privacy. Because mobile phones are personal devices containing private information, respect of consumer privacy is believed to be an essential factor in mobile advertising, and, thus, advertising in this medium is likely to be well accepted by those consumers who opt-in to specific ads (Vantanparast & Butt, 2010). This indicates that although users prefer customized advertisements, due to the direct, one-to-one connection between a consumer and a mobile phone, mobile users prioritize their privacy over commercial messages.

The second line of mobile app research addresses the changing role of app developers. By comparing the platforms (the types or brands of mobile phones) and portals (the method used to gain information) of smartphones, Holzer and Ondrus (2011) explored the differences between mobile apps, such as open/closed technology, centralized/ decentralized portals, diverse/uniform devices, and device integration. They found that closed technology forces app developers to create apps under standard guidelines (e.g., size and features) while open technology allows anyone to create any type of app or content. Similarly, centralized versus decentralized portals and diverse versus uniform devices are other technological differences between current mobile platforms (i.e. Apple and Nokia). These differences accordingly lead app developers to create different apps for different mobile devices. However, the continuation of smartphone technology adoption may eventually alter this, creating a set of uniform standards for app developers across all mobile phone types (or platforms), allowing one app to be run on numerous types of smartphones (Holzer & Ondrus, 2011).

The third line of mobile app research focuses on users. West and Mace (2010) studied the introduction of the Apple iPhone, a popular smartphone, into the U.S. and European markets, discovering that the widespread acceptance and adoption of the Apple iPhone relied heavily on the benefits (e.g., simplicity, information access, speed, etc.) of the product. They argued the Apple iPhone's success is due to the Safari browser app, an app connecting mobile users to a familiar view of the online world (West & Mace, 2010).

Verkasalo et al. (2009) studied the use of the Internet, games and maps on mobile phones by installing an activity-tracking device on smartphones in order to gather unbiased data. Using perceived behavioral control, defined as consumer perceptions of ease/difficulty of app use, Verkasalo et al. (2009) found that technological barriers negatively impact behavioral control and result in the avoidance of the use of certain mobile apps. In addition, the type of mobile phones (e.g., smartphone and non-smartphones) was found to be an important indicator of app use. The results showed that smartphone holders use mobile apps more than non-users. In addition, smartphone users are found to be more active in mobile data communication, such as text messaging, than users with basic mobile phones (Sinisalo & Karjaluoto, 2009).

Expansion of the Internet

The Internet in modern times barely resembles that originating in the late 1960s. In the late 1960s, the Internet emerged from two research projects implemented by the Defense Advanced Research Projects Agency (DARPA). The first project, ARPAnet (Advanced Research Projects Agency Network), allowed DARPA researchers to share information on computers using a 50KB leased line. The ARPAnet used Network Control Protocols (NCP), which initiated three Internet uses: remote computing, file transfer and electronic mail (Weis, 1992). The second project, taking place in the mid-1970s, furthered the ARPAnet by attempting to interconnect

ARPAnet with other networks through a series of protocols. This led to Transmission Control Protocols/Internet Protocols (TCP/IP), developments essential to the functioning of the Internet (Weis, 1992). Collectively, the ARPAnet and the developed protocols became the Internet. In the 1980s, this technology was used by a wider range of researchers and funded by the government and universities in addition to research laboratories (Weis, 1992). By the early 1990s, demands from the private sector drastically expanded the number of Internet users as the adoption of desktop computers grew within households (Leiner et al., 1997). Additionally, in October, 1994, Netscape's Mosaic browser became available to the public and was downloaded by thousands of people (Rainie et al., 2005). Since then, the use of the Internet drastically increased and the Internet has become an important part of public daily life.

Previous research on this medium has identified three major factors that contributed to the rapid growth of the Internet browsers during the early stages: satisfied needs, problem solving ability and high-speed broadband technology (Weis, 1992). The Internet browser allows users to satisfy their needs by obtaining relevant information and communicating with others (mainly through email and instant messaging). In addition, the technology behind the Internet is seen as a tool for problem solving, allowing users to quickly seek and access information. The speed of the Internet furthered user abilities to communicate and gain information instantaneously.

Compared to early adopters of this medium, whose uses were limited to mainly communicating and searching, late majority users implemented the Internet in more various ways (Wells, 2008). While appreciative of the merits of electronic communication, current users also enjoy other daily functions, which they would normally do offline with traditional retailers and media, such as shopping and gaining information (Rainie et al., 2005). In addition, the surge

of businesses online, such as company websites, online newspapers and other online business tools, further expanded the possibilities of use for Internet users. Indeed, Internet purposes grew in tandem with business use.

Despite the popular use in the overall population, young adults (18-29 year-olds) are considered more dominant users of the Internet than other population segments. For instance, 93% of individuals within this age group use the Internet, compared to 81% of 30-49 year-olds and 70% of 50-64 year-olds (Rainie, 2010). Furthermore, compared to other demographics, more young adults (48%) have accessed the Internet from a third place, a location other than home or work (Harwood & Rainie, 2004). In terms of income, 95% of Americans earning \$75,000 or more a year use the Internet at least occasionally. This is significantly different from Internet users below a \$75,000 income, where only 70% occasionally use the Internet (Jansen, 2010). Higher income individuals are also found to participate in more activities online, including donating to charities, conducting online product research and using cell phones to send or receive email (Jansen, 2010).

In terms of gender, Internet users are fairly similar. However, the purpose of using this medium varies between males and females. Males are more likely to access news, sports, politics, weather and financial transactions online while women are more likely to visit websites for health information, religious news, maps and directions and send emails to friends and family (Fallows 2005; Rainie et al., 2005).

Based on Internet use, Meyen, Pfaff-Rüdiger, Dudenhöffer and Huss (2010) categorized Internet users into seven categories: virtuosos, addicts, aficionados, professionals, companions, affiliated, and cautious. The virtuosos are those who incorporate the Internet into their daily routines and find the Internet essential to everyday life. The addicts are those who use the

Internet throughout the day while aficionados are those who typically go online once a day. The professionals utilize the Internet mostly for work while the companions and the affiliated are online for social purposes (e.g., social networking sites), but at different frequency levels. Finally, the cautious are defined as Internet users who go online several times a week to visit Internet search engines (e.g., Google), online encyclopedias (e.g., Wikipedia) and their favorite online stores. In sum, personal habits and social positions, rather than practical reasoning, often determine Internet use (Meyen et al., 2010).

In general, the simplicity and convenience of receiving information are two important features of Internet use, resulting in more than half (58%) of the U.S. adult population choosing Internet browsers as their preferred information medium for various issues such as health, education, job training, and taxes (Wells, 2008). In addition, faster connections, ease of use and media familiarity lead to users creating and sharing photos, writings and audio files (Wells, 2008).

The recent surge of social networking websites (SNS, such as Facebook, Twitter and MySpace) is also believed to increase the use of the Internet. Social networking websites allow Internet users to connect with one another to build and/or maintain relationships. People also communicate via online groups, forums, personal websites, blogs, etc. Statistically, 84% of Internet users belong to groups that have an online presence (Rainie et al., 2005). In addition to social purposes, Internet users seek commercial purposes online through the research and purchase of goods (Meyen et al., 2010). In fact, 41% of users claim that the Internet helps them shop (Rainie et al., 2005). More specifically, 68% of Internet users have purchased a product or service online (Fallows, 2005) and 83% of adult Internet users have researched a product online prior to making a purchase (Fox & Fallows, 2003). Therefore, considering the benefits obtained

from Internet use purposes, Internet gratifications can be best cataloged into five categories: information, communication, convenience, entertainment and commercial/purchase.

Based on these purposes of Internet use, Ko, Cho and Roberts (2005) identified two types of Internet users: seeker and surfer. One type of Internet user is a seeker who is goal-directed and in search of specific information or assistance in completing a task. Seekers use the web by expanding optimal time and directing cognitive effort towards only relevant sites and links likely to assist in reaching a desired goal. Thus, seekers are found to be more likely to prefer online control and customized content (Ko et al., 2005). On the other hand, a surfer is described as an Internet user who accesses digital information for entertainment purpose. Surfers, in comparison with seekers, are not as efficient in managing their time online (Hoffman & Novack, 1996; Li & Bukovac, 1999; Stanaland & Tan, 2010). Furthermore, Stanaland and Tan (2010) found that seekers prefer websites with visually simple designs while surfers prefer visually complex websites. One important fact regarding seekers and surfers is that this division is not entirely mutually exclusive per se and an individual can switch between being a seeker or a surfer, depending on the purpose of Internet use.

Digital Information Access and Privacy Concerns

The development and expansion of the Internet opened new doors in the field of marketing, such as content-targeted behavioral advertisements, electronic mail pieces and company websites. More directly, the Internet enables marketers to gather more personal information on individual users in order to convert them to a target audience. Tracking consumers ranges widely from identifying brand preferences (e.g., visiting the website of Target but not Wal-mart) to political affiliations (e.g., donating online to a particular party) to personal interests (e.g., using search engines to look up recipes). Marketers use the information obtained

through this tracking process to perform tailored targeting according to user preferences, likes and dislikes, etc. However, because Internet users are typically unaware of companies utilizing personal information, the violation of personal privacy on the Internet becomes a concern. Internet users increasingly feel a loss of personal privacy as marketers track and use personal information obtained without the user's permission, awareness or approval.

The most common method in which marketers gain personal information is through cookies, which are small text files used for tracking user information. When an individual accesses a certain website, the website places a cookie on the user's computer to assist the website in recognizing a returning user in the future. A persistent cookie is similar, but able to track users in relation to online advertisements, assisting marketers in diversifying advertisements shown to an individual Internet user (Turow, Hoofnagle, Bleakley, & Hennessey, 2009). Removal of this type of cookie is relatively easy and cause cookie-installing websites to lose track of site use information. However, a newer type, known as a flash cookie, causes a bigger privacy concern because of its difficult uninstallation process and possible self-expansion ability (Turow et al., 2009).

In addition to cookies, search engines have created a mechanism for gaining user's personal information. For instance, a search engine uses keywords to connect the individual searcher to the information desired. In this process, the keywords are automatically connected to the user's computer through a unique Internet Protocol (IP) address. However, through the use of a log, defined as a compilation of keywords attached to an IP address, search engines can gain extensive insight on individual preferences, including characteristics, interests, family life and political preferences. Logs can be used separately or together to create a data-mine, a compilation of information tracking an individual's Internet use such as searches, e-mails, shared

information and other online activities. Thus, data-mine and log information can characterize an individual Internet user, which can then be used to target that user, either through spam mail, tailored behavioral advertisements, or organization campaigns.

Nonetheless, search engines are not solely responsible for creating logs. All content placed on the Internet can be logged in some form. That is, content placed through blogging, Twitter and e-mail can also be harbored by the owning companies. In addition, materials posted on personal websites, including profiles on social networking websites, create a permanent record of personal information that is often used by marketers. Moreover, data gathering and mining are not restricted to personal computer platforms any more. In addition to behavioral information accessed through emails, SNS and search engines, the use of certain mobile apps, such as a GPS location finder, also provide personal information to the service providing company unconsciously.

Previous Studies on Internet Privacy

Due to the interconnectedness of online consumers and online marketers, these two types of Internet users create one overlapping area of research regarding Internet privacy. Turow and colleagues (2009) conducted a survey with 1,000 individuals to determine the relationship between behavioral advertising and privacy and found that 66% of respondents did not want to find tailored ads on the websites they visit (Turow et al., 2009). This figure became even higher (84%) when they were informed of data-mining techniques conducted by the websites (Turow et al., 2009).

