# Internet Use and Well-Being of Young Adults

| | |
|---|---|
| Journal: | *International Conference on Information Systems 2013* |
| Manuscript ID: | ICIS-0348-2013.R1 |
| Track: | 08. Global and Cultural Issues in IS |
| Keywords: | Internet, IT impacts, IT use, Subjective well-being |
| Abstract: | Internet has significantly transformed how, when and where people conduct their everyday life activities. This study examines the relationship between Internet use and well-being. We ask: how do Internet use and the quality of Internet and non-Internet experiences influence well-being? Drawing on the subjective well-being literature in economics and psychology as well as empirical research on Internet use and impacts, we evaluate the influence of domain life satisfaction and affective experiences associated with Internet and non-Internet activities on life satisfaction. Young adults in Thailand are the empirical focus of this study. The results suggest that satisfaction with family is important to their life satisfaction. Positive affect from Internet activities is important to a satisfying life of young adults. They appear to value positive affect from Internet activities more than positive affect from non-Internet activities. On the other hand, negative affect from both Internet and non-Internet activities decreases life satisfaction. |
| | |

# Internet Use and Well-Being of Young Adults

*Completed Research Paper*

**Angsana A. Techatassanasoontorn**
Faculty of Business and Law
Auckland University of Technology
New Zealand
angsana@aut.ac.nz

**Nalitra Thaiprasert**
Faculty of Economics
Chiang Mai University
Thailand
nalitra@gmail.com

## Abstract

*Internet has significantly transformed how, when and where people conduct their everyday life activities. This study examines the relationship between Internet use and well-being. We ask: how do Internet use and the quality of Internet and non-Internet experiences influence well-being? Drawing on the subjective well-being literature in economics and psychology as well as empirical research on Internet use and impacts, we evaluate the influence of domain life satisfaction and affective experiences associated with Internet and non-Internet activities on life satisfaction. Young adults in Thailand are the empirical focus of this study. The results suggest that satisfaction with family is important to their life satisfaction. Positive affect from Internet activities is important to a satisfying life of young adults. They appear to value positive affect from Internet activities more than positive affect from non-Internet activities. On the other hand, negative affect from both Internet and non-Internet activities decreases life satisfaction.*

**Keywords:** Internet, IT use, IT impacts, subjective well-being

# Introduction

In recent years, the Internet has significantly transformed how people conduct their everyday activities. Evidence from international data suggests an upward trend in the number of Internet users and Internet activities. In 2011, there were 2.26 billion Internet users with an average of 70.5% and 24.5% of individuals using the Internet in developed and developing countries respectively (International Telecommunication Union 2013). According to the World Internet Project report published in 2012, more than 40% of Internet users in Australia, Canada, New Zealand and Spain went on line at least weekly to look for information about a product. And 30% or more of Internet users in ten countries accessed health information online at least monthly. See Table 1 for key statistics on Internet access from the International Telecommunications Union.

**Table 1. Statistics on Internet Access**

| Statistics | Worldwide | Developed countries | Developing countries |
|---|---|---|---|
| Individuals using the Internet (%) | 32.7 | 70.5 | 24.5 |
| Households with Internet access at home (%) | 33.6 | 70.2 | 20.2 |
| Active mobile broadband subscriptions (%) | 16.6 | 55.1 | 8.2 |
| Fixed (wired) broadband subscriptions (%) | 8.0 | 25.0 | 5.0 |

On a policy front, policymakers anticipate that the Internet will improve people's well-being. For example, the Broadband Commission for Digital Development, a joint effort between the International Telecommunication Union (ITU) and United Nations Educational, Scientific and Cultural Organization (UNESCO), promotes the Internet as "a platform for progress" (Broadband Commission for Digital Development 2011). Internet is viewed as a promising technology that is "making a tangible difference in the lives of people" worldwide (Broadband Commission for Digital Development 2012). The Commission emphasizes that high-speed, affordable connection to the Internet is a necessity for modern society to make social and economic progress. More important, high-speed Internet is considered instrumental to achieve the Millennium Development Goals to end poverty, to have universal primary education, to promote gender equality, and to improve healthcare, among others. The broadband leadership summit in October 2011 concludes that bringing people online is one of the important actions and measures of progress. By mid-2012, 119 developed and developing countries have a national broadband plan in place (Broadband Commission for Digital Development 2012). Despite these international and national policies and their expected promises of the Internet, we do not know whether and to what extent Internet use contributes to positive well-being.

Scholars believe that human behaviors are significantly transformed by the Internet. In the 1990s, Kraut et al. (1998, p. 1017) predicted that "[t]he Internet could change the lives of average citizens as much as did the telephone in the early part of the 20th century and television in the 1950s and 1960s." More recently, Turkle (2011, p. 19) cautioned us about the becoming of our relationship with technology. She argued that, through technology, "[w]e don't ask the open ended 'How are you?' Instead, we ask the more limited 'Where are you?' and 'What's up?' These are good questions for getting someone's location and making a simple plan. They are not so good for opening a dialogue about complexity of feeling. We are increasingly connected to each other but oddly more alone."

Collectively, studies that examined Internet use and its impacts on people's lives produce inconclusive findings. For example, Kraut et al. (1998) initially reported that heavy Internet users, compared to lighter Internet users, were less socially involved and more lonely. However, in the follow-up study with the same group of participants (Kraut et al. 2002), they found that Internet use was associated with declines in family communication and a decrease in social connections but these negative effects dissipated over time. In addition, a body of literature on Internet use and impact tends to focus on selected outcome variables such as social involvement and social connections (Franzen 2000; Kraut et al. 2002; Kraut et al. 1998), political and community commitment (Jennings and Zeitner 2003; Wellman et al. 2001) and stress and

depression (Jackson et al. 2004). As the Internet is becoming an essential tool to live in a modern society, we need to have some answers to the broader question: "Does Internet use make life better or worse?" (Haythornthwaite 2001)

This research examines the relationship between Internet use and well-being. The research question is *how do Internet use and the quality of Internet and non-Internet experiences influence well-being?* Young adults in Thailand are the empirical focus of the study. We chose Thailand as a country context for two reasons. First, Thailand has a national broadband plan in place with explicit aims to use high-speed Internet as a tool to improve people's lives and increase the country's economic competitiveness (Ministry of Information and Communication Technology 2010). Second, similar to some developing countries, Thailand has experienced rapid growth of Internet users. The number of Internet users in Thailand has almost doubled from 12.0% in 2005 to 23.7% in 2011 (National Statistical Office 2011). We focus on young adults because young people are viewed as digital natives who have grown up in the digital world surrounded by various information technologies (Prensky 2001). Despite the rise of the digital native, very little IS research has paid attention to the use and impact of information systems of digital natives (Vodanovich et al. 2010).

In the next section, we first discuss the concept of subjective well-being and its empirical findings followed by the state of knowledge on Internet use and impacts to conceptualize the relationship between Internet and non-Internet use and subjective well-being. Next, we discuss our data collection method, instruments and the empirical analysis method employed. We discuss our results and their interpretation and conclude the paper with our contribution.

