

EXPLORING GENDER DIMENSIONS IN INTERNET SELF-EFFICACY IN THE PHILIPPINES

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ABSTRACT

Given the pervasiveness of the Internet and related technologies, opportunities and challenges related to their development, implementation and usage by individuals and organizations have arisen. Individuals' beliefs in their ability to effectively utilize the Internet and perform Internet-related tasks can affect the way they use, transact and communicate in the Internet. Additionally, this Internet self-efficacy may be influenced by gender differences.

Responses to two interrelated Internet self-efficacy scales (Internet Self-Efficacy scale with 39 items across seven factors and the Sources of Internet Self-Efficacy scale with 11 items comprising three factors) administered to 127 Filipinos of varying ages, educational backgrounds and work backgrounds (63 men and 64 women) were analyzed. Results indicated that, overall, there is no significant difference between men and women in almost all of the different factors associated with Internet self-efficacy and sources of Internet self-efficacy although there is a significant difference between males and females when it comes to psychological and affective states, specifically Internet anxiety.

Understanding how gender differences can be mitigated in different environments like the home, school or workplace can help in motivating more people, regardless of gender, to make use of the Internet more confidently and harness its potential in their day to day lives. Understanding how the different factors related to Internet self-efficacy and the sources of Internet self-efficacy can influence people's behavior and attitudes towards the Internet would also contribute positively to gradually eliminating any gender differences that may be present.

Keywords: Internet, self-efficacy, gender differences, behavior, skills

INTRODUCTION

Given the pervasiveness of the Internet and related technologies, opportunities and challenges related to their development, implementation and usage by individuals and organizations have arisen. It has been recognized that, because people are able to access the Internet to do different things such as email, download a document or photo, put their status on Facebook or Twitter or even just chatting over such social media and other platforms such as Yahoo Messenger or Gmail Chat, their information creation and sharing capabilities as well as interaction facilitation have rapidly increased and developed.

The presence of such Internet-related capabilities has influenced product and service development and management as well as the reengineering of business processes, organizational structures and linkages and industry barriers and limits (Torkzadeh & Van Dyke, 2002). However, it is not only processes and structures that have to adapt to the dynamics brought about by the Internet but people as well. Rogers (1983) points out that the successful adaptation or assimilation of any new technology lies in its ability to fit easily and seamlessly into people's lives. More and more people access the web regularly for different types of information – from academic to government to health and wellness to financial and investment related, do different

types of searches – from job opportunities to travel packages to scholarships and other school related opportunities, watch videos and other forms of entertainment and a lot more (Fallows, 2004; Hargittai & Shafer, 2006; Howard, Rainie, & Jones, 2002).

Internet self-efficacy is defined as an individual's self-evaluated ability to use the Internet and independently accomplish Internet tasks (Torkzadeh & Van Dyke, 2002) or individuals' perception of their ability to use the Internet (Tsai & Tsai, 2003) or the examination of learners' confidence in their general skills or knowledge of operating Internet functions or applications in the Internet-based learning environment (Tsai, Chuang, Liang, & Tsai, 2011). It is, therefore, important to recognize how much Internet self-efficacy influences an individual's adaptation of Internet technologies in his or her way of life.

It would also be good to note that Internet self-efficacy may not necessarily be restricted to Internet behaviors, such as performing information searches, exploring websites or blogs, etc. or even emailing or communicating through social media. Akyol and Garrison (2011) recommended that the person's cognitive process and metacognition should be incorporated in the analysis of Internet self-efficacy. Internet self-efficacy may, in fact, be influenced by gender differences. We may even discover important gender differences in attitudes to the Internet, the intensity and frequency of use, and user skill, all factors pertinent to different groups benefitting from Internet use on different levels (Hargittai & Shafer, 2006).

This study explores whether such gender differences exist in the Philippines, a country where there is a lot of potential for Internet technologies which its citizenry want to effectively use to contribute to its competitiveness as a nation, and recommend ways to be able to deal with such differences, if ever.

THEORETICAL BACKGROUND AND REVIEW OF LITERATURE

Individuals with moderate to high self-efficacy tend to engage more frequently in task-related activities and persist longer in coping efforts. This leads to more mastery experiences, which in turn enhance self-efficacy. Those with low self-efficacy tend to engage in fewer challenging efforts; they give up more easily under adversity and evidence less mastery, which in turn reinforces their low self-efficacy (Bandura, 1977; Bandura, 1982).