Much of the information acquired by marketers is through social networking websites, where the majority of users provide their personal information willingly in order to fully utilize functions offered. For instance, 82% of social networking site users allow others to access their

personal pages. Among them, 60% permit anyone to access their personal information while 38% limit this to only allowing their friends to view their personal content (Madden et al., 2007). However, a large number of social networking site users (about 50%) are not aware of their information being used for content-targeted behavioral advertising (Hoy & Milne, 2010).

According to Madden, Fox, Smith and Vitak (2007), 85% of adults believe that controlling access to personal information on the Internet is extremely important; however, about half (54%) of Internet users actually take steps to limit the amount available to other online users. They categorized Internet users into four groups based upon the amount of information they provide: confident creatives, concerned and careful, worried by the wayside, and unfazed and inactive. Confident creatives are the smallest group of Internet users (17%) who actively upload content and information but counteract this action by taking steps to limit personal information availability. The concerned and careful (21%) and the worried by the wayside (18%) are concerned about personal privacy. However, only the former group attempts to control their personal content. Finally, the unfazed and inactive group is the largest group comprised of 43% of Internet users who do not worry or take steps to limit the amount of personal information accessible in the online world.

In terms of gender, women who update and provide more personal information on social networking sites than men (Tufekci, 2008), are more concerned about privacy issues and content-targeted behavioral advertising than their male counterparts (Fogel & Nehmad, 2009). Similar to women, young adults have higher privacy concerns than other generations. Turow and colleagues (2009) detected that 55% of 18-24 year-olds do not prefer the use of content-targeted advertising and 86% do not want content-targeted advertising created based on their online actions and activities. Furthermore, Pew research found that about two-thirds of teenagers who

own social networking accounts make their personal profile page invisible to random visitors (Lenhart & Madden, 2007). Additional research on privacy concerns suggest individuals with higher education levels are more concerned about Internet privacy than individuals with less education (Sheehan, 2002).

Nonetheless, surprisingly, the majority of Internet users is still less concerned with how much their private information is accessible online. Madden, Fox, Smith and Vitak (2007) found that 60% of Internet users report not being concerned about the availability of their personal information. Only about 30% of these individuals actually attempt to limit their digital footprint, which is a digitized version of one's personal information (Madden et al., 2007).

Due to its short history, little research regarding privacy has been conducted regarding smartphones and mobile apps. One of the few studies on privacy research focuses on platform (computer vs. mobile) considerations. According to a 2010 study by the National Cyber Security Alliance, when asking participants to select their preferred medium in regards to privacy, 87% of individuals reported feeling safer accessing the Internet from a PC rather than a mobile phone (National Cyber Security Alliance, Norton by Semantec, & Zogby International, 2010). When asked about privacy concern within each individual medium, 24% of users reported feeling safe on a PC while 18% reported feeling safe on mobile phone.

Theoretical Understanding: Uses and Gratifications Theory

According to the uses and gratifications theory, an individual's certain needs drive specific communication behaviors, including selecting a certain medium and the use of it. Thus, a medium is typically selected when it has the ability and resources to satisfy a desired need.

The uses and gratifications theory suggests an individual's social and psychological circumstances influence the formation of certain needs, which in turn influence selection and use

of media to gain satisfactory outcomes of those needs (Katz, Blumer, & Gurevitch, 1974). McQuail, Blumler and Brown (1972) identified four types of motivational uses of media: personal identity/individual psychology, diversion, personal relationship, and surveillance. Personal identity/individual psychology use categorizes self-understanding or reality exploration. This indicates the use of a particular medium to explore, develop and understand one's self. Diversion use includes escapism and emotional release in which an individual uses a medium to avoid reality. Personal relationship use considers social use of information or using a medium to assist in relationship development and maintenance. Finally, surveillance use includes information that either affects or assists an individual in obtaining information (McQuail, Blumler, & Brown, 1972). In a later study, Katz, Gurevitch and Haas (1973) suggested five alternative needs categories, comprised of cognitive needs (e.g., acquiring information), affective needs (e.g., emotional experiences), personal integrative needs (e.g., strengthening credibility and status), social integrative needs (e.g., strengthening personal contacts), and tension release needs (e.g., escape and diversion).

Regarding media use, Finn (1997) argues that the most critical components are an individual's social and psychological aspects of needs, different media exposure patterns, and engagement differences in medium activities. With the regard to audience gratification, Canary and Spitzberg (1993) posit that internal, emotional factors (e.g., loneliness) determine the level of gratification while Rubin and Windahl (1986) suggest a need for more external, social structure considerations that influence the extent of satisfaction.

A group of researchers have attempted to modify the theoretical underpinning of the uses and gratifications theory. For example, although the uses and gratifications theory assumes audiences' active use of media, Rubin (1994) argues that certain media use, such as escape and

diversion uses, can result in passive media use. In addition, by combining the uses and gratifications theory with the dependency theory (Ball-Rokeach & DeFleur, 1976), which argues consumers rely on media to obtain information, but in unequal amounts, Rubin and Windahl's (1986) uses and dependency model categorizes individuals within social systems into those using a medium and those dependent upon a medium. Furthermore, the expectancy value model (Palmgreen & Rayburn, 1982; Palmgreen, Wenner, & Rayburn, 1980) grouped gratifications into two types: gratifications sought and gratifications obtained. Gratifications sought develop if a user believes a medium has specific characteristics that are relevant to the need the individual is looking to fulfill. On the other hand, gratifications obtained develop over time, as past, individual experiences with a medium influence future expectations (Palmgreen & Rayburn, 1982).

Application of U&G to Digital Information Access Media

The expansion of the Internet and mobile phones seems to rejuvenate research on the uses and gratifications theory since the use of these new digital information access media is expected to gratify specific needs which cannot be satisfied via traditional media use (Charney & Greenberg, 2001; Flanagin, 2005; Johnson & Kaye, 2010; Kaye, 2005; Kaye & Johnson, 2002, 2006; Kink & Hess, 2008; LaRose, Mastro, & Eastin, 2001; Leung, 2001; Lin, Salwen, & Abdulla, 2005). Meyen, Pfaff-Rüdiger, Dudenhöffer and Huss (2010) identified three types of uses and gratifications associated with Internet use: economic, cultural and social capital. Economic capital is assumed to be a gratification of all Internet users, either through online purchasing or saving time. Cultural capital focuses on improving knowledge or solving problems while social capital addresses maintaining relationship ties or establishing new ties. Using these aspects through a uses and gratifications lens, audiences are expected to benefit in some way from the Internet (Meyen et al., 2010).

A group of researchers applied traditional media gratifications to the Internet, attempting to discover similarities and dissimilarities between audience needs, including entertainment and escape. General findings indicate that the capabilities of the Internet to consume and produce media content create certain needs such as convenience, identity, personal fulfillment, social surveillance, anti-media sentiment that do not exist in traditional media (Charney & Greenberg, 2001; Ferguson & Perse, 2000; Flanagin & Metzger, 2000; Kaye, 2005; Li, 2007).

Furthermore, using a survey of 300 Internet users, Kink and Hess (2008) compared the use of Internet search engines (e.g., Google, Yahoo) with that of three traditional information sources (e.g., encyclopedias, yellow pages and directory assistance). Kink and Hess (2008) found that Internet search engines meet a range of users' needs related to information seeking, such as up-to-date information, versatility, mass information, speed and convenience (Kink & Hess, 2008). Similarly, Fallows (2004) and Kaye and Johnson (2003) found that information gathering is one of the strongest motives for Internet use, resulting in less time spent collecting information in comparison to traditional media vehicles.

In terms of social networking websites, previous research found that an integration of online and offline communication fulfills the gratifications of social media users (Baym, Zhang, & Lin, 2004; Squires, 2003; Quan-Hasse, 2007). Similar to the study conducted by Kink and Hess (2008), which assessed the use of Internet search engines in comparison to traditional information sources, Quan-Haase and Young (2010) compared the uses and gratifications of Facebook and Instant Messenger (IM), an instant online messaging program. Results indicated similar uses between Facebook and IM, as both communication tools were used as a pastime activity. However, the types of the gratifications from the two tools were different. Facebook gratifications included learning about social events, friends' activities and social information

about peers. On the contrary, because of its one-on-one communication specialty, IM was found to be more useful for deeper social exchanges between two individuals. Thus, social information was found as a key difference between the two communication tools (Haase & Young, 2010).

In a different line of research, numerous studies address gratifications received through online news consumption, identifying basic needs such as surveillance and voter guidance (Flanagin & Metzger, 2000; Kaye & Johnson, 2002; Lin & Salwen, 2006). Similarly, past research found surveillance, information, convenience, and social utility as four major needs associated with Internet users seeking political content outside of major news sources from political blogs (Kaye & Johnson, 2006; Zhang, 2006).

Focusing on unintentional needs, researchers attempt to understand Internet addiction through this theory. Widyanto and McMurrin (2004) found that the amount of Internet use positively correlated with an individual's extent of Internet addiction symptoms. Additional studies also suggest hours spent using the Internet medium is a predictor of Internet addiction (Kim & Haridakis, 2009; Leung, 2004). Kim and Haridakis (2009) extended this line of research further, suggesting motivations of habitual entertainment and escape positively predicted higher levels of Internet addiction. They broadened this concept by claiming some motivations for accessing the Internet (e.g., escapism) are more harmful than others (Kim & Haridakis, 2009).

Regarding the use of mobile phones, Leung and Wei (2000) found that, through an analysis of 417 surveys, users were generally satisfied with its mobility, immediate access, sociability, information seeking and status. In other words, in addition to motivations of traditional telephony (e.g. sociability and instrumentality, Dimmick & Sikan, 1994), mobile telephone motivations include information, convenience and communication. The use of mobile phones allows for instantaneous social interactions via wireless connections, allowing users to

gain information and psychological reassurance. In addition, previous studies further expanded motivations of mobile use by adding two new needs: pastime/entertainment uses and fashion/status functions to improve individuals' image as more up-to-date and tech savvy, portrayed by a user owning the latest technology released on the market (Leung & Wei 1998, 2000; Peters & Allouch, 2005). Furthermore, recent research identifies relaxation, a particular form of entertainment, and personal business as additional motives for mobile phone use (Jin & Choi, 2005; Jun & Lee, 2007).

Similarly, studies focusing on mobile game apps identified entertainment as the strongest gratification factor gaining from mobile apps (Casey et al., 2007; Lee, Goh, & Chua, 2010). Lee, Goh and Chua (2010) conducted a survey of 203 individuals to test gratifications of using Indagator, a mobile game app allowing multiple player use and collaboration, and found significant effects of motivations on intention to use the game. This gaming entertainment motivation was comprised of information discovery, information quality, socialization and relationship maintenance (Lee, Goh, & Chua, 2010).

CHAPTER 3

RESEARCH QUESTIONS

The use of mobile communication continues to increase. Along with advanced mobile technology, various mobile apps have been developed and replaced many functions that have previously been satisfied by traditional media and traditional Internet access using Internet browsers. The uses and gratifications theory suggests that people actively use media in a variety of ways for multiple purposes and are, therefore, in control of communication. The uses and gratifications theory may rejuvenate itself with the introduction of digital information access devices (e.g., Internet browsers and mobile apps). Because of its young history, however, mobile apps have not been empirically studied from the uses and gratifications perspective. Nonetheless, considering the popularity and numerous benefits of mobile apps as a digital information access tool, it is possible to predict that the mobile apps will increasingly become the medium of choice for digital information access in the near future. As an exploratory research, this research attempts to determine how young adults, which is the largest demographic who owns and operates Internet browsers and mobile apps, use digital information access devices for certain needs, commonly identified in both the Internet browser and mobile app uses: information (information seeking), communication (the ability to create and maintain relationships), convenience (instant gratification and mobility), entertainment (past time, escapism) and commercial/purchase (the research and/or purchase of a product). This study poses the following questions:

RQ1: Which digital information access modality (Internet browsers versus mobile apps) do young adults use more?