## Theory Development

We extend the concept of subjective well-being in welfare economics and psychology to conceptualize an outcome of Internet use. Next, we draw on the Internet use and impacts literature to theorize the relationship between Internet use and subjective well-being.

### *Subjective well-being*

Subjective well-being (also known as happiness) involves cognitive and affective evaluations of people's lives (Diener 1984). These two distinct yet complementary components of subjective well-being are referred to as life satisfaction (Diener 1984) and emotional well-being (Kahneman and Krueger 2006) respectively. Emotional well-being is an evaluation of affective experiences associated with everyday life activities (Kahneman et al. 2010). These positive and negative affect measures hedonic experiences in the moment. For example, emotional well-being research asks whether people feel happy, friendly, worried, or angry during an everyday activity (e.g., commuting, shopping, and doing housework). Life satisfaction is an overall judgment on life as a whole (Diener et al. 1985) by asking people to self-report the extent to which they are satisfied with their lives. For a review of subjective well-being literature, see Diener et al. (1999), Dolan et al. (2008) and Frey and Stutzer (2002), among others.

Researchers and policymakers are increasingly convinced that subjective well-being offers a complementary perspective to the objective view of individual utility in economics that primarily focuses on observable choices through goods and services consumption. In particular, subjective well-being research builds on the premise that "everybody has their own ideas about happiness and the good life and that observed behavior is an incomplete indicator for individual well-being" (Frey and Stutzer 2002, p. 405). A body of empirical work has attempted to find answers to the question: "What makes people happy?" Evidence from various studies suggests that people's evaluation of their subjective well-being is based on their personalities, life circumstances, their lives compared to others, past experiences, expectations of the future, and some institutional and social contexts (Diener et al. 2003; Diener et al. 1999; Dolan et al. 2008; Frey and Stutzer 2002). In other words, reports of subjective well-being are constructed from information that a person draws on at the time the question was posted. The information may include various norms (e.g., status in the social structure) that are socially constructed (Schwarz and Strack 1999). See Table 2 for a summary of factors associated with subjective well-being.

| Table 2. Subjective Well-being Studies | | | |
|---|---|---|---|
| Type | Factor | Key finding | Study |
| Life circumstances | Income (at a particular time point) | Income has a positive relationship with subjective well-being with a diminishing marginal utility | Diener and Suh (1999); Easterlin (2001); Howell and Howell (2008); Oswald (1997) |
| | Income (over time) | Subjective well-being remains constant despite income growth | Clark et al. (2008); Easterlin (2001) |
| | Unemployment | Unemployment significantly lowers the level of subjective well-being | Blanchflower and Oswald (2004); Blanchflower and Oswald (2011) Di Tella et al. (2001); Korpi (1997); Ravallion and Lokshin (2001) |
| Personality | Extraverts/introverts | Extraverts are happier than introverts | Diener et al. (1999) |
| | Traits associated with characteristic experience of emotions and explanations to life events | Emotional stability, positive affectivity, tension, trust, and hardiness are associated with subjective well-being | DeNeve and Cooper (1998) |
| Institutional and social contexts | Political, economic and personal freedom | Freedom and subjective well-being are positively related | Radcliff (2001); Veenhoven (2000) |
| | Culture | Culture influences subjective well-being through salient needs and values | Diener (2000); Oishi et al. (1999a) |

A number of studies pay attention to life circumstances that are related to financial situation, family life, health, and work conditions (Easterlin 2006). Empirical evidence demonstrates that people with higher income are happier than those with lower income. The positive association between income and subjective well-being is confirmed in studies conducted in the U.S. (Easterlin 2001), European Union (Oswald 1997) and developed and developing countries represented in the World Values Survey (Diener and Suh 1999). However, there is a limit to the contribution of income on happiness. Income contributes less to happiness at higher income levels (Diener 2000; Easterlin 2001). Helliwell (2003) produced convincing evidence from the World Values Survey data that cover between 18 to 38 developed and developing countries in three waves (1980-1982, 1990-1991, and 1995-1997). He found that subjective well-being increases by 0.10 for a person to move from the fourth to the fifth decile in the distribution of family income. But subjective well-being increases by only 0.01 for a person to move from the ninth to the tenth decile. In addition, Richard Easterlin discovered another puzzling effect of income on subjective well-being. Over a period of time, real income has increased but subjective well-being has remained constant (Easterlin 2001). This puzzle has become known as the "Easterlin paradox". Take Japan, as an example. Income per capita in Japan increased six fold between 1958 and 1991 but the average life satisfaction on a four-point scale remains stagnant at 2.7.

Few studies pay attention to subjective well-being in developing countries. Howell and Howell (2008) conducted meta-analysis to examine the relationship between economic status and subjective well-being from 56 studies that span across 54 developing countries. Overall, they found a stronger relationship between economic status and subjective well-being among developing countries ($r$ = .20) than the average

relationship for the developed country samples ($r$ = .13). Among the developing countries sample, they found that the relationship is stronger for low-income than high-income developing countries. This evidence seems to support that there is a threshold of basic needs that money can influence subjective well-being. However, money may not increase those elements of subjective well-being that are associated with higher-order needs (e.g., self-esteem, belongingness, and self-actualization).

Why higher income does not always make people happier? There are two plausible explanations; one is from a social comparison view and the other is from an adaptation view. From a social comparison view, people compare themselves to others. Thus, when incomes increase for the general population, a person perceives that his or her income has not increased relative to other people's income. From an adaptation view, people generally are never satisfied because they tend to have an upward adjustment of aspiration. As a result, materials goods and services and life achievements may temporarily increase happiness. But that satisfaction is transitory because people tend to raise their expectation and aspiration for the next big thing.

Unemployment is a life situation that has negative influence on subjective well-being, according to robust results in several studies in developed and developing economies. Di Tella et al. (2001), in their study of individual data in 12 European countries in the period of 1975-1991, found that unemployed persons reported much lower life satisfaction than employed persons who share similar characteristics (e.g., education). Other researchers reported similar findings in other countries such as the U.K. and the U.S. (Blanchflower and Oswald 2004), Sweden (Korpi 1997), Russia (Ravallion and Lokshin 2001), and a mix of 33 developed and developing countries (Blanchflower and Oswald 2011). The psychological cost of job loss (e.g., depression, anxiety, a loss of self-esteem) may explain the decline in subjective well-being from unemployment. Blanchflower and Oswald (2011), one of the few studies that examines subjective well-being in both developed and developing countries, report that disability negatively affects life satisfaction. On the other hand, being religious and having a university degree positively affect life satisfaction. They also found that men and women have a similar set of determinants of life satisfaction. Beyond personal and immediate social contexts, research finds that political, economic and personal freedom are positively associated with subjective well-being (Radcliff 2001; Veenhoven 2000).

In addition to personal, social and institutional factors, recent evidence suggests that overall life satisfaction is influenced by satisfaction in other life domains. Easterlin (2006), using the U.S. cohort data in the period of 1973-1994, found that happiness increases slightly from 18 until midlife and slowly declines afterward. His finding seems to challenge the conclusion from other studies that the relationship between happiness and age is a U-shaped curve; the middle-aged are the least happy compared to the young and the old (Dolan et al. 2008). With the focus on economic, family, health and work domains, Easterlin (2006) explained that the rising happiness among people up to 50 years old comes from their increased satisfaction with family and work. From midlife onward, people's slight decline in happiness is generated by their decreasing satisfaction with family life, work and health offset by increasing satisfaction with their financial situation.