Bandura (1986) suggests that self-efficacy measures need to be tailored to the domain of interest in order to maximize prediction. Research findings suggest that the predictive capability of a self-efficacy estimate is most accurate when determined by specific domain-related measures rather than with general measures (Bandura, 1989). Research into computer self-efficacy was the pre-cursor to research initiatives into Internet self-efficacy as it was recognized that Internet self-efficacy can be distinguished from computer self-efficacy as the belief that one can successfully perform a distinct set of behaviors required to establish, maintain and utilize effectively the Internet over and above basic personal computer skills (Eastin & LaRose, 2000). Internet self-efficacy can also refer to the beliefs in one's capabilities to organize and execute courses of Internet actions required to produce given attainments (Hsu & Chiu, 2004).

Researchers examining the Internet phenomenon have looked into a wide range of issues such as openness to Internet or web-based learning platforms or environments (Chu & Tsai, 2009; Liang & Wu, 2010) or even psychological influences of Internet usage, including gender differences (Teo & Lim, 1997; Teo & Lim, 2000; Whitty & McLaughlin, 2007; Dhir, Pallesen, Torsheim, & Andreassen, 2016; Malik et al, 2016). A number of studies have indicated either that there are significant differences in perceptions of men and women regarding their Internet

and computer self-efficacy, including attitudes towards computer and Internet usage (Broos, 2005; Dittmar, Long, & Meek, 2004; Durndell & Haag, 2002; Imhof, Vollmeyer, & Beierlein, 2007; Vekiri & Chronaki, 2008; Wu & Tsai, 2006). Several studies have also indicated that men tend to spend much more time online than women and that both sexes use the Internet for different purposes (Busselle, Reagan, Pinkleton, & Jackson, 1999; Durndell & Thomson, 1997; Jackson, Ervin, Gardner, & Schmitt, 2001; Kennedy, Wellman, & Klement, 2003; Kelsey, 2002; Sherman et al, 2000; Schumacher & Morahan-Martin, 2001; Haferkamp, Eimler, Papadakis, & Kruck, 2012). These studies characterize men as functional when it comes to Internet usage while women are more relational.

Weiser (2000) summarized his findings by saying that men use the Internet mostly as a leisure time activity and for recreation, while women use it more for interpersonal communication. Joiner et al (2012) found that males generally had a more extensive use of the Internet compared to females although this was in the area of games and entertainment. They also found that, similar to Weiser (2000), females were using the Internet more for communication and participating in social networking sites (SNS). Fletcher (2005) found that gender and previous online experience influence online learning self-efficacy, with female students having greater self-efficacy. A number of studies have confirmed such inclinations of females to online interpersonal communications and active patronage and use of social networking sites to enhance social gratification (Andreassen, Torsheim, Brunborg, & Pallesen, 2012; Bonetti, Campbell, & Gilmore, 2010; Haferkamp et al, 2012; Debrand & Johnson, 2008; Hargittai & Hsieh, 2010; Dhir et al, 2016; Teppers, Luyckx, Klimstra, & Goosens, 2014; Chan, Cheung, Shi, & Lee, 2015; Special & Li-Barber, 2012).

Men tend to have attitudes that show their stereotypes on who they think are capable of using the internet, and, when it comes to self-evaluations and perceptions, results show that women tend to demonstrate lower levels of internet skills (Cooper, 2006; van Deursen & van Dijk, 2015; Wasserman & Richmond-Abbott, 2005). However, when subjected to actual performance tests, results show that there does not seem to be any significant difference in the measures of skills of men and women do not differ much (Hargittai & Shafer, 2006; van Deursen & van Dijk, 2010, 2011).

On the other hand, there are a number of studies that have indicated that there are no significant differences in the way men and women view their Internet self-efficacy or how they make use of the Internet like in online communication and other online activities (Goldstein & Puntambekar, 2004; Teo, 2001; Torkzadeh, Plfughoeft, & Hall, 1999; Schumacher & Morahan-Martin, 2001; Hung, Chou, Chen, & Own, 2010). Hargittai and Shafer (2006) concluded that gender may not directly influence the level of internet skills, but that it does play a role in one's perception.

Given this mix of findings across different Internet self-efficacy studies, it is proposed that, for this exploratory study, the hypothesis (H) to be tested is: There is no significant difference in the Internet self-efficacy of men and women.

METHODOLOGY

One of the most important considerations in a research field such as this is the development of valid and reliable measures and constructs to facilitate the collection of relevant findings to substantiate analyses of research hypotheses being put forth.

The instrument

Internet self-efficacy measurements and constructs have been developed to evaluate the individual's self-perception and self-competency in interacting specifically with the Internet.

This study used two questionnaires developed by Chuang, Lin and Tsai (2015) for their exploratory study on the relationship of Internet self-efficacy and sources of Internet self-efficacy among Taiwanese university students. These two questionnaires are the Internet Self-efficacy Survey (ISS) containing seven factors (usage, sharing, communication, verification, metacognition, application and learning) and 39 items in total and the Sources of Internet Self-efficacy Survey (SISS) containing 3 factors (pre-experience, influence of others and psychological and affective states) and 11 items in total. English editing of a couple of statements was done to improve the comprehension of the prospective respondents to such statements.