RQ1a: What digital information access modality do young adults use more when seeking information?

RQ1b: What digital information access modality do young adults use more when seeking communication?

RQ1c: What digital information access modality do young adults use more when seeking convenience?

RQ1d: What digital information access modality do young adults use more when seeking entertainment?

RQ1e: What digital information access modality do young adults use more when seeking commercial/purchase?

In addition, online privacy concerns are increasing as more online, personal information is available to more people, including marketers. Considering the uses and gratifications theory, the degree of perceived privacy concerns might deter young adults from gratifying certain needs.

This study asks the following questions:

RQ2: How does young adults' level of privacy (high versus low) influence the use of digital information?

RQ2a: How does young adults' level of privacy influence the use of digital information when seeking information?

RQ2b: How does young adults' level of privacy influence the use of digital information when seeking communication?

RQ2c: How does young adults' level of privacy influence the use of digital information when seeking convenience?

RQ2d: How does young adults' level of privacy influence the use of digital information when seeking entertainment?

RQ2e: How does young adults' level of privacy influence the use of digital information when seeking commercial/purchase?

Furthermore, to explore the interrelationship between the degree of perceived privacy (high vs. low) and digital information access modality (Internet browsers versus mobile apps), this study asks:

RQ3: How does young adults' degree of personal privacy interact with digital information access modality with regard to use digital information?

CHAPTER 4

METHOD

In order to address the research questions, this study conducted a survey of young adults who currently use a smartphone and Internet browser to access digital information. The independent variables of this study are digital information access modality and the degree of perceived privacy. The dependent variable of this study is media use, determined by five major needs of accessing digital information.

Research Participants

College students enrolled in selected mass communication courses at a large university participated in this study in exchange for extra credit. Based on the purpose of this study, this study recruited 201 participants who currently use both mobile apps and Internet browsers in accessing digital media information (e.g., Internet website information).

Student samples may not best represent the general population of mobile app users and Internet browsers users. However, student samples are typically composed of young adults, which are the largest represented age demographic in both digital information access modalities as well as the desired participants of this study. Thus, the results of this research are expected to provide valid findings.

Independent Variables

The independent variables in this study are digital information access modality and the degree of perceived personal privacy. First, digital information access modality includes two types: Internet browsers and mobile apps. Internet browsers are a more traditional method and are typically created for desktop or laptop computers to access online digital information. On the other hand, mobile apps can access digital information without going through a traditional Internet browser. Smartphone mobile apps include those apps pre-installed on a mobile device as

well as those purchased or downloaded by individual users. It should be noted that while Internet browsers and mobile apps are not the only technological devices able to access the Internet, they are most popular methods, making their selection as the representatives of digital access modality logical.

Second, the degree of perceived privacy is divided into two categories: high and low. This study adopted the Internet privacy scales constructed by Sheehan and Grubbs-Hoy (1999). Scale components include indicating a level of privacy concern about the following situations: “You receive e-mail from a company that you have (sent e-mail to in the past/recently visited their webpage/ have no idea how the company got your address),” “A company requests your e-mail address only to send information of interest,” “A notice on a webpage states that information collected (is used by other divisions of that company/may be sold to other companies,” “You are asked to provide (name/ names of newsgroups read/ your social security number) to access a homepage,” “You receive e-mail about a new product from (a company you currently do business with/ a known company you don’t do business with/ a company you’ve never heard of,” and “A webpage requires your email address to access the page. Upon registration, you will (receive a mouse pad/ receive a 24% discount on future purchases/ be entered in a contest to win a computer- value: \$1000).” Privacy was measured using a seven-point Likert-type scale, ranging from very unlikely (1) to very likely (7).

However, after checking the reliability and initial mean (4.48), this study dropped one item (“You are asked to provide your Social Security Number to access a homepage”), which showed an overtly high mean of 6.46 ($SD=1.37$) that caused an unreasonably high mean of 4.48 ($SD=.98$) in a seven-point scale. As a result, the mean of privacy scale was lowered to 4.03 ($SD=.92$) and achieved a reliable internal consistency, with the Cronbach’s alpha coefficient of

.82). Using this newly obtained mean (4.03), participants' perceived privacy levels were divided into high privacy and low privacy. This division resulted in an approximately equal distribution for the high privacy condition (96, 50.3%) and a low privacy (95, 49.7%) condition. This subject distribution in each condition is displayed in Table 2.

Table 2. Participant Distribution in Each Condition

		Perceived Privacy Level		Modality Totals
		High	Low	
Modality	Internet browsers	96	95	191
	Mobile apps	96	95	191

Dependent Variables

The dependent variable, digital information use, is measured in five frequent purposes of using digital information recognized by previous research: information, communication, convenience, entertainment, and commercial/purchase. *Information* purpose includes accessing content that will assist in gaining knowledge and is measured by participants' use of three information subscales: search engines, news websites, and other information sources (e.g., Wikipedia). *Communication* purpose includes building and maintaining relationships with family, friends, and/or acquaintances. For the communication purpose, this study determined participants' use of four communication subscales: personal email account, social networking websites (e.g., Facebook and Twitter), IM/Google Chat (instant messaging tool) and Sykpe (video communication tool). The third purpose, *convenience*, includes accessing digital information immediately, quickly, and while on the go. Participants' use of maps, weather and immediate information determined a convenience purpose. *Entertainment*, which includes accessing information in order to relax, pass time, and escape, was assessed by participants' use of four subscales: games, sports and hobby websites and entertainment-themed websites (e.g.,

YouTube). Finally, the purpose *of commercial/purchase* includes researching or purchasing products, coupons, or other materials available online. This scale was determined based on participants' use of retail websites, online retailers (e.g. eBay), coupons and electronic stores (e.g. iTunes).

In assessing participants' device usage based on these purposes, this study created a digital information use index. For the Internet browser condition, this study asked “If you were looking to (individual item in each purpose), how likely are you to use an Internet browser?” Using the scale constructed by Yi (1990a; 1990b; 1993), participants' responses were assessed on three seven-point bipolar scales anchored by likely-unlikely, possible-impossible, and probable-improbable. Then, index scores were formed by averaging the values of these items. The same assessments were performed for smartphone mobile apps condition using “If you were looking to (individual item in each purpose), how likely are you to use a mobile app?” Then, by averaging the values of individual cases, an index for each purpose for each device was constructed.

One cautionary note is that due to the multiple purposes of some mobile apps, some items in the purpose scales may not be mutually exclusive. However, for the purpose of this study, primary uses for each purpose are first considered. For example, the global positioning system (GPS) app can be associated with either information or convenience; however, this study identified the primary use of the GPS app as convenience by considering its primary function that facilitates users to find a way. In addition, this study included multiple items in constructing individual purpose scale. Thus, the inclusion of multiple items in creation and development of composite scales for each purpose are expected to lower this concern.

Survey Procedure

This study conducted an online survey. The survey was designed to last approximately 20 minutes and included the assessments of digital media uses of both Internet browsers and mobile apps as well as perceived privacy (See Appendix). The survey used in this study was designed to be completed under participants' own control, allowing participants to manage the timeliness of the survey and choose a proper location to complete the survey (e.g., home, computer lab, or their mobile devices). This ordinary setting is assumed to avoid forced answers that are frequently observed in a laboratory setting.

CHAPTER 5 RESULTS

Research Overview

This study investigated whether young adults use digital information access devices differently in various conditions and how the level of perceived privacy influences the use of digital information. This study included two independent variables, digital information access modality (Internet browsers versus mobile apps) and the degree of perceived personal privacy (high versus low). The dependent variable was digital information use, measured in five different purpose conditions (information, communication, convenience, entertainment, and commercial/purchase).

As an exploratory attempt, this study posed three research questions: how are digital access modalities used by young adults in various conditions, how does perceived privacy of young adults influence digital access modality use, and how do young adults' perceived privacy and digital access modality interact with each other with regard to digital information access. The data for this study were analyzed using a two-way repeated measure analysis via the Statistical Package for the Social Sciences (SPSS) 19. The effect of digital access modality (Internet browsers and mobile apps) was tested in a within-group comparison design while that of perceived privacy (high and low) were examined in a between-group comparison design.

A total of 201 college students participated in the study. Because this study requires research subjects who use both Internet browsers and mobile apps, a screening question regarding the ownership of a smartphone was placed at the beginning of the survey. As a result, this study eliminated ten participants who reported not owning a smartphone. Hence, the final number of research participants was reduced to 191. The majority of subjects were female (158, 82.7%) with 33 males (17.3%). The average age of participants was 20.16.

Internal Consistency Check

Because composite indices were constructed to create a subscale of each purpose for both digital access modalities, internal consistencies of subscales for each purpose were examined. For information scales, which contained the search engines, news websites and online information source subscales, Cronbach's alpha coefficients for assessing the internal consistency were .69 and .78, for Internet browsers and mobile apps, respectively. The results show that Cronbach's alpha coefficients of the indices for communication, which included the e-mail, social networking websites, IM/Google Chat and Sykpe subscales, were .60 and .58 for Internet browsers and mobile apps, respectively. For the convenience scale, composed of the maps, weather and immediate information subscales, Cronbach's alpha coefficients indicated .79 for the Internet browsers measure and .62 for the mobile apps measure. The Internet browsers and mobile apps indices for entertainment were created using the following subscales: online games, sports information, entertainment, and hobby, with Cronbach's alpha coefficients of .72 and .76, respectively. Finally, for the purpose of commercial/purchase, comprised of the retail websites, online retailers, and coupons subscale, Cronbach's alpha coefficients for assessing the internal consistency of the commercial/purchase scales were .77 and .89, for Internet browsers and mobile apps, respectively. Although reliability scores of some subscales were somewhat lower than the conventional Cronbach's alpha of .80, the reliability of these initial scale attempts is assumed to be consistent and reliable. The results of the reliability tests of each subscale for two digital access modalities are displayed in Table 3.

Table 3. Cronbach's Alpha Coefficients for Subscales

	Subscale	Cronbach's Alpha	
		Internet browsers	Mobile apps
Information	Search Engine	.96	.95
	News Website	.96	.95
	Online Information Source	.93	.93
Communication	Email	.88	.98
	Social Networking Website	.89	.96
	Skype	.94	.95
	IM/Google Chat	.95	.93
Convenience	Map/Directions	.91	.95
	Current Weather	.89	.95
	Immediate Information	.94	.95
Entertainment	Online Games	.95	.94
	Sports Information	.93	.93
	Entertainment	.96	.93
	Hobby	.95	.92
Commercial/Purchase	Retail Website	.96	.92
	Online Store	.97	.92
	Coupons	.97	.93

Data Screening and Assumption Check

Prior to conducting data analyses, the data were carefully screened to check whether they were reported accurately, and all the assumptions for two-way repeated ANOVAs were met. First, a visual inspection of a data file was performed to see if all the data were accurately entered. This study detected that 15 subjects shortened their responses for some of the subscales that consisted of three bipolar scales anchored by likely-unlikely, possible-impossible, and probable-improbable. After checking the patterns of their responses for the rest of the measures and other participants' responses, this study decided to replace those missing values with the means of the values placed in the participant's selected scale. Nonetheless, in order to check if this replacement resulted in different findings, each subscale was measured in two ways, one with missing values and one with mean replacements. No major differences were found.