Emotional well-being, the other component of subjective well-being, focuses on the emotional quality of everyday experience by investigating "the frequency and intensity of experiences of joy, fascination, anxiety, sadness, anger, and affection that make ones' life pleasant or unpleasant" (Kahneman and Deaton 2010, p. 16489). This approach collects data on individuals' time use and associated affective experience to derive emotional well-being. Conceptually, emotional well-being is "the temporal average of a dimension of subjective experience reported in real time" (Kahneman et al. 2010, p. 18). Empirically, emotional well-being is commonly measured by *positive affect* (the average of positive emotions such as happiness, enjoyment or frequent smiling and laughter), *negative affect* (the average of negative emotions such as worry, sadness, depressed), *net affect* (the average of positive emotions minus negative emotions), *U-index* (the proportion of time that one spends in an unpleasant state), and *DIFMAX* (the difference between happiness feeling and the strongest of the following three feelings: tense, depressed, and angry) (Kahneman and Deaton 2010; Kahneman et al. 2010; Krueger 2007; Krueger et al. 2009).

Measuring data at the activity-level is one of the strengths of this approach because it allows researchers to ask several questions that the life satisfaction approach cannot. Some of these questions are: "Are people spending their time in more pleasant or unpleasant activities?"; "Do patterns of time spending and quality of experiences change over time?"; and "How do time use and quality of experiences contribute to well-being?" In their analysis of more than 450,000 U.S. residents' responses to the Gallup-Healthways

Well-Being Index in 2008 and 2009, Kahneman and Deaton (2010) found that life circumstances affect life satisfaction and emotional well-being in slightly different ways. For example, the effects of income on emotional well-being seem to saturate at around an annual income of US$75,000. They conducted detailed analysis of four well-being measures: positive affect, negative affect, stress, and life satisfaction. The results suggest that illness, being alone, and caregiving have larger negative effects on emotional well-being than on life satisfaction. Presence of children is associated with significant increases in stress, sadness and worry. Being married and religion have larger influence on improving positive affect than on life satisfaction. In another study, Krueger (2007) analyzed time use trends among men and women in the U.S. in the period of 1965-2005. He found that men had a downward trend in time spent in unpleasant activities and an upward trend in enjoyable activities such as watching television or relaxing. For women, despite the fact that women shifted their time away from household chores to work and some downtimes such as gardening, watching television and relaxing, these activity changes did not have any discernible effects on women's U-index. At the activity level, results from cluster analysis of 2006 time use data suggest that computer use is classified as moderately enjoyable activities while activities such as having conversations, religious activities, sports and exercise are classified as the most enjoyable and interesting activities.

Recently, Kahneman et al. (2010) used data from 770 women in Columbus, Ohio and 700 women in Renne, France to investigate plausible associations between emotional well-being and life satisfaction and highlight their distinct determinants. They found that emotional well-being is moderately correlated with life satisfaction ($r$ = .36). Their analysis of the correlation between life satisfaction and emotions leads them to conclude that "a satisfying life is not necessarily more enjoyable, but it is likely to be high in activation—tense as well as happy, less depressed but also less calm" (Kahneman et al. 2010, p. 22). In other words, a highly satisfied life comes with emotional costs as well as benefits.

### *Internet use and impacts*

Internet has been theorized as an IT innovation (Lyytinen and Rose 2003), digital infrastructure (Tilson et al. 2010) and a suite of applications and services (Kraut et al. 1999). This study broadens the previous conceptualization of Internet as information and communication functionalities in Kraut (1999) to emphasize a broad range of Internet activities that people may use to support everyday activities in multiple life domains. For example, people may watch movies in their free time, use Facebook to find new friends, and sell products on auction sites to support leisure, social, and finance life domains respectively.

People have increasingly integrated the Internet into their everyday life activities (Haythornthwaite 2001; International Telecommunication Union 2013). This trend prompts researchers to ask questions whether Internet use brings positive or negative change to people's lives. Since strong interpersonal interactions are important to a well-functioning community, a growing body of research has investigated the impact of Internet use on social, civic, and community involvement. Theoretically, there are a few plausible reasons to support different outcomes of Internet use on people's lives. The first view supports the negative effect from Internet use (Franzen 2000; Nie 2001). Time spent on the Internet replaces time spent with friends, families, and neighbors. As a result, more Internet use is likely to lead to a decline in social involvement and an increase in isolation and loneliness. The second view argues for the positive effects from Internet use (Franzen 2000; Haythornthwaite 2001). Internet frees up time from some activities that generally take longer to do offline. These activities may include shopping, searching for information, and banking. The free time can then be spent with friends, family, and colleagues. Therefore, more Internet use is likely to be associated with stronger social involvement.

Empirical studies on effects of Internet use produce mixed results (See Table 3). Some report positive effects (Franzen 2000; Kavanaugh and Patterson 2001; Kraut et al. 2002; Valkenburg and Peter 2007; Wellman et al. 2001) while others find negative effects from Internet use (Kim et al. 2009; Kraut et al. 1998; van den Eijnden et al. 2008). Yet, a few studies find neither positive nor negative effects associated with Internet use (Franzen 2000; Jackson et al. 2004). Kraut et al. (1998) observed the Internet paradox when they found that Internet use mostly for communication was associated with a decline in social involvement. The result from their study generated much attention and inspired others to investigate the social impact of the Internet. Franzen (2000) compared a large sample of Internet users and a control group in Switzerland and found that Internet use does not decrease network size and the time spent with friends. On the other hand, e-mail use increases people's social involvement. Similarly, Jackson et al.

(2004) found that Internet use has no effect on psychological well-being and social involvement of low-income African Americans. They support their findings with the fact that their participants embraced the Internet as an information tool rather than as a communication tool. Another plausible scenario is that Internet use may lead to positive effects in other domains that they did not measure in their study.

**Table 3. Internet Use and Impact Studies**

| Study | Subjects | Internet use measures | Impact | Key findings |
|---|---|---|---|---|
| Franzen (2000) | Internet and non-Internet users in Switzerland | Minutes spent on the Internet per day | Social involvement | Internet use has no effect on people's network size and time spent with friends |
| Jackson et al. (2004) | Individuals in low-income household in a U.S. city | Minutes, number of sessions, number of domains visited, number of e-mail sent per day | Psychological well-being and social involvement | Internet use has no effect on psychological well-being and social involvement |
| Kavanaugh and Patterson (2001) | Residents in Blacksburg, Virginia | Years using the Internet, Internet use to communicate with social groups | Community involvement and attachment | The longer people have used the Internet, the more likely they are to use the Internet for social capital building activities |
| Kim et al. (2009) | Undergraduate students in U.S. universities | Preference for online social interaction and compulsive Internet use scale | Psychological well-being | People who are lonely or those who do not have good social skills develop strong compulsive Internet use behaviors |
| Kraut et al. (1998) | New Internet users (1995-1996) in Pittsburg, Pennsylvania | Weekly Internet hours, Number of e-mails sent and received, Number of web site visits per week | Psychological well-being and social involvement | Greater Internet use was associated with declines in social involvement and increases in loneliness and depression |
| Kraut et al. (2002) | Three-year follow up with Internet users in Kraut et al. (1998) | Weekly Internet hours, Number of e-mails sent and received, Number of web site visits per week | Psychological well-being and social involvement | Positive effects of Internet use on social communication, social involvement and psychological well-being |