Sample and procedure

The questionnaire was sent out to multiple email and social media groups and lists in order to establish some form of Internet experience in the respondents who were based in different parts of the Philippines (i.e., Luzon, Visayas, Mindanao, Metro Manila) so as to contribute to the geographical coverage of the whole country and not have respondents just concentrated in one geographic region in the country. A total of 127 complete questionnaires (all items answered) consisting of 63 males (49.6%) and 64 females (50.4%) were gathered. One hundred (78.2%) of the respondents were between the ages of 16 – 30 years old while the remaining 27 (21.8%) respondents were from 31 – 50 years old. There were 44 (34.6%) student respondents, 69 (54.3%) employed and the remaining 14 (11.1%) were entrepreneurs/business owners.

Gender differences were analyzed using t-tests for equality of means. Additionally, a correlation analysis was done to determine the relationship between the seven factors of the ISS and the three factors of the SISS.

RESULTS AND DISCUSSION

Data analysis, Results and Discussion

The reliability (internal consistency) of items in the instrument was examined using Cronbach's alpha to confirm the adequacy of the measures for testing the hypothesis. The coefficient (0.962) of the ISS and the coefficient (0.702) of the SISS confirmed results of earlier studies and provided confidence in testing the hypothesis.

The following tables (Tables 1 and 2) summarize the means and standard deviations of the seven factors in the ISS and the three factors in the SISS as well as the means and standard deviations of the ISS and the SISS.

Factors	Gender	N	Mean	Std. Deviation
Usage	Male	63	4.4048	.55117
	Female	64	4.4015	.48785
Sharing	Male	63	4.2305	.65195
	Female	64	4.0598	.72272
Communication	Male	63	4.4643	.64735
	Female	64	4.5508	.54405
Verification	Male	63	4.2379	.71179
	Female	64	4.2870	.61412
Metacognition	Male	63	4.3073	.60177
	Female	64	4.3645	.48965
Application	Male	63	4.2500	.73369
	Female	64	4.2891	.63186
Learning	Male	63	4.2806	.66196
	Female	64	4.2555	.58441
Pre-experience	Male	63	3.9048	.62924
	Female	64	3.8531	.58580
Influence	Male	63	3.2381	.81249
	Female	64	3.2656	.62974
Psychological	Male	63	3.2143	.63952
	Female	64	3.4219	.47324

Survey	Gender	N	Mean	Std. Deviation
ISS	Male	63	4.3092	.53178
	Female	64	4.3120	.46868
SISS	Male	63	3.5371	.57980
	Female	64	3.5614	.42660

The following tables (Tables 3 and 4) summarize the results of the t-tests used in analyzing the gender differences in the different factors in both the ISS and SISS.

Factors		Levene's Test for Equality of Variances		t-test for Equality of Means		
		F	Sig.	T	Df	Sig. (2-tailed)
Usage	Equal variances assumed	.248	.619	.035	125	.972
	Equal variances not assumed			.035	122.691	.972
Sharing	Equal variances assumed	.596	.442	1.396	125	.165
	Equal variances not assumed			1.397	124.063	.165
Communication	Equal variances assumed	2.460	.119	-.816	125	.416
	Equal variances not assumed			-.815	120.744	.417
Verification	Equal variances assumed	.994	.321	-.416	125	.678
	Equal variances not assumed			-.416	121.795	.678
Metacognition	Equal variances assumed	2.802	.097	-.588	125	.557
	Equal variances not assumed			-.587	119.286	.558
Application	Equal variances assumed	1.269	.262	-.322	125	.748
	Equal variances not assumed			-.321	121.725	.749
Learning	Equal variances assumed	2.162	.144	.227	125	.821
	Equal variances not assumed			.227	122.607	.821
Pre-experience	Equal variances assumed	.238	.627	.479	125	.633
	Equal variances not assumed			.478	124.056	.633
Influence	Equal variances assumed	5.284	.023	-.214	125	.831
	Equal variances not assumed			-.213	116.810	.832
Psychological	Equal variances assumed	7.179	.008	-2.082	125	.039*
	Equal variances not assumed			-2.077	114.200	.040*

* Significant at .05 level of significance

Survey		Levene's Test for Equality of Variances		t-test for Equality of Means		
		F	Sig.	T	df	Sig. (2-tailed)
ISS	Equal variances assumed	.479	.490	-.032	.972	.975
	Equal variances not assumed			-.032	.972	.975
SISS	Equal variances assumed	6.048	.015	-.269	.165	.788
	Equal variances not assumed			-.268	.165	.789

Analyzing the ISS revealed that was no significant difference found between males and females in the factors of usage, sharing, communication, verification, metacognition, application and learning which suggested that males and females may have similar viewpoints or perspectives with respect to these factors. On the other hand, analyzing the SISS showed a significant difference only in the factor of psychological and affective states. The results showed that males had significantly lower scores ($t = -2.077$) than females in the factor of psychological and affective states. This result might be seen as signifying that female respondents seem to be more anxious than male respondents in the Internet-based environment. The two statements in this factor (“It makes me nervous when I use the Internet” and “It makes me anxious when I am confronted with difficulty on the Internet”) seem to suggest that females are more nervous and anxious when using the Internet because of possible difficulties that they may encounter in the course of their usage.