Next, this study screened the overall dataset for univariate level errors, including out-of-range values, reasonable means, standard deviations, outliers, and non-linear relationships. The

results showed that the ranges between maximum and minimum values of most cases had fallen within the acceptable range of $\pm 2\sim 3$ standard deviations from the mean. Then, using an explore analysis, this study screened for extreme values. In this process, several possible outliers were detected. After reviewing these potential outliers, however, this study decided to include those outliers in the data analysis. First, there were only a few outliers, and those were not too far from the mean in a seven-point scale. In addition and more importantly, no participant was deemed to have multiple outlying responses in various measures. Therefore, list deletion would affect values associated with other dependent variables. However, data analysis was conducted both with and without the deletion of outliers to assure no significant differences appeared. The results show that the outliers did not have a significant impact on the data analysis. In addition to outlying responses, this study tested for homogeneity among responses. The *Levene* tests revealed a violations in some analyses. However, because approximately equal numbers of research subjects were assigned to the two between-subject comparison conditions (96 for the high privacy and 95 for the low privacy), it is expected that ANOVA should be robust to possible heterogeneity of variance. Finally, participants in this study were randomly assigned into only one of the two perceived privacy level conditions. Thus, this study achieved the assumption for the two-way repeated measures ANOVA.

Descriptive Statistics

The results of descriptive statistics indicated that the overall uses for Internet browsers were higher than those for mobile apps, except for the convenience purpose that showed a higher mean for mobile apps than for Internet browsers. The mean score for the information seeking purpose via Internet browsers was the highest, with 6.50 and a range of 3.56 to 7.00, followed by the convenience purpose using mobile apps (6.16, 1.00-7.00). The lowest mean score, 4.12, was

detected by the commercial/purchase purpose using mobile apps (4.12, 1.00-7.00). The descriptive statistics of major variables are displayed in Table 4.

Table 4. Descriptive Statistics of Major Variables

	Major Variable	Min.	Max.	Mean	Std. Deviation	Skewness	Kurtosis
Internet browsers	Information	3.56	7.00	6.50	0.77	-1.82	2.92
	Communication	1.00	7.00	5.27	1.32	-0.65	-0.01
	Convenience	0.89	7.00	5.52	1.46	-0.93	0.08
	Entertainment	1.50	7.00	5.37	1.34	-0.75	-0.01
	Commercial/Purchase	1.00	7.00	5.90	1.35	-1.45	1.59
Mobile apps	Information	1.11	7.00	5.15	1.59	-0.75	-0.37
	Communication	1.75	7.00	4.90	1.19	-0.07	-0.42
	Convenience	1.00	7.00	6.16	1.05	-1.78	4.10
	Entertainment	1.00	7.00	4.68	1.50	-0.29	-0.74
	Commercial/Purchase	1.00	7.00	4.12	1.90	-0.09	-1.13

Research Questions According to Purposes of Use

This study conducted two-way repeated measures analyses to test the main effect of digital access modality as well as the main effect of perceived personal privacy on digital information access. Furthermore, this study tested the interaction between perceived personal privacy and digital access modality. For testing the main effect of digital access modality, the mean differences between Internet browsers and smartphone apps, with regard to the five purposes (information, communication, convenience, entertainment, and commercial/purchase), were compared using a within-subject comparison approach. For the main effect of perceived personal privacy, this study investigated the mean differences between two privacy levels (high and low) for the five measures of purpose of use using a between-subject comparison approach. Finally, this study examined the interaction effects by determining the mean differences between two privacy levels (high and low) across two digital access modalities (Internet browsers and mobile apps).

Information Purpose

The means and standard deviations for information as a function of digital access modality and perceived privacy level are presented in Table 5. Figure 1 shows the relationship between subjects' information use in each condition.

Table 5. Mean statistics: Information Purpose

Information			Perceived Privacy Level		Modality Totals
			High	Low	
Modality	Internet browsers	Mean (Std.)	6.51 (.68)	6.49 (.85)	6.50 (.77)
	Mobile apps	Mean (Std.)	5.26 (1.37)	5.04 (1.78)	5.15 (1.59)
	Privacy Totals		5.89 (.82)	5.76 (1.03)	5.83

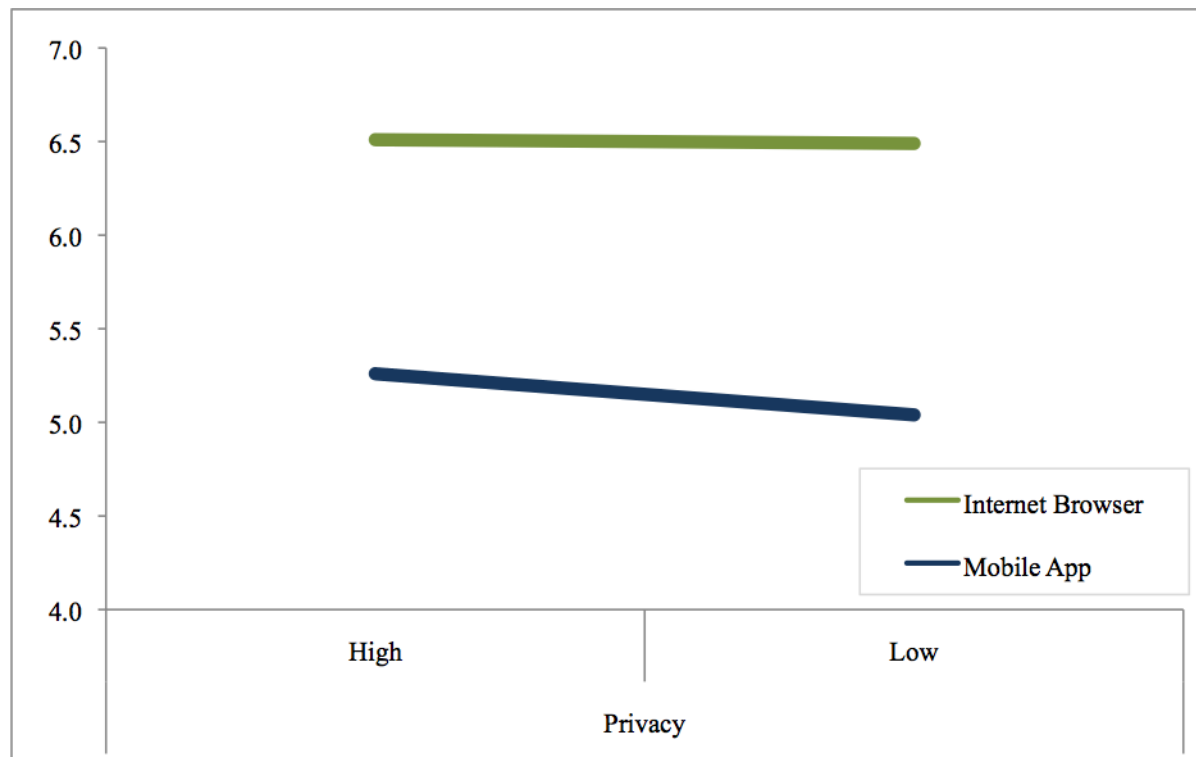


Figure 1. Information Purpose

First, a significant difference between two digital access modality types was detected, where participants reported the likelihood to use Internet browsers significantly more for

accessing online information ($M=6.50$, $SD=.77$) than mobile apps ($M=5.15$, $SD=1.59$), $F(1, 189) = 125.18$, $p < .001$, partial $\eta^2 = .40$.

Second, using a between-subjects comparison analysis, the impact of privacy on digital access modality use, in respect to information as a purpose of use, was investigated. However, the result failed to find a significant difference. Although those with high privacy ($M=5.89$, $SD=.82$) were more likely to access digital devices for the information purpose than those with low privacy ($M=5.76$, $SD=1.03$), the differences between the two groups were not considerable, $F(1, 189) = .84$, $p > .05$, partial $\eta^2 = .00$.

Third, the results regarding the interaction between privacy level and digital access modality were found to be not significant in respect to the information seeking purpose. The privacy scores for accessing information using Internet browsers was 6.51 ($SD=.68$) for high privacy and 6.49 ($SD=.85$) for low privacy, while that in the mobile apps category was 5.26 ($SD=1.37$) and 5.04 ($SD=1.78$), respectively. However, differences between these conditions was not statistically significant, $F(1, 189) = .63$, $p > .05$, $\eta^2 = .00$.

Communication Purpose

The means and standard deviations for communication as a function of digital access modality and perceived privacy level are presented in Table 6 and Figure 2 shows the relationship between subjects' communication use in each condition.

Table 6. Mean Statistics: Communication Purpose

Communication			Perceived Privacy Level		Modality Totals
			High	Low	
Modality	Internet browsers	Mean (Std.)	5.35 (1.23)	5.19 (1.41)	5.27 (1.32)
	Mobile apps	Mean (Std.)	4.89 (1.18)	4.90 (1.21)	4.90 (1.19)
	Privacy Totals		5.12 (.85)	5.04 (.97)	5.09

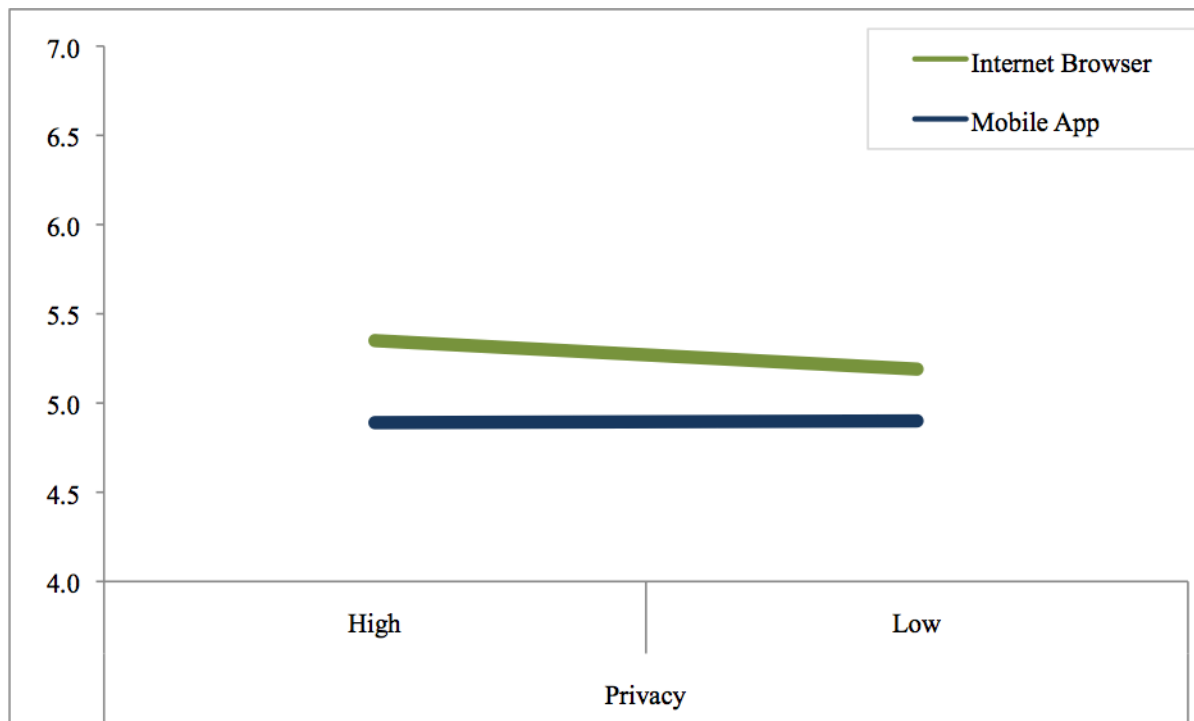


Figure 2. Communication Purpose

First, a two-way within-subject analysis showed a significant main effect for the types of modalities on the communication purpose, $F(1, 188) = 8.74, p < .01$, partial $\eta^2 = .04$. Similar to the information condition, young adults are more likely to use Internet browsers ($M = 5.27, SD = 1.32$) significantly more than mobile apps ($M = 4.90, SD = 1.19$) for communication purpose.