| Table 3. Internet Use and Impact Studies | | | | |
|---|---|---|---|---|
| Valkenburg and Peter (2007) | Dutch young adults (10-17 years old) | Amount of time IM and chat use daily | Time spent with existing friends, quality of friendships and life satisfaction | Internet communication positively influences subjective well-being through the time spent with existing friends and the quality of friendships |
| van den Eijnden et al. (2008) | Dutch adolescents (12-15 years old) | Frequency of various Internet activities and compulsive Internet use scale | Psychological well-being | Instant messenger use is positively associated with depression |
| Wellman et al. (2001) | North American adults | Years using the Internet, synchronous and asynchronous Internet use | Social networks, involvement in politics and voluntary organizations, and community commitment | Internet use supplements face-to-face communication and heavy Internet use is associated with increased participation in voluntary organizations and politics |

In their follow-up study, Kraut et al. (2002) revisited the Internet paradox by examining the longer-term impact of Internet use with the same group of participants in their previous study. Surprisingly, they found that negative psychological and social effects dissipate by the third year. However, positive benefits are limited to extraverts and those who have more social support. What can explain the shift from negative to positive outcomes? The authors speculate that changes in how people use the Internet and a number of new services on the Internet may account for the changing outcomes. Wellman et al. (2001) placed Internet use along with two other forms of communication namely face-to-face and telephone communications and examined the effect of Internet use on network capital, participation in politics and voluntary organizations. Their finding suggests that Internet augments people's offline activities by allowing them to extend those activities online. In particular, they found that the Internet supplements other forms of communications. The more people engage in political activities offline, the more they involve in political discussions online.

Although previous research offers important insight on impact of Internet use, our understanding of the effects of Internet on people's lives is still limited. This is because previous studies are designed to examine selected aspects of impact with an emphasis on social effects of the Internet. We believe that there is a need to situate Internet use in the broader context of people's everyday activities that include Internet and non-Internet activities. Haythornthwaite (2001) warned us that it is no longer productive to treat "the impact of the Internet in isolation from people's everyday lives" (p. 364). In this study, we take this suggestion one step further by considering quality of Internet and non-Internet experiences as well as time spent on online and offline activities. As the Internet transforms how, when, and where we conduct daily life routines, its potential effects on our lives are likely to go beyond social involvement that is the primary focus of prior research. We posit that research should look at outcome variables that help us better understand broader implications of the Internet. We chose to focus on subjective well-being in this study because we believe that well-being is an important indicator to answer the important question,

"Does Internet use improve our lives?"

## Thailand: National Broadband Plan and Internet Use

National broadband plans are policy documents that outline the goals, targets and implementation plans associated with high-speed broadband deployment, use and anticipated benefits. Thailand national broadband plan was approved by the cabinet in November 2010. The country has ambitious targets to move the Thai society towards a digital society through solid Internet infrastructure and Internet-enabled applications and services in healthcare, education, government, and safety domains. Table 4 summarizes the key objectives of the plan.

**Table 4. Key Objectives of Thailand National Broadband Plan**

| Area | Target |
|---|---|
| Infrastructure | |
| Availability | Provide access to at least 80% and 95% of population by 2015 and 2020 respectively |
| Speed | Have a minimum speed of 100 Mbps by 2020 for cities that are economic and regional hubs |
| Applications | |
| Education | Enable all schools to access quality broadband services by 2020 |
| Healthcare | Provide health insurance and social security services through broadband by 2015 |
| Government services | Allow people to use government services through broadband by 2015 |
| Safety and emergency | Have a national disaster and emergency monitoring and warning system on a broadband network |

According to the most recent statistics from the National Statistics Office, Thailand had more than 13 million Internet users or 22.4% per 100 inhabitants in 2010. See Table 5 for Internet usage statistics by gender and age groups. There were slightly higher female users (52%) than male users (48%). The 15-24 years old age group is the most connected to the Internet for both males and females. This trend is similar to what others have observed in their studies (Kim et al. 2009; Turkle 2011; Valkenburg and Peter 2007). For example, Kim et al. (2009) found that the undergraduate students in their study incorporated the Internet into multiple life activities including social networking, downloading or streaming music and videos, instant messaging, information seeking, and gaming, among others.

**Table 5. 2010 Internet Usage by Gender and Age Groups in Thailand**

| Statistics by age groups | Male | | Female | |
|---|---|---|---|---|
| | Percent of the male group | Percent of total Internet users | Percent of the female group | Percent of total Internet users |
| 6-14 years old | 23.5% | 11.3% | 21.5% | 11.1% |
| 15-24 years old | 37.3% | 17.9% | 38.3% | 19.9% |
| 25-34 years old | 17.5% | 8.5% | 20.3% | 10.6% |
| 35-39 years old | 6.4% | 3.1% | 6.8% | 3.5% |
| 40-49 years old | 9.5% | 4.6% | 9.2% | 4.8% |
| 50-59 years old | 5.0% | 2.4% | 3.5% | 1.8% |
| 60 years old and older | 0.8% | 0.4% | 0.4% | 0.2% |

## Measures and Data

We focus our empirical inquiry on young adults in Thailand. Using the data from a homogenous group in one country allows us to control for several factors (e.g., culture, age, income, marital status, and education) that have been reported to affect Internet use and well-being (Chen and Wellman 2005; Diener 2000; Easterlin 2001). Young adults belong to the generation whose lives are highly influenced by information technology. They are often referred to as the digital native or the Net generation (Prensky 2001). Digital natives are young people who were born after 1980. They are often described as those who are confident with digital technologies and are fully immersed and surrounded by various technologies (e.g., the Internet, video games, and mobile phones). Prensky (2001) argues that the significance of technology goes beyond playing a role in digital natives' everyday lives. In fact, technology is crucial to their existence. One widespread claim is that digital natives have sophisticated technology skills. However, Bennett et al. (2008) argue that this claim does not have strong theoretical and sound empirical supports. To date, empirical evidence seems to suggest that young people have varying levels of technology skills depending on their socio-economic status, cultural and ethnic background, and gender (Hargittai 2010; Kennedy et al. 2008). However, there is a lack of empirical studies in IS that focuses on the digital native and their use and impact of information technology (Vodanovich et al. 2010). With the importance of Internet in young people's lives, we believe that it is critical to understand digital natives' online and offline activities to gain useful inference about the role of the Internet in their lives and the impact of Internet on their well-being.

Participants are 100 students in a university located in an urban area in Thailand. A useful method to collect hedonic experiences is an experience sampling method, a technique that asks participants to record experiences during their daily lives. But this method is costly to administer to a large sample of populations. We use the daily reconstruction method, a less costly method to administer, that shows comparable results to the experience sampling method (Kahneman and Krueger 2006). In this method, participants are asked to reconstruct the previous day, first by producing a short diary consisting of a sequence of episodes. Next, they draw on the diary to fill in additional details of each episode.

In our study, participants were invited to the campus location on July 18, 2012 to complete the three-sectioned questionnaire. The first section includes demographic questions, life satisfaction, and domain-specific satisfaction questions. The life satisfaction and domain specific satisfaction items are measured on a scale from 1 (strongly disagree) to 7 (strongly agree). We adapted the validated 5-item life satisfaction items from (Diener et al. 1985). We measured domain specific satisfaction in four domains that are pertinent to young adults' lives: family, friends, university, and self. These four domain specific satisfaction scales are adapted from validated items from Zullig et al. (2009)

The second section asks participants to construct a diary of the previous weekday (Tuesday, July 17) as a series of activities from waking up until going to bed. For each activity, participants report the beginning and ending time, location, social interactions, Internet use (yes/no), Internet activities, and feelings. The positive and negative feelings are measured on a seven-point scale from 0 (not at all) to 7 (very strongly). Consistent with emotional well-being literature (Kahneman et al. 2004; Krueger et al. 2009), our measures of positive feelings include happy, warm/friendly, enjoying myself. Negative feelings include frustrated/annoyed, depressed, hassled/pushed around, angry/hostile, worried/anxious, and criticized/put down. Participants submitted the first two sections of the questionnaire and were instructed to complete and return the third section to the researchers in the following week. Similar to the second section, the third section asked participants to construct a diary of the following weekend day (Sunday, July 22).

Table 6 presents descriptive statistics. The average waking hours on a weekday and weekend day are 15.87 and 15.28 hours respectively. On average, respondents reported 15.02 activities on a weekday and 11.87 activities on a weekend day. The average numbers of Internet activities on a weekday and weekend day are 4.65 and 3.87 respectively. On average, respondents spent 6.48 and 6.65 hours on Internet activities on a weekday and a weekend day. Respondents spent an average of 9.37 and 7.60 hours on non-Internet activities on a weekday and a weekend day respectively.

| Table 6. Descriptive Statistics of Respondents | | | |
|---|---|---|---|
| | Number of respondents | | Number of respondents |
| Gender | | Daily computer use | |
| Male | 50 | < 1 hour | 6 |
| Female | 50 | 1 to 3 hours | 31 |
| Age | | 3 to 5 hours | 37 |
| 18 years old | 5 | 5 to 7 hours | 15 |
| 19 years old | 22 | > 7 hours | 11 |
| 20 years old | 40 | Daily Internet use | |
| 21 years old | 28 | < 1 hour | 22 |
| 22 years old | 5 | 1 to 3 hours | 49 |
| Computer experience | | 3 to 5 hours | 13 |
| < 5 years | 1 | 5 to 7 hours | 5 |
| 5-10 years | 62 | > 7 hours | 11 |
| > 10 years | 37 | | |
| Internet experience | | | |
| <5 years | 8 | | |
| 5-10 years | 85 | | |
| > 10 years | 7 | | |

We conducted confirmatory factor analysis on five multi-item constructs: life satisfaction (SATIS), family life satisfaction (FAMILY), satisfaction with friends (FRIEND), satisfaction with university life (UNI) and satisfaction with the self domain (SELF). The model fit was evaluated based on $\chi^2$ test, comparative fit index (CFI), Tucker-Lewis index (TLI), root mean square error of approximation (RMSEA), and standardized root mean square residual (SRMR). For a good model, the $\chi^2$ test should be non-significant, RMSEA ≤ .06, TLI ≥ .95, CFI ≥ .95, and SRMR ≤ .08 (Hu and Bentler 1998; Hu and Bentler 1999). The CFA results suggest a good model fit: $\chi^2$ = 224.98 (*df*=195), *p*=.07; RMSEA = .04, TLI = .95, CFI = .96, and SRMR = .07. The standardized loadings for SATIS, FAMILY, FRIEND, UNI, SELF are in the range of 0.650-0.767, 0.520-0.841, 0.716-0.874, 0.583-0.830, 0.565-0.713 respectively. The results of the validity and reliability of measurement scales are shown in Table 7.

| Table 7. Validity and Reliability of Constructs | | | | | | | |
|---|---|---|---|---|---|---|---|
| CONSTRUCT | CR | AVE | Correlations | | | | |
| | | | 1 | 2 | 3 | 4 | 5 |
| 1. SATIS | 0.809 | 0.515 | *0.718* | | | | |
| 2. FAMILY | 0.792 | 0.439 | 0.431 | *0.663* | | | |
| 3. FRIEND | 0.819 | 0.604 | 0.344 | 0.430 | *0.777* | | |
| 4. UNI | 0.798 | 0.446 | 0.265 | 0.258 | 0.416 | *0.668* | |
| 5. SELF | 0.787 | 0.427 | 0.249 | 0.062 | 0.386 | 0.454 | *0.653* |
| *Note*: The values in the diagonal shaded cells are square root of AVE. | | | | | | | |

## Empirical Analysis and Results

Our aim is to examine the influence of Internet use and the quality of experience with Internet and non-

Internet activities on life satisfaction. Since we have ordered responses in our dependent variable, we use ordered logistic regression to regress life satisfaction (SATIS1) on domain life satisfaction variables and affective variables. Table 8 presents variable definitions.

**Table 8. Variable Definitions**

| Variable | Definition/Items |
|---|---|
| PAFFWNET | Duration weighted positive affect from Internet activities on a weekday and weekend |
| PAFFWNONET | Duration weighted positive affect from non-Internet activities on a weekday and weekend |
| NAFFWNET | Duration weighted negative affect from Internet activities on a weekday and weekend |
| NAFFWNONET | Duration weighted negative affect from non-Internet activities on a weekday and weekend |
| PAFFWDNET | Duration weighted positive affect from Internet activities on a weekday |
| PAFFWDNONET | Duration weighted positive affect from non-Internet activities on a weekday |
| PAFFWENET | Duration weighted positive affect from Internet activities on a weekend |
| PAFFWENONET | Duration weighted positive affect from non-Internet activities on a weekend |
| NAFFWDNET | Duration weighted negative affect from Internet activities on a weekday |
| NAFFWDNONET | Duration weighted negative affect from non-Internet activities on a weekday |
| NAFFWENET | Duration weighted negative affect from Internet activities on a weekend |
| NAFFWENONET | Duration weighted negative affect from non-Internet activities on a weekend |
| FAMILY | Average value of five items of family satisfaction construct (1-5); two items are dropped due to low loadings |
| UNI | Average value of five items of university life satisfaction construct (1-4 and 6); three items are dropped due to low loadings |
| SELF | Average value of five items of satisfaction with self construct (1-5); two items are dropped due to low loadings |
| FRIEND | Average value of three items of satisfaction with friends construct (1,2,5); other items are dropped due to low loadings |
| GENDER | Sex; 0 = male, 1 = female |

Following Kahneman et al. (2004), positive affect is an average of three feelings: happy, warm/friendly, and enjoying myself. Negative affect is an average of frustrated/annoyed, depressed, hassled/pushed around, angry/hostile, worried/anxious, and criticized/put down. For each activity, we calculated duration weighted positive affect and duration weighted negative affect. Next, we compute aggregated measures of positive and negative affect from weekday and weekend Internet and non-Internet activities for each respondent. Similar formulas are used to calculate the other three covariates (PAFFWNONET, NAFFWNET, NAFFWNONET). Duration weighted positive affect from weekday and weekend Internet use (PAFFWNET) is calculated from (PAFFWDNET*5 +PAFFWENET*2)/7. Table 9 presents the ordered logistic regression results with life satisfaction as a dependent variable. Note that the overall amount of variance of life satisfaction explained from our models from 7.5% to 10.5% are within the range of 8%-15% reported in previous research (Diener et al. 1999; Easterlin 2006). Easterlin (2006), for example, reported between 6.5% and 13.3% of variance from the results of ordered logistics regression on life satisfaction from a sample size of 18,000 and more.