The impact of privacy on digital access modality use, in respect to the communication purpose, was investigated using a between-subjects comparison. The results showed that the difference between high privacy ($M = 5.12, SD = .85$) and low privacy ($M = 5.04, SD = .97$) in respect to the communication purpose was not significant, $F(1, 188) = .36, p > .05$, partial $\eta^2 = .00$.

Additionally, the interaction between digital access modality and perceived personal privacy, in respect to communication as a purpose of use, yielded higher privacy scores in Internet browsers (high privacy; $M = 5.35, SD = 1.23$ and low privacy; $M = 5.19, SD = 1.41$) than in

mobile apps (high privacy; $M=4.89$, $SD=1.18$ and low privacy; $M=4.90$, $SD=1.21$). However, differences between these condition was not statistically significant, $F(1, 188) = .48$, $p > .05$, $\eta^2=.00$.

Convenience Purpose

Table 7 displays the means and standard deviations for convenience as a purpose of digital access modality across different perceived privacy level. Furthermore, Figure 3 shows the relationship between subjects' information use in each condition.

Table 7. Mean Statistics: Convenience Purpose

Convenience			Perceived Privacy Level		Modality Totals
			High	Low	
Modality	Internet browsers	Mean (Std.)	5.55 (1.35)	5.49 (1.58)	5.52 (1.46)
	Mobile apps	Mean (Std.)	6.23 (.87)	6.09 (1.20)	6.16 (1.05)
	Privacy Totals		5.89 (.78)	5.79 (1.07)	5.84

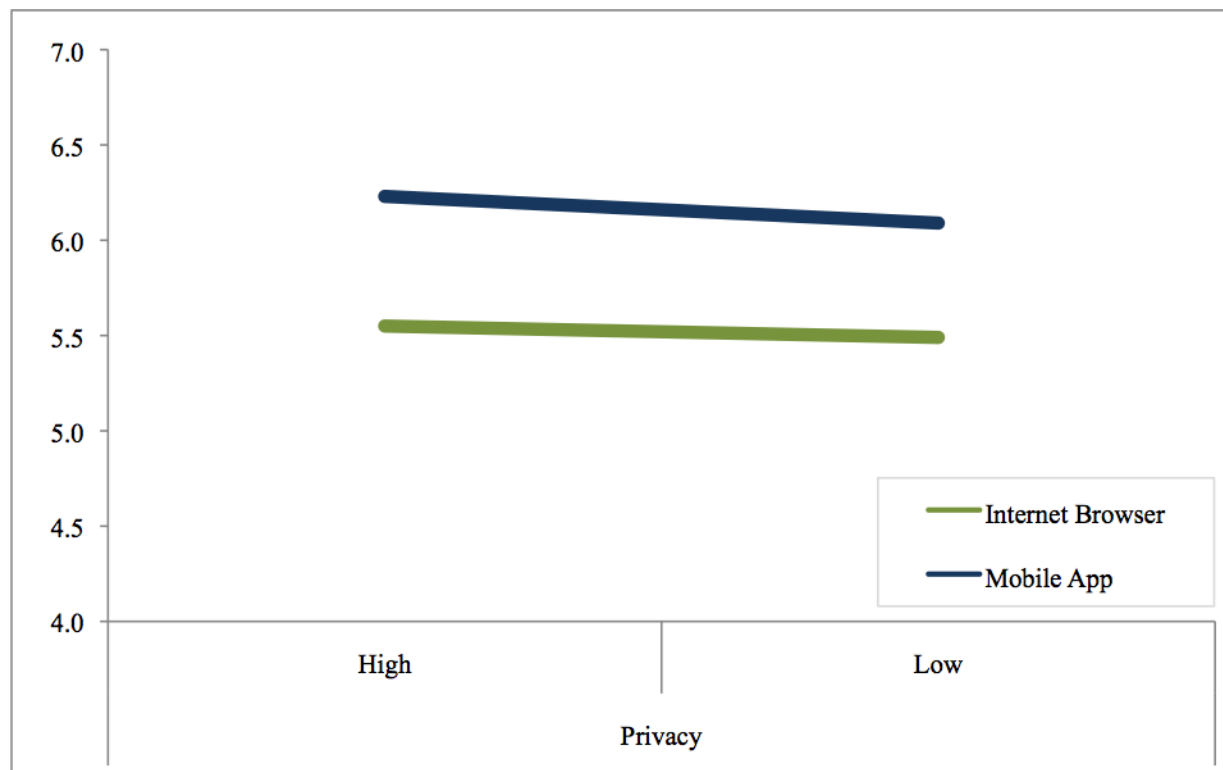


Figure 3. Convenience Purpose

This study detected a significant main effect between the types of digital access modalities regarding the convenience purpose. Participants significantly reported being more likely to use mobile apps for accessing digital information for convenience purpose ($M=6.16$, $SD=1.05$) than Internet browsers ($M=5.52$, $SD=1.46$), $F(1, 189) = 26.08$, $p < .001$, partial $\eta^2 = .12$.

The impact of privacy on digital information use, in respect to convenience as a purpose of use, was investigated; however, the result failed to find a significant difference. Although those with high privacy concern ($M=5.89$, $SD=.78$) are likely to access digital devices more for the convenience purpose than those with low privacy concern ($M=5.79$, $SD=1.07$), the difference between the two groups was not statistically considerable, $F(1, 189) = .57$, $p > .05$, partial $\eta^2 = .00$.

Consistent to other purpose conditions, interaction between privacy concern and digital access modality use in regards to the convenience purpose was not significant, $F(1, 189) = .09$, $p > .05$, $\eta^2 = .00$. Interestingly, however, dissimilar to the means of information and communication, the means were higher for mobile apps condition (high privacy; $M=6.23$, $SD=.87$ and low privacy; $M=6.09$, $SD=1.20$) than their Internet browsers counterparts (high privacy; $M=5.55$, $SD=1.35$ and low privacy; $M=5.49$, $SD=1.58$) across each perceived privacy level.

Entertainment Purpose

The means and standard deviations for entertainment as a function of digital access modality and perceived privacy level are presented in Table 8. Figure 4 shows the relationship between subjects' entertainment use in each condition.

Table 8. Mean Statistics: Entertainment Purpose

Entertainment			Perceived Privacy Level		Modality Totals
			High	Low	
Modality	Internet browsers	Mean (Std.)	5.44 (1.23)	5.30 (1.44)	5.37 (1.34)
	Mobile apps	Mean (Std.)	4.80 (1.34)	4.56 (1.65)	4.68 (1.50)
	Privacy Totals		5.12 (1.05)	4.93 (1.33)	5.03

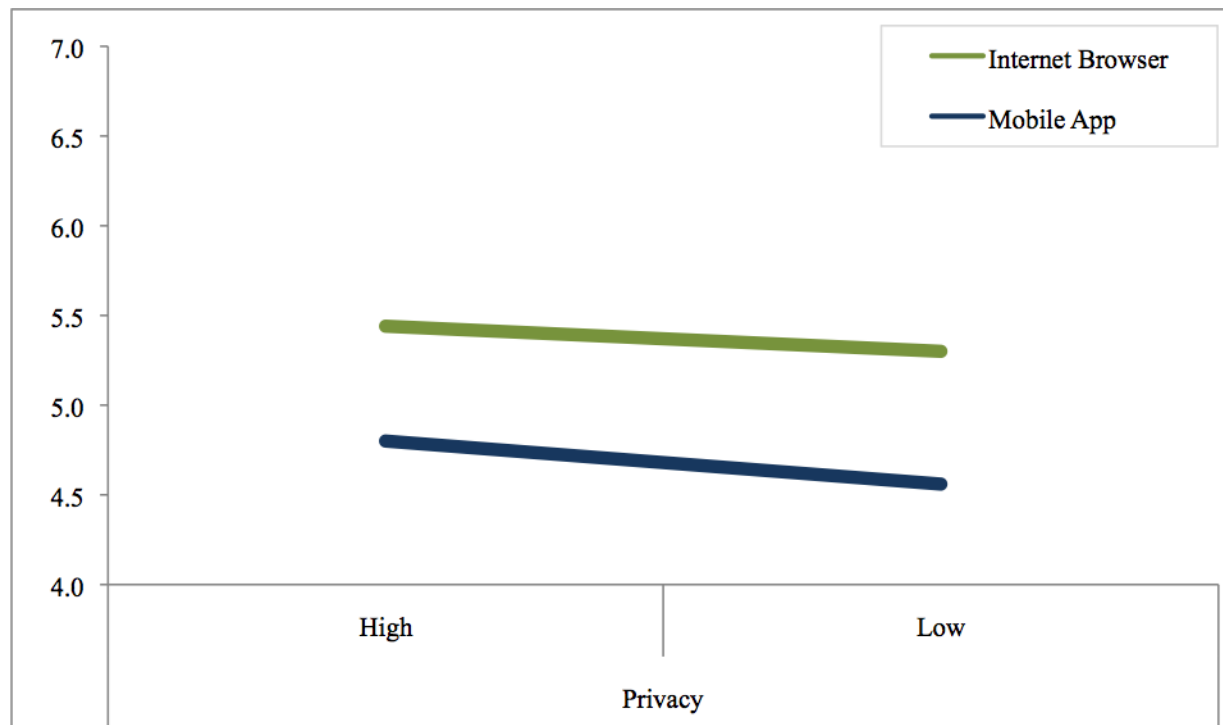


Figure 4. Entertainment Purpose

A within-subject comparison analysis displayed a significant main effect between two modalities in terms of the entertainment purpose, $F(1, 189) = 39.17, p < .001$, partial $\eta^2 = .17$. The means indicated that participants are likely to use Internet browsers more often than mobile apps when seeking entertainment as a purpose of accessing the online world ($M=5.37, SD=1.34$ and $M=4.68, SD=1.50$, respectively).

The impact of privacy on digital access modality use, in respect to entertainment as a purpose of use, was similar to the other results for various purposes of use. The results showed

that the difference between high privacy ($M=5.12$, $SD=1.05$) and low privacy ($M=4.93$, $SD=1.33$) in respect to the entertainment purpose was not significant, $F(1, 189) = 1.22$, $p > .05$, partial $\eta^2 = .01$.

The privacy scores for accessing entertainment using Internet browsers was generally higher ($M=5.44$, $SD=1.23$ for high privacy and $M=5.30$, $SD=1.44$ for low privacy) than those using mobile apps ($M=4.80$, $SD=1.34$ for high privacy and $M=4.56$, $SD=1.65$ for low privacy). However, the interaction between privacy levels and digital modality were not significant, $F(1, 189) = .19$, $p > .05$, $\eta^2 = .00$.

Commercial/Purchase Purpose

Table 9 displays the means and standard deviations for commercial/purchase as a function of digital access modality and perceived privacy level. In addition, Figure 5 shows the relationship between subjects' commercial/purchase use in each condition.

Table 9. Mean Statistics: Commercial/Purchase Purpose

Commercial/Purchase			Perceived Privacy Level		Modality Totals
			High	Low	
Modality	Internet browsers	Mean (Std.)	5.98 (1.26)	5.83 (1.44)	5.90 (1.35)
	Mobile apps	Mean (Std.)	4.16 (1.74)	4.09 (2.05)	4.12 (1.90)
	Privacy Totals		5.07 (1.16)	4.96 (1.48)	5.01

The result revealed a significant main effect for the types of modalities on the commercial/purchase purpose, $F(1, 189) = 159.30$, $p < .001$, partial $\eta^2 = .46$. Participants reported using Internet browsers ($M=5.90$, $SD=1.35$) more than mobile apps ($M=4.12$, $SD=1.90$), when accessing the web for commercial/purchase purpose.