**Table 9. Ordered Logistic Regressions of Life Satisfaction**

| Variable | Model 1 Combined weekday and weekend | Model 2 Weekday and weekend | Model 3 Weekday | Model 4 Weekend | Model 5 Weekday and weekend (positive affect) |
|---|---|---|---|---|---|
| PAFFWNET | .596** | | | | |
| PAFFWNONET | -.215 | | | | |
| NAFFWNET | -.040 | | | | |
| NAFFWNONET | -.018 | | | | |
| PAFFWDNET | | .396 | .441* | | .418* |
| PAFFWDNONET | | .212 | -.101 | | .242 |
| PAFFWENET | | .305 | | .522** | .293 |
| PAFFWENONET | | -.496* | | -.363* | -.508* |
| NAFFWDNET | | -.051 | -.048 | | |
| NAFFWDNONET | | .143 | -.011 | | |
| NAFFWENET | | -.069 | | -.180 | |
| NAFFWENONET | | -.098 | | .078 | |
| FAMILY | .488** | .475** | .501** | .487** | .458** |
| UNI | .099 | .073 | .101 | .104 | .065 |
| SELF | .391 | .297 | .435 | .292 | .302 |
| FRIEND | -.072 | -.064 | -.046 | .046 | -.069 |
| GENDER | .333 | .294 | .280 | .317 | .314 |
| Pseudo $R^2$ | .087 | .105 | .075 | .093 | .105 |

*Note*: Number of observations = 100. All models are statistically significant. Model 1: Log likelihood = -130.787, Wald $\chi^2$ = 43.89, $p$ = 0.00. Model 2: Log likelihood = -128.208, Wald $\chi^2$ = 49.12, $p$ =0.00. Model 3: Log likelihood = -128.299, Wald $\chi^2$ = 33.73, $p$ = 0.00. Model 4: Log likelihood = -132.577, Wald $\chi^2$ = 44.08, $p$ = 0.00. Model 5: Log likelihood = -129.964, Wald $\chi^2$ = 34.54, $p$ = 0.00.
Significance: * $p$<.10, ** $p$<.05, ***, $p$<.01.

We start by evaluating the influence of Internet use and affective experiences from overall Internet and non-Internet activities on life satisfaction (Model 1). The positive affect associated with Internet use is positive and statistically significant ($p$=.03). We also find that satisfaction with family is positive and statistically significant ($p$=.02). Next, we evaluate the positive and negative affect from Internet and non-Internet activities for weekday and weekend separately in the same model (Model 2). Two variables show significant results. Satisfaction with family is positive and statistically significant ($p$=.03) with comparable estimated coefficients to the result from Model 1. Interestingly, the positive affect associated with non-Internet activities during weekend is negative and weakly significant ($p$=.08).

We also evaluate the influence of positive and negative affective experiences from weekday (Model 3) and from weekend (Model 4). The positive affect from Internet use during weekday and weekend are statistically significant ($p$=.06, $p$=.01 respectively) with a slightly stronger effect from positive affect associated with Internet use during weekend. Similar to the result from Model 2, the positive affect associated with non-Internet activities during weekend is negative and significant ($p$=.06). Finally, we concentrate on the influence of positive affect from Internet and non-Internet activities during weekday and weekend. The results confirm those from Model 3 and Model 4 that positive affect associated with Internet use during weekday is positive and significant ($p$=.06) and the positive affect associated with non-Internet activities during weekend is negative and significant ($p$=.07). We do not find any difference

between males and females across all five models.

## Discussion and Conclusion

Positive well-being is crucial to a vibrant society. Research suggests that both emotional well-being and life satisfaction need to be considered in assessing people's lives (Kahneman et al. 2010). Overall life satisfaction has important consequences on people's overall health. Similarly, affect plays a significant role in decision making in various life events. Policymakers view the Internet as an instrumental technology that will improve people's well-being in the future. Thus, it is important that we develop a better understanding of the consequences of Internet use so we can meaningfully assess our progress.

The value of the Internet is determined by how people use it and whether the usage transforms their lives. This study chooses subjective well-being with an emphasis on life satisfaction as an outcome variable and affective experiences as covariates to evaluate the impact of Internet use. From a policy perspective, subjective well-being offers a meaningful assessment that can inform policy on Internet promotion and intervention. This research goes beyond the traditional measures of Internet use (e.g., time spent on line and frequency of use) by linking time spent in Internet activities with feelings associated with those activities. In addition, we take an integrative view of people's lives (Haythornthwaite 2001) by incorporating both Internet and non-Internet experiences.

Life satisfaction, in general, and the contribution of Internet use on life satisfaction, in particular, is more complex than theorized in previous research. Our results suggest that life satisfaction in the digital world needs to be conceptualized from at least two related perspectives. The first perspective is that life satisfaction is a function of satisfaction in various life domains (e.g., family, health, and work) (Diener 1984). The second perspective is that life satisfaction is influenced by how people spend their time on Internet and non-Internet activities as well as positive and negative feelings while engaging in those activities.

Overall, the empirical results from 18-22 years old young adults suggest that satisfaction with family is important to their life satisfaction. Our participants use the Internet for various purposes from mundane activities such as checking maps to active leisure activities (e.g., playing online games, watching video clips, and listening to music) to passive leisure (e.g., using the Internet for no specific purposes). Positive affect from Internet activities is important to a satisfying life of young adults. On the other hand, negative affect from both Internet and non-Internet activities decreases life satisfaction. Our results also suggest that not all affective experiences contribute positively to life satisfaction. These young adults seem to value positive affect from Internet activities more than positive affect from non-Internet activities.

The strength of the effect of domain satisfaction ratings on an overall life satisfaction may vary from one life domain to another, depending on each individual's value orientations. Therefore, life domains with higher perceived importance should exert stronger influence on life satisfaction when compared with other life domains that have lower perceived importance. These higher valued life domains are often referred to as salient life domains in the literature (Oishi et al. 1999b). Our finding is consistent with Oishi et al. (1999a) and Easterlin (2006) that family life satisfaction is important to global life satisfaction of young adults.