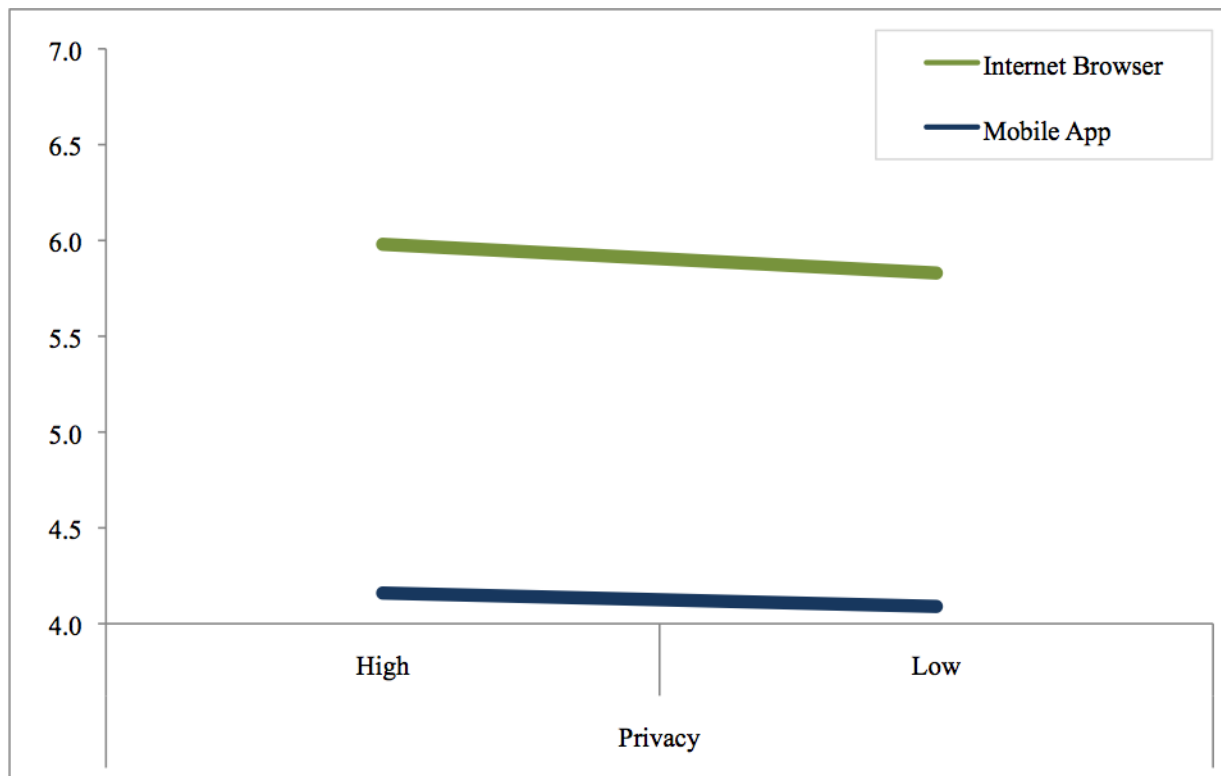


Figure 5. Commercial/Purchase Purpose

In addition, the result shows that the impact of the extent of perceived privacy on digital access modality use, in respect to the commercial/purchase purpose was not significant.

Although those with high privacy concern ($M=5.07$, $SD=1.16$) are more likely to access digital devices for the information purpose than those with low privacy concern ($M=4.96$, $SD=1.48$), the difference between two groups were not considerable, $F(1, 189) = .33$, $p > .05$, partial $\eta^2 = .00$.

In terms of interaction, similar to the other purposes of use, privacy scores were found to be higher in the Internet browser condition (high privacy; $M=5.98$, $SD=1.26$ and low privacy; $M=5.83$, $SD=1.44$) than in the mobile apps condition (high privacy; $M=4.16$, $SD=1.74$ and low privacy; $M=4.09$, $SD=2.05$) regarding the commercial/purchase purpose. However, differences among four conditions were not significant, $F(1, 189) = .06$, $p > .05$, $\eta^2 = .00$.

Overall Purposes of Use

Finally, to have a composite understanding of young adults' overall digital access modality use across their level of privacy, overall purposes of use was created. The means and standard deviations for overall usage, constructed by adding the five different purposes of digital information use, as a function of digital access modality and perceived privacy level are presented in Table 10. Figure 6 shows the relationship between subjects' purpose of use in each condition.

Table 10. Mean Statistics: Overall Purposes of Use

Overall Purpose of Use			Perceived Privacy Level		Modality Totals
			High	Low	
Modality	Internet browsers	Mean (Std.)	5.77 (.75)	5.66 (.94)	5.71 (.85)
	Mobile apps	Mean (Std.)	5.07 (.95)	4.93 (1.25)	5.00 (1.10)
	Privacy Totals		5.42 (.67)	5.30 (.94)	5.36

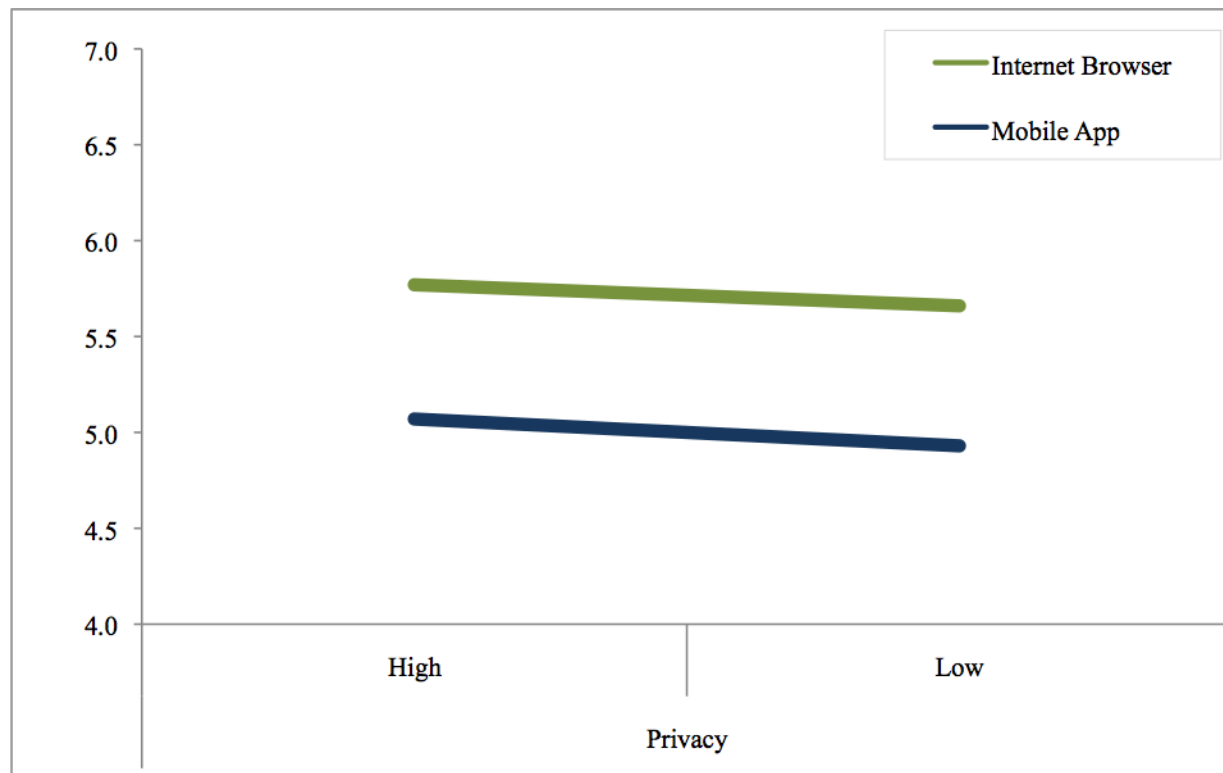


Figure 6. Overall Purposes of Use

The results indicated a significant main effect for the types of modalities on the overall use. In overall, participants reported being more likely to access digital information from Internet browsers ($M=5.71$, $SD=.85$) than mobile apps ($M=5.00$, $SD=1.10$), $F(1, 188) = 79.20$, $p < .001$, partial $\eta^2 = .30$. The results of the main effects of digital access modality for the collective purpose as well as the individual purposes are shown in Table 11.

Table 11. Within-Group Comparisons of Purposes of Use

Dependent Variables	Wilks' λ	F -value	Hypothesis df	Error df	Sig.	Partial η^2
Overall***	.70	79.20	1.00	188.00	.000	.30
Information***	.60	125.18	1.00	189.00	.000	.40
Communication**	.96	8.74	1.00	188.00	.004	.04
Convenience***	.88	26.03	1.00	189.00	.000	.12
Entertainment***	.83	39.17	1.00	189.00	.000	.17
Commercial/Purchase***	.54	159.30	1.00	189.00	.000	.46

Note: *** $p < .001$; ** $p < .01$; * $p < .05$

In terms of perceived privacy effect, consistent to the individual purpose conditions, the result failed to find significant difference. Although, again, those with high privacy ($M=5.42$, $SD=.67$) are likely to access digital information more than those with low privacy ($M=5.30$, $SD=.94$); however, the difference between the two groups were not considerable, $F(1, 188) = 1.16$, $p > .05$, partial $\eta^2 = .01$. Table 12 displays the results for the main effects of perceived privacy on digital information access for the composite purpose and individual purposes.

Table 12. Between Group Comparisons of Privacy and Purposes of Use

Dependent Variables	F -value	Hypothesis df	Error df	Sig.	Partial η^2
Overall	1.16	1.00	188.00	.283	.01
Information	.84	1.00	189.00	.362	.00
Communication	.36	1.00	188.00	.552	.00
Convenience	.57	1.00	189.00	.450	.00
Entertainment	1.22	1.00	189.00	.270	.01
Commercial/Purchase	.33	1.00	189.00	.566	.00

Note: *** $p < .001$; ** $p < .01$; * $p < .05$

Finally, a consistent pattern was found with the collective purpose scale of five purposes regarding interaction effects. The means for Internet browsers (high privacy; $M=5.77$, $SD=.75$ and low privacy; $M=5.66$, $SD=.94$) were generally higher than those for mobile apps (high privacy; $M=5.07$, $SD=.95$ and low privacy; $M=4.93$, $SD=1.25$), but the interaction between the level of perceived privacy concern and digital access modality was not significant, $F(1, 188) = .03$, $p > .05$, $\eta^2=.00$. The results of interaction analyses for the collective purpose of use as well as the individual purposes are displayed in Table 13.

Table 13. Interaction Comparisons of Privacy and Digital Access Modality

Dependent Variables	Wilks' λ	F -value	Hypothesis df	Error df	Sig.	Partial η^2
Overall	1.00	.03	1.00	188.00	.854	.00
Information	1.00	.63	1.00	189.00	.429	.00
Communication	1.00	.48	1.00	188.00	.489	.00
Convenience	1.00	.09	1.00	189.00	.763	.00
Entertainment	1.00	.19	1.00	189.00	.663	.00
Commercial/Purchase	1.00	.06	1.00	189.00	.814	.00

CHAPTER 6 DISCUSSION

Digital Access Modality Effects

The results of this study indicate that, overall, young adults are more likely to use Internet browsers over mobile apps when accessing online information. Indeed, in spite of the drastic increase of smartphone use among young adults, this study found that Internet browsers are still a popular means to access digital information. When broken into individual purposes of use, similar patterns were observed. Four of the five purposes of digital information use—information, communication, entertainment and commercial/purchase—were more likely to obtain gratification through Internet browsers than mobile apps.

Interestingly, however, this study found that young adults are likely to use mobile apps more frequently for the convenience purpose, which was constructed with the maps, weather and immediate information subscales. Compared to other purposes, convenience purpose is indifferent to location and relies heavily on instantaneousness. This seemingly interesting observation can be explained by the lifestyle young adults typically have. In general, young adults are more mobile and spend more time on-the-go or outside where traditional digital access means, such as desktop and laptop computers, are not readily available. Thus, considering the characteristics of convenience purpose that are used for more on-the-go activities, mobile apps are more likely to be selected to fulfill an immediate, instantaneous gratification.

Another interesting finding is that, although this study confirmed that Internet browsers are still more popularly used by young adults than mobile apps, the differences in use between the two modalities are noticeably narrow overall and in individual purposes. Particularly, considering the different stages of each digital access modality, this slight gap may imply a significant change in mass communication. For instance, Internet browsers, since its public

inception in the early 1990s, have been available as the dominant and sole device to access digital information. On the contrary, despite rapid diffusion among young smartphone users, mobile apps are assumed to be in its embryonic stage. Thus, regarding the rapid advance in mobile technologies and the broader diffusion of smartphones, the findings of this study may show that the media shift from Internet browsers to mobile apps in obtaining digital information is occurring. The initial support of this notion may be found from the dominant use of mobile apps for a convenient purpose.

Arguably, the likelihood to use mobile apps while gratifying convenience could potentially be the beginning of the transition from Internet browsers to mobile apps as the dominant modality for digital information access. The continuous development and improvement in modern technology, such as the recent introductions of HTML 5 and Apple's Siri, increasingly creates an interface based on the purpose of convenience. In this sense, the future technology of mobile apps will use convenience as a benefit of seeking all purposes, including information, communication, entertainment and commercial/purchase. By simultaneously gratifying consumer desires for convenience and additional purposes for accessing the web, mobile apps will succeed in becoming the ultimate tool for accessing digital information regardless of purposes sought. This study, therefore, is the first to anticipate the smartphone, specifically mobile apps, as the dominant modality used for accessing digital information in the near future.

Perceived Privacy Effects

Regarding the relationship between the level of perceived privacy and digital information use, this study failed to find the significant difference between those with high privacy concern and those with low privacy concern. As a matter of fact, this observation is interesting in that the previous studies on privacy might assume that those who are more concerned with their privacy

use digital information less than their non-concerned counterparts (National Cyber Security Alliance, Norton by Semantec, & Zogby International, 2010). On the contrary, the results indicate that the degree of perceived personal privacy is not directly associated with the use of online information.

Overall, this study found that perceived privacy level does not directly influence the digital information use. This interesting finding can be explained by the reliance of young adults on the digital world. The current population of young adults was introduced to the Internet at a young age and, therefore, has formed a continuous reliance on digital information, in regards to both knowledge and entertainment. Additionally, this demographic is aware of the privacy agreements displayed before entering websites, opening e-mails or joining an online network, such as Facebook. In respect to the uses and gratifications theory, while young adults are aware marketers harbor their personal information, the gratification received from the web (via Internet browsers or mobile apps) is considerably bigger and more important than potential privacy risks.

Another explanation can be made with the high level of privacy concern of this study's research participants. This study adopted a scale from Sheehan and Grubbs-Hoy (1999) to determine the perceived privacy of young adults. However, the initial mean of the privacy concern scale (4.48) was significantly higher for a seven-point scale. As a result, one item of the measure was deleted, creating a mean (4.03) acceptable for splitting participants into high and low categories. Nonetheless, in respect to the theoretical mean of a seven-point scale (3.5), the average remained high. In this condition, rather than a comparison of high and low privacy levels, this study might have compared a high level of perceived personal privacy with an even higher level, resulting in similar results and the inability to determine a main effect or interaction effect for perceived privacy.

One interesting observation is that, despite non-statistical significance, young adults who possess high privacy concern were found to be more likely to use digital information than their low privacy counterparts. This seemingly ironic observation may be understood with the premise that the amount of digital information use is highly correlated with the degree of perceived privacy concern. In this condition, those who use more digital information are likely to possess a higher degree of personal privacy, because of their various activities on the web, than those who use less digital information. For example, young adults who access a variety of websites are likely to contribute multiple types of information, including e-mail, passwords and zip codes. Additionally, each website collects information from written content, creating even more privacy invasions and therefore, more privacy concerns. Thus, those who use more digital information tend to form higher degrees of privacy concern. This paradoxical relationship should be determined in future research.

Interaction Between Digital Access Modality and Perceived Privacy

This study also determined how the extent of perceived privacy interacts with digital access modality with regard to digital information use. The findings indicate that the impact of perceived privacy levels was not significant on young adults' choice of digital modality for accessing digital information. The mean scores for each privacy condition in the Internet browser condition compared to the mobile apps condition were relatively similar.

This finding is assumed to be caused by the little difference between the two levels of perceived privacy concerns. For instance, research participants might have believed that both Internet browsers and mobile apps provide the same information, and thus, they might have presumed that their privacy invasion would occur anyway. In this sense, despite the significant main effects of digital access modality, the differences among conditions (i.e., high perceived

privacy-Internet browser, low perceived privacy-Internet browser, high perceived privacy-mobile apps, and low perceived privacy-mobile apps) became minimal. In fact, private information obtained for marketing purposes varies between modalities. In addition to information provided by young adults (e-mail addresses, written content, etc.), mobile apps are able to incorporate information irrelevant to digital information use. For example, the GPS/map app on smartphones allows marketers to gain access to consumer locations, and therefore interests (e.g., location at a stadium or specialty store), creating an even higher level of privacy invasion. However, the similar privacy levels for each digital access modality found in this study suggests that young adults are unaware of the different privacy invasion tactics used on each device.

An additional explanation can be made with privacy aversion rather than ignorance. The high levels of privacy in both digital access modality conditions may suggest that young adults are aware of the vast amount of personal information harbored by marketers; however, regardless of what information, in respect to modality type, is taken, it is possible that young adults simply tolerate their personal privacy invasion in exchange for digital information. This notion is further supported by the media systems dependency theory (Ball-Rokeach & DeFleur, 1976), a system in which the media, individuals, their interpersonal environment and the social environment have dependency relationships with each other. Furthermore, this theory holds that each portion of this relationship draws resources from other components in order to satisfy needs. The similarities between high privacy and low privacy, regardless of each modality, in this study show that there is no difference among these four conditions. It is possible that the similar conditions indicate young adults' reliance on digital information, regardless of which modality is implemented to obtain. In this sense, young adults are dependent upon digital information and are, therefore,

willing to fulfill their needs by supplying their personal information to meet the goals of the media.

Implications of the Findings

The implications of this study's findings are threefold. First, while past studies have used the uses and gratifications theory to explain various aspects of the Internet and other new media, little research has applied this theoretical perspective to determine smartphones and mobile apps. Smartphones are already pervasively used and are expected to replace numerous functions that are performed by different devices, including traditional Internet browsers. Thus, by applying the uses and gratification theory in explaining how young adults use smartphone mobile apps to gratify their digital information needs, this study not only contributes to a better understanding of digital information use but successfully yields a meaningful theoretical implication as well.

Secondly, the measures and scales created in this study can serve as a new methodological approach to access five purposes of accessing the online world for future research. Although previous studies have identified and tested numerous purposes of using web information, they generally tested a sole purpose or a relatively smaller number of purposes. On the other hand, this study created five purposes not only by compiling and modifying the previously identified purposes but also by constructing the five purposes using multiple items. For instance, the information purpose was measured by participants' use of three information items: search engines, news websites, and other information sources (e.g., Wikipedia). For the communication purpose, this study determined participants' use of four communication items: personal email account, social networking websites (e.g., Facebook and Twitter), IM/Google Chat and Sykpe. Participants' use of maps, weather and immediate information were included for the convenience purpose. The fourth purpose, entertainment, was assessed by participants'

use of four items: games, sports and hobby websites and websites meant to entertain (e.g., YouTube). Finally, the purpose of commercial/purchase was determined based on participants' use of retail websites, online retailers (e.g. eBay), coupons and electronic stores (e.g. iTunes). Thus, this methodological categorization will be useful in determining digital information use for later research.

Finally, the findings of this study indicate that although traditional browsers are still used more by young adults in accessing digital information, the use of mobile apps is also found to be considerable. Therefore, it may suggest the likelihood of mobile apps becoming the dominant method for accessing digital information in the near future. Considering rapid growth of mobile apps use, the findings of this study provide marketers with an important marketing implication about mobile apps and prompt to develop more suitable promotional activities via smartphones for young adults.

Limitations

This study bares some limitations. First, this study included college students in order to determine young adults' use of digital information. Although students are a major part of the young adult population, student samples may not best represent the general population of smartphone and Internet browser users. In addition, the majority of participants in this study are female (82.7%). Thus, the results might have been different if different young adult population with more male subjects participated. Nonetheless, due to the limited research devoted to mobile apps and digital access, the findings of this exploratory research are expected to be meaningful.

Secondly, the scales created in this study might have caused some concerns. Due to the multiple purposes of some mobile apps, the purpose scales constructed may not be mutually exclusive. For example, based on the primary use of their functions, this study categorized

GPS/map into convenience purpose; however, one may group those functions differently (e.g., informational). Hence, it is possible that these potential overlapping purposes created confusion among participants.

Finally, the privacy scale adopted might cause a concern. Regardless of the modifications made to the created privacy scale, the mean remained well above the theoretical mean of a seven-point scale. Therefore, it became uncertain if the mean split truly created conditions that were truly high and low in nature. Therefore, the two desired conditions might not have been accurately obtained.

Suggestions for Future Research

The continuously changing technology ensures this study is only the first step in a lengthy line of future research in smartphone and mobile apps. Thus, the rapid diffusion of smartphones lends itself to several additional future research suggestions. Some argue that the web (browser) is dead (Anderson & Wolff, 2010). However, this study found that it has not happened yet, but it seems to be only a matter of time. Thus, it is meaningful to determine how long current web browsers keep its dominant position in accessing digital information and how soon mobile apps become the dominant platform over browsers. Furthermore, while Internet browsers and mobile apps are the most popular methods of digital access, they are not the only technological devices available for the same purpose (e.g., Internet TV, tablet computers). Hence, the inclusion of these alternative devices would also contribute to a better understanding of digital information use.

In addition, the present study paved the road to understand how digital access modality and perceived privacy level together influence young adults' use of digital information. Due to the lack of research regarding mobile apps, both as an individual topic and in relation to

perceived privacy, one approach is to broaden the examination of these areas. Additional scientific research designs with diverse subjects, including non-student participants, and various digital access modalities that gratify different purposes of digital information use should be included.

Further, this study constructed digital information purpose scales based on previous studies and current technologies available. However, this study detected different levels of reliability in constructing each scale. Although they were considered reasonable to include in this study, modifications are expected to improve the internal consistencies of scales and generate more valid outcomes.

Finally, a reexamination of the impact of perceived privacy on digital information access is suggested. It is suspected that the current research samples' high privacy concern may have influenced the results regarding digital information access. Future studies should not only retest the adopted scale from Sheehan and Grubbs-Hoy (1999) with a different segment of the population but should also consider developing alternative privacy scale that is more relevant to newer media such as smartphone and mobile apps.

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APPENDIX SURVEY

Q1. Do you own a smartphone? (A smartphone is defined as a mobile device that offers advanced capabilities, including Internet access and an operating system similar to a personal computer).

- ☐ Yes
- ☐ No

Q2. What type of smartphone do you own (e.g., iPhone, Android, etc.)?

☐ _____

Internet

The next set of questions ask about your INTERNET BROWSER use (e.g., connecting to the Internet via a desktop or laptop)

Q3. How long have you used/operated an Internet browser?

- ☐ 5+ years
- ☐ 3-4 years
- ☐ 1-2 years
- ☐ Less than a year
- ☐ Less than a month

Q4. How comfortable do you feel using/operating an Internet browser?