We discover the puzzling effects of positive affect from online and offline activities. Typically, we expect that time spent in activities that are associated with happiness, enjoyment and warmth will increase life satisfaction. However, our finding suggests that positive affect from Internet activities increases life satisfaction while the positive affect from non-Internet activities decreases life satisfaction. Previous research suggests that the Internet takes time away from other activities (Nie and Erbring 2002). This notion has become known as the "time displacement" effect of the Internet. In this study, our results from Internet and non-Internet activities seem to offer preliminary evidence that Internet users may experience the "emotional displacement" effect of the Internet in which happiness associated with Internet activities seem to be more salient to a satisfying life than happiness associated with non-Internet activities. However, there is a need to conduct further analysis to find out about different kinds of activities people engage in online and offline to fully understand the observed paradox.

There are a few limitations in our research. First, this research has a modest sample size of young men and women. This is because the data collection instrument employed in this research is more demanding

than a traditional 1-2 pages survey that most participants are accustomed with. Our questionnaire requires participants to recall and record all activities and associated feelings for one typical weekday and one day of a weekend. Despite a relatively small sample size, we still find statistically significant results to explain the role of Internet and non-Internet activities on life satisfaction. Future research may want to consider offering strong incentives to encourage more participants to join the study (Kahneman et al. 2010). Second, this study focuses on one age group in one country. Therefore, we encourage others to exercise caution in generalizing the results of this study. Future research may want to include other age groups as well as participants in other countries to enrich our understanding of the role of Internet and non-Internet activities in explaining life satisfactions.

## References

Bennett, S., Maton, K., and Kervin, L. 2008. "The 'Digital Natives' Debate: A Critical Review of the Evidence," *British Journal of Educational Technology* (39:5), pp. 775-786.

Blanchflower, D.G., and Oswald, A.J. 2004. "Well-Being over Time in Britain and the USA," *Journal of Public Economics* (88:7-8), pp. 1359-1386.

Blanchflower, D.G., and Oswald, A.J. 2011. "International Happiness." National Bureau of Economic Research.

Broadband Commission for Digital Development. 2011. "Broadband: A Platform for Progress." Retrieved September 2, 2013, from http://www.broadbandcommission.org/work/documents.aspx

Broadband Commission for Digital Development. 2012. "The State of Broadband 2012: Achieving Digital Inclusion for All." Retrieved September 2, 2013, from http://www.broadbandcommission.org/work/documents.aspx

Chen, W., and Wellman, B. 2005. "Charting Digital Divides: Comparing Socioeconomic, Gender, Life Stage, and Rural-Urban Internet Access and Use in Five Countries," in *Transforming Enterprise: The Economic and Social Implications of Information Technology,* W.H. Dutton, B. Kahin, R. O'Callaghan and A.W. Wyckoff (eds.). Cambridge, MA: MIT Press, pp. 467-498.

Clark, A.E., Frijters, P., and Shields, M.A. 2008. "Relative Income, Happiness, and Utility: An Explanation for the Easterlin Paradox and Other Puzzles," *Journal of Economic Literature* (46:1), pp. 95-144.

DeNeve, K.M., and Cooper, H. 1998. "The Happy Personality: A Meta-Analysis of 137 Personality Traits and Subjective Well-Being," *Psychological Bulletin* (124:2), pp. 197-229.

Di Tella, R., MacCulloch, R.J., and Oswald, A.J. 2001. "Preferences over Inflation and Unemployment: Evidence from Surveys of Happiness," *American Economic Review* (91:1), pp. 335-341.

Diener, E. 1984. "Subjective Well-Being," *Psychological Bulletin* (95:3), pp. 542-575.

Diener, E. 2000. "Subjective Well-Being: The Science of Happiness and a Proposal for a National Index," *American Psychologist* (55:1), pp. 34-43.

Diener, E., Emmons, R.A., Larsen, R.J., and Griffin, S. 1985. "The Satisfaction with Life Scale," *Journal of Personality Assessment* (49:1), pp. 71-75.

Diener, E., Oishi, S., and Lucas, R.E. 2003. "Personality, Culture, and Subjective Well-Being: Emotional and Cognitive Evaluations of Life," *Annual Review of Psychology* (54:1), pp. 403-425.

Diener, E., and Suh, E.M. 1999. "National Differences in Subjective Well-Being," in *Well-Being: The Foundations of Hedonic Psychology,* D. Kahneman, E. Diener and N. Schwarz (eds.). New York, NY: Russell Sage Foundation, pp. 434-450.

Diener, E., Suh, E.M., Lucas, R.E., and Smith, H.L. 1999. "Subjective Well-Being: Three Decades of Progress," *Psychological Bulletin* (125:2), pp. 276-302.

Dolan, P., Peasgood, T., and White, M. 2008. "Do We Really Know What Makes Us Happy? A Review of the Economic Literature on the Factors Associated with Subjective Well-Being," *Journal of Economic Psychology* (29:1), pp. 94-122.

Easterlin, R.A. 2001. "Income and Happiness: Towards a Unified Theory," *The Economic Journal* (111:473), pp. 465-484.

Easterlin, R.A. 2006. "Life Cycle Happiness and Its Sources Intersections of Psychology, Economics, and Demography," *Journal of Economic Psychology* (27:4), pp. 463-482.

Franzen, A. 2000. "Does the Internet Make Us Lonely?," *European Sociological Review* (16:4), pp. 427-438.

Frey, B.S., and Stutzer, A. 2002. "What Can Economists Learn from Happiness Research?," *Journal of Economic Literature* (40:2), pp. 402-435.