- ☐ Very comfortable
- ☐ Comfortable
- ☐ Neither comfortable or uncomfortable
- ☐ Uncomfortable
- ☐ Very uncomfortable

Q5. If you were looking to access A SEARCH ENGINE, how likely are you to use an Internet browser to do this? Please rate your opinions using the scales below.

Unlikely	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Likely
Impossible	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Possible
Improbable	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Probable

Q6. If you were looking to access a NEWS WEBSITE, how likely are you to use an Internet browser to do this? Please rate your opinions using the scales below.

Unlikely	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Likely
Impossible	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Possible
Improbable	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Probable

Q7. If you were looking to access **ONLINE INFORMATION SOURCES** (e.g., Wikipedia), how likely are you to use an Internet browser to do this? Please rate your opinions using the scales below.

Unlikely	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Likely
Impossible	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Possible
Improbable	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Probable

Q8. If you were looking to access **YOUR EMAIL ACCOUNT**, how likely are you to use an Internet browser to do this? Please rate your opinions using the scales below.

Unlikely	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Likely
Impossible	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Possible
Improbable	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Probable

Q9. If you were looking to access a **SOCIAL NETWORKING WEBSITE**, how likely are you to use an Internet browser to do this? Please rate your opinions using the scales below.

Unlikely	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Likely
Impossible	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Possible
Improbable	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Probable

Q10. If you were looking to access **SYKPE**, how likely are you to use an Internet browser to do this? Please rate your opinions using the scales below.

Unlikely	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Likely
Impossible	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Possible
Improbable	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Probable

Q11. If you were looking to access **INSTANT MESSENGER, GOOGLE CHAT, ETC.**, how likely are you to use an Internet browser to do this? Please rate your opinions using the scales below.

Unlikely	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Likely
Impossible	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Possible
Improbable	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Probable

Q12. If you were looking to access a MAP/DIRECTIONS, how likely are you to use an Internet browser to do this? Please rate your opinions using the scales below.

Unlikely	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Likely
Impossible	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Possible
Improbable	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Probable

Q13. If you were looking to access a CURRENT WEATHER CONDITIONS how likely are you to use an Internet browser to do this? Please rate your opinions using the scales below.

Unlikely	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Likely
Impossible	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Possible
Improbable	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Probable

Q14. If you were looking to access IMMEDIATE INFORMATION (e.g., STORE HOURS, LOCATION, CONTACT INFO, ETC.), how likely are you to use an Internet browser to do this? Please rate your opinions using the scales below.

Unlikely	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Likely
Impossible	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Possible
Improbable	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Probable

Q15. If you were looking to access ONLINE GAMES, how likely are you to use an Internet browser to do this? Please rate your opinions using the scales below.

Unlikely	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Likely
Impossible	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Possible
Improbable	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Probable

Q16. If you were looking to access SPORTS INFORMATION, how likely are you to use an Internet browser to do this? Please rate your opinions using the scales below.

Unlikely	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Likely
Impossible	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Possible
Improbable	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Probable

Q17. If you were looking to access ONLINE ENTERTAINMENT WEBSITES (e.g., YOUTUBE), how likely are you to use an Internet browser to do this? Please rate your opinions using the scales below.

Unlikely	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Likely
Impossible	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Possible
Improbable	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Probable

Q18. If you were looking to access INFORMATION ON A PERSONAL HOBBY, how likely are you to use an Internet browser to do this? Please rate your opinions using the scales below.

Unlikely	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Likely
Impossible	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Possible
Improbable	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Probable

Q19. If you were looking to access ONLINE RETAIL WEBSITES (e.g., EBAY), how likely are you to use an Internet browser to do this? Please rate your opinions using the scales below.

Unlikely	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Likely
Impossible	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Possible
Improbable	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Probable

Q20. If you were looking to access ONLINE STORES, how likely are you to use an Internet browser to do this? Please rate your opinions using the scales below.

Unlikely	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Likely
Impossible	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Possible
Improbable	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Probable

Q21. If you were looking to access ONLINE COUPONS/PROMOTIONS, how likely are you to use an Internet browser to do this? Please rate your opinions using the scales below.

Unlikely	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Likely
Impossible	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Possible
Improbable	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Probable

Mobile Apps

The next set of questions ask about your SMARTPHONE MOBILE APPLICATION use (e.g., accessing the web through mobile apps)

Q22. How long have you owned a smartphone?

- ☐ 5+ years
- ☐ 3-4 years
- ☐ 1-2 years
- ☐ Less than a year
- ☐ Less than a month

Q23. How comfortable do you feel using mobile applications on your smartphone?

- ☐ Very comfortable
- ☐ Comfortable
- ☐ Neither comfortable or uncomfortable
- ☐ Uncomfortable
- ☐ Very uncomfortable

Q24. If you were looking to access A SEARCH ENGINE, how likely are you to use a mobile application to do this? Please rate your opinions using the scales below.

Unlikely	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Likely
Impossible	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Possible
Improbable	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Probable

Q25. If you were looking to access a NEWS WEBSITE, how likely are you to use a mobile application to do this? Please rate your opinions using the scales below.

Unlikely	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Likely
Impossible	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Possible
Improbable	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Probable

Q26. If you were looking to access ONLINE INFORMATION SOURCES (e.g., Wikipedia), how likely are you to use a mobile application to do this? Please rate your opinions using the scales below.

Unlikely	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Likely
Impossible	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Possible
Improbable	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Probable

Q27. If you were looking to access YOUR EMAIL ACCOUNT, how likely are you to use a mobile application to do this? Please rate your opinions using the scales below.

Unlikely	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Likely
Impossible	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Possible
Improbable	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Probable

Q28. If you were looking to access a **SOCIAL NETWORKING WEBSITE**, how likely are you to use a mobile application to do this? Please rate your opinions using the scales below.

Unlikely	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Likely
Impossible	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Possible
Improbable	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Probable

Q29. If you were looking to access **SYKPE**, how likely are you to use a mobile application to do this? Please rate your opinions using the scales below.

Unlikely	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Likely
Impossible	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Possible
Improbable	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Probable

Q30. If you were looking to access **INSTANT MESSENGER, GOOGLE CHAT, ETC.**, how likely are you to use a mobile application to do this? Please rate your opinions using the scales below.

Unlikely	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Likely
Impossible	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Possible
Improbable	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Probable

Q31. If you were looking to access a **MAP/DIRECTIONS**, how likely are you to use a mobile application to do this? Please rate your opinions using the scales below.

Unlikely	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Likely
Impossible	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Possible
Improbable	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Probable

Q32. If you were looking to access a **CURRENT WEATHER CONDITIONS** how likely are you to use a mobile application to do this? Please rate your opinions using the scales below.

Unlikely	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Likely
Impossible	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Possible
Improbable	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Probable

Q33. If you were looking to access IMMEDIATE INFORMATION (e.g., STORE HOURS, LOCATION, CONTACT INFO, ETC.), how likely are you to use a mobile application to do this? Please rate your opinions using the scales below.

Unlikely	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Likely
Impossible	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Possible
Improbable	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Probable

Q34. If you were looking to access ONLINE GAMES, how likely are you to use a mobile application to do this? Please rate your opinions using the scales below.

Unlikely	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Likely
Impossible	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Possible
Improbable	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Probable

Q35. If you were looking to access SPORTS INFORMATION, how likely are you to use a mobile application to do this? Please rate your opinions using the scales below.

Unlikely	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Likely
Impossible	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Possible
Improbable	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Probable

Q36. If you were looking to access ONLINE ENTERTAINMENT WEBSITES (e.g., YOUTUBE), how likely are you to use a mobile application to do this? Please rate your opinions using the scales below.

Unlikely	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Likely
Impossible	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Possible
Improbable	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Probable

Q37. If you were looking to access INFORMATION ON A PERSONAL HOBBY, how likely are you to use a mobile application to do this? Please rate your opinions using the scales below.

Unlikely	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Likely
Impossible	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Possible
Improbable	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Probable

Q38. If you were looking to access ONLINE RETAIL WEBSITES (e.g., EBAY), how likely are you to use a mobile application to do this? Please rate your opinions using the scales below.

Unlikely	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Likely
Impossible	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Possible
Improbable	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Probable

Q39. If you were looking to access ONLINE STORES, how likely are you to use a mobile application to do this? Please rate your opinions using the scales below.

Unlikely	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Likely
Impossible	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Possible
Improbable	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Probable

Q40. If you were looking to access ONLINE COUPONS/PROMOTIONS, how likely are you to use a mobile application to do this? Please rate your opinions using the scales below.

Unlikely	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Likely
Impossible	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Possible
Improbable	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Probable

Privacy

Q41. Please evaluate your level of concern regarding each of the following statements based on the following scales.(1= not at all concerned to 7 = extremely concerned).

	1	2	3	4	5	6	7
	<i>Not at all</i>						<i>Extremely</i>
	<i>concerned</i>						<i>concerned</i>
You receive e-mail from a company that you have sent e-mail to in the past.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
You receive e-mail from a company whose web page you recently visited.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
You receive e-mail from and have no idea how the company got your address.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A company requests your e-mail address only to send information of interest.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
You receive e-mail about a new product from a company you currently do business with.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

You receive email about a new product from a known company you don't do business with.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
You receive email about a new product from a company you've never heard of.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Q42. Please evaluate your level of concern regarding each of the following statements based on the following scales.(1= not at all concerned to 7 = extremely concerned).

	1 <i>Not at all concerned</i>	2	3	4	5	6	7 <i>Extremely concerned</i>
A notice on a web page states that information collected is used by other divisions of that company.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A notice on a web page states that information collected on that web page may be sold to other companies.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
You are asked to provide your name to access a homepage.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
You are asked to provide names of newsgroups read to access a homepage.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
You are asked to provide your Social Security Number to access a homepage.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A web page requires your email address to access the page. Upon registration, you will receive a mouse pad.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A web page requires your email address to access the page. Upon registration, you will receive a 24% discount on future purchases.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A web page requires your email address to access the page. Upon registration, you will be entered in a contest to win a computer (value: \$1000)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Technology

Q43. How often do you use technology (e.g., cellular phones, computers, tablets, electronics, etc.)?

Never | ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ | Constantly

Q44. How familiar do you consider yourself with technology?

Unfamiliar | ☐ ☐ ☐ ☐ ☐ ☐ ☐ | Very Familiar

Q45. How much of a technology expert would you call yourself?

Not at all expert | ☐ ☐ ☐ ☐ ☐ ☐ ☐ | Extremely expert

Q46. How well-acquainted with technology are you?

Not at all acquainted | ☐ ☐ ☐ ☐ ☐ ☐ ☐ | Very well acquainted

Q47. How regularly do you use technology?

Not very regularly | ☐ ☐ ☐ ☐ ☐ ☐ ☐ | Very regularly

Self Esteem

Q48. Please evaluate your level of agreement with each of the following statements based on the following scale.(1= strongly disagree to 7 = strongly agree).

	1 <i>Strongly Disagree</i>	2	3	4	5	6	7 <i>Strongly Agree</i>
At times I think I am no good at all.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I am able to do things as well as most other people.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I certainly feel useless at times.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I feel that I am a person of worth, at least on an equal plane with others.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
All in all, I am inclined to feel that I am a failure.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

End Questions

Q49. How old are you?

○ _____

Q50. What is your gender?

○ Male

○ Female

VITA

Cydney Palmer graduated from Louisiana State University in May 2008 with a Bachelor of Arts in mass communication: advertising and a minor in business administration. After graduation, Cydney worked as an event and public relations coordinator for a privately owned company, where she wrote press releases, hosted large events and designed promotional advertisements and materials. Cydney then transferred to a Fortune 500 company, where she worked as a marketing manager. She enrolled in the master's program at Louisiana State University in January 2010 in the Manship School of Mass Communication. She will complete her degree in December 2011. Following graduation, Cydney will continue her career in mass communication before pursuing a doctoral degree.