Hargittai, E. 2010. "Digital Na(T)Ives? Variation in Internet Skills and Uses among Members of the "Net Generation"," *Sociological Inquiry* (80:1), pp. 92-113.
Haythornthwaite, C. 2001. "Introduction: The Internet in Everyday Life," *American Behavioral Scientist* (45:3), pp. 363-382.
Helliwell, J.F. 2003. "How's Life? Combining Individual and National Variables to Explain Subjective Well-Being," *Economic Modeling* (20:2), pp. 331-360.
Howell, R.T., and Howell, C.J. 2008. "The Relation of Economic Status to Subjective Well-Being in Developing Countries: A Meta-Analysis," *Psychological Bulletin* (134:4), pp. 536-560.
Hu, L., and Bentler, P.M. 1998. "Fit Indices in Covariance Structure Modeling: Sensitivity to Underparameterized Model Misspecification," *Psychological Methods* (3:4), pp. 424-453.
Hu, L., and Bentler, P.M. 1999. "Cutoff Criteria for Fit Indexes in Covariance Structure Analysis: Conventional Criteria Versus New Alternatives," *Structural Equation Modeling* (6:1), pp. 1-55.
International Telecommunication Union. 2013. "2006-2013 ICT Data for the World." from Retrived from http://www.itu.int/en/ITU-D/Statistics/Documents/statistics/2012/ITU_Key_2006-2013_ICT_data.xls
Jackson, L.A., von Eye, A., Barbatsis, G., Biocca, F., Fitzgerald, H.E., and Zhao, Y. 2004. "The Impact of Internet Use on the Other Side of the Digital Divide," *Communications of the ACM* (47:7), pp. 43-47.
Jennings, M.K., and Zeitner, V. 2003. "Internet Use and Civic Engagement," *Public Opinion Quarterly* (67:3), pp. 311-334.
Kahneman, D., and Deaton, A. 2010. "High Income Improves Evaluation of Life but Not Emotional Well-Being," *Proceedings of the National Academy of Sciences of the United States of America* (107:38), pp. 16489-16493.
Kahneman, D., and Krueger, A.B. 2006. "Developments in the Measurement of Subjective Well-Being," *Journal of Economic Perspectives* (20:1), pp. 3-24.
Kahneman, D., Krueger, A.B., Schkade, D.A., Schwarz, N., and Stone, A. 2004. "A Survey Method for Characterizing Daily Life Experience: The Day Reconstruction Method," *Science* (306:5702), pp. 1776-1780.
Kahneman, D., Schkade, D.A., Fischler, C., Krueger, A.B., and Krilla, A. 2010. "The Structure of Well-Being in Two Cities: Life Satisfaction and Experienced Happiness in Columbus, Ohio; and Rennes, France," in *International Differences in Well-Being,* E. Diener, D. Kahneman and J. Helliwell (eds.). New York, NY: Oxford University Press, pp. 16-33.
Kavanaugh, A.L., and Patterson, S.J. 2001. "The Impact of Community Computer Networks on Social Capital and Community Involvement," *American Behavioral Scientist* (45:3), pp. 496-509.
Kennedy, G., Krause, K., Judd, T., Churchward, A., and Gray, K. 2008. "First Year Students' Experiences with Technology: Are They Really Digital Natives?," *Australasian Journal of Educational Technology* (24:1), pp. 108-122.
Kim, J., LaRose, R., and Peng, W. 2009. "Loneliness as the Cause and the Effect of Problematic Internet Use: The Relationship between Internet Use and Psychological Well-Being," *CyberPsychology and Behavior* (12:4), pp. 451-455.
Korpi, T. 1997. "Is Utility Related to Employment Status? Employment, Unemployment, Labor Market Policies and Subjective Well-Being among Swedish Youth " *Labour Economics* (4:2), pp. 125-147.
Kraut, R., Kiesler, S., Boneva, B., Cummings, J., Helgeson, V., and Crawford, A. 2002. "Internet Paradox Revisited," *Journal of Social Issues* (58:1), pp. 49-74.
Kraut, R., Mukhopadhyay, T., Szczypula, J., Kiesler, S., and Scherlis, B. 1999. "Information and Communication: Alternative Uses of the Internet in Households," *Information Systems Research* (10:4), pp. 287-303.
Kraut, R., Patterson, M., Lundmark, V., Kiesler, S., Mukopadhyay, T., and Scherlis, W. 1998. "Internet Paradox: A Social Technology That Reduces Social Involvement and Psychological Wellbeing?," *American Psychologist* (53:9), pp. 1017-1032.
Krueger, A.B. 2007. "Are We Having More Fun Yet? Categorizing and Evaluating Changes in Time Allocation," *Brookings Papers on Economic Activity* (2007:2), pp. 193-215.
Krueger, A.B., DKahneman, D., Fischler, C., Schkade, D.A., Schwarz, N., and Stone, A. 2009. "Time Use and Subjective Well-Being in France and in the U.S.," *Social Indicators Research* (93:1), pp. 7-18.
Lyytinen, K., and Rose, G.M. 2003. "The Disruptive Nature of Information Technology Innovations: The Case of Internet Computing in System Development Organizations," *MIS Quarterly* (27:4), pp. 557-596.
Ministry of Information and Communication Technology. 2010. "National Broadband Policy." Retrieved

September 2, 2013, from http://eng.mict.go.th/
National Statistical Office. 2011. "2011 Summary of Household Usage of Information and Communication Technology." Retrieved September 2, 2013, from http://service.nso.go.th/nso/nsopublish/themes/files/ictHSum54.pdf
Nie, N.H. 2001. "Sociability, Interpersonal Relations, and the Internet: Reconciling Conflicting Findings," *American Behavioral Scientist* (45:3), pp. 420-435.
Nie, N.H., and Erbring, L. 2002. "Internet and Society: A Preliminary Report," *IT&Society* (1:1), pp. 275-283.
Oishi, S., Diener, E., Lucas, R.E., and Suh, E.M. 1999a. "Cross-Cultural Variations in Predictors of Life Satisfaction: Perspectives from Needs and Values," *Personality and Social Psychology Bulletin* (25:8), pp. 980-990.
Oishi, S., Diener, E., Suh, E.M., and Lucas, R.E. 1999b. "Value as a Moderator in Subjective Well-Being," *Journal of Personality* (67:1), pp. 157-184.
Oswald, A.J. 1997. "Happiness and Economic Performance," *The Economic Journal* (107:445), pp. 1815-1831.
Prensky, M. 2001. "Digital Natives, Digital Immigrants," *On the Horizon* (9:5), pp. 1-6.
Radcliff, B. 2001. "Politics, Markets, and Life Satisfaction: The Political Economy of Human Happiness," *American Political Science Review* (95:4), pp. 939-952.
Ravallion, M., and Lokshin, M. 2001. "Identifying Welfare Effects from Subjective Questions," *Economica* (68:271), pp. 335-357.
Schwarz, N., and Strack, F. 1999. "Reports of Subjective Well-Being: Judgmental Processes and Their Methodological Implications," in *Well-Being: The Foundations of Hedonic Psychology,* D. Kahneman, E. Diener and N. Schwarz (eds.). New York: Russell Sage Foundation, pp. 61-84.
Tilson, D., Lyytinen, K., and Sorensen, C. 2010. "Digital Infrastructures: The Missing Is Research Agenda," *Information Systems Research* (21:4), pp. 748-759.
Turkle, S. 2011. *Alone Together: Why We Expect More from Technology and Less from Each Other*. New York, NY: Basic Books.
Valkenburg, P.M., and Peter, J. 2007. "Online Communication and Adolescent Well-Being: Testing the Stimulation Versus the Displacement Hypothesis," *Journal of Computer-Mediated Communication* (12:4), pp. 1169-1182.
van den Eijnden, R., Meerkerk, G., Vermulst, A., Spijkerman, R., and Engels, R. 2008. "Online Communication, Compulsive Internet Use, and Psychological Well-Being among Adolescents: A Longitudinal Study," *Developmental Psychology* (44:3), pp. 655-665.
Veenhoven, R. 2000. "Freedom and Happiness: A Comparative Study in Forty-Four Nations in the Early 1990s," in *Culture and Subjective Well-Being,* E. Diener and E.M. Suh (eds.). Cambridge, MA: MIT Press.
Vodanovich, S., Sundaram, D., and Myers, M. 2010. "Digital Natives and Ubiquitous Information Systems," *Information Systems Research* (21:4), pp. 711-723.
Wellman, B., Quan Haase, A., Witte, J., and Hampton, K. 2001. "Does the Internet Increase, Decrease, or Supplement Social Capital?," *American Behavioral Scientist* (45:3), pp. 436-455.
Zullig, K.J., Huebner, E.S., Patton, J.M., and Murray, K.A. 2009. "The Brief Multidimensional Students' Life Satisfaction Scale-College Version," *American Journal of Health Behavior* (33:5), pp. 483-493.

## Acknowledgments

We thank Chiang Mai University for the generous funding to support this study.