The following table (Tables 5) summarizes the correlation analysis between the respondents' ISS scores and SISS scores.

Factor		Pre - experience	Influence	Psychological
Usage	Pearson Correlation	.507**	-.003	.196**
	Sig. (2-tailed)	.000	.975	.027
Sharing	Pearson Correlation	.522**	.034**	.090
	Sig. (2-tailed)	.000	.701	.312
Communication	Pearson Correlation	.522**	.210**	.153**
	Sig. (2-tailed)	.000	.018	.086
Verification	Pearson Correlation	.480	.085**	.228**
	Sig. (2-tailed)	.000	.343	.010
Metacognition	Pearson Correlation	.490**	.125**	.220**
	Sig. (2-tailed)	.000	.161	.013
Application	Pearson Correlation	.564**	.140**	.196**
	Sig. (2-tailed)	.000	.117	.027
Learning	Pearson Correlation	.595**	.015**	.145**
	Sig. (2-tailed)	.000	.871	.103

Note: N=127

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

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

Going through the correlation analysis, results showed that the factor of pre-experience in SISS was found to be positively and significantly correlated with all the factors of ISS except for verification. This strongly suggests that respondents' prior experience with the Internet and Internet-related transactions or processes could be a significant predictor of their Internet self-efficacy. For the factor of psychological and affective states in SISS, results show that it is also positively and significantly correlated with all factors of ISS except for sharing which seems to be odd because it would seem that the propensity to share information would be significantly affected by a person's psychological and affective state. As for the factor of influence of others, results show that it is also positively and significantly correlated with all factors of ISS except for usage. This seems to suggest that influence of others isn't as significant a factor in a respondent's decision to use the Internet, whether for searching information or transacting business, etc. It seems that, in this day and age, the need to be online or connected is a stronger motivator for respondents to do Internet-related processes or transactions. Results are pointing towards all three factors having a significant relationship with Internet self-efficacy.

Similar to what previous studies (Chou, 2003; Zhang 2005; Chuang et al, 2015) have found out, this study also identified that females expressed more Internet anxiety and nervousness compared to males.

Discussion

It would be worth pointing out again that it seems that all three factors (pre-experience, influence of others and psychological and affective states) in a person have a strong relationship with their Internet self-efficacy. This means that 1) the more exposed people are to the Internet and the different processes or interactions that can be undertaken, the more people will become comfortable in navigating the different aspects of the Internet environment and thus discover about the potential that lies in the Internet, 2) the more confident people become when it comes to the Internet (as a result of more exposure), the more they would be willing to try things out and move out of their comfort zones thus strengthening their Internet self-efficacy and 3) all of these behaviors can be enhanced by others around them, whether at home (family), school (peers, teachers, etc.) or workplace/business environment (officemates, clients, etc.) especially since more and more things are being done on the Internet and more and more people are finding themselves exposed to what the Internet has to offer on both a personal and school/work – environment level.

The increasing popularity of the Internet especially here in the Philippines, where the presence of Internet cafes in a lot of areas is becoming more and more real along with the influx of products and services to entice people to spend more time using the Internet, has led to exploring what factors influence people when it comes to the Internet. One of those factors is gender.

In the context of the Internet, studies have generally shown that users are predominantly males and that men took to the Internet faster than women ("Finding out who surfs", 1996). Ono and Zavodny (2004) even showed that "there were significant gender differences in computer and Internet usage" as far back as mid-1990s. Yet, in more recent studies (Goldstein & Puntambekar, 2004; Hung et al, 2010), findings indicate no significant differences in gender responses when it came to computer and Internet self-efficacy. Studies such as that of Chuang, Lin and Tsai (2015) even show significant differences between men and women in some factors while no significant differences can be seen in other factors. Joiner et al (2012) have

discovered that the gender differences when it comes to Internet use is more distinct and evident in the present times compared to a number of years ago.

Given this, there may be ways to be able to mitigate such gender differences and encourage more women to be more comfortable and confident in using Internet technologies and applications without necessarily impeding their male counterparts in being more comfortable and confident in using such technologies. Providing more avenues and opportunities, such as training, to women while at the same time, encouraging men to continue their Internet usage would certainly contribute to both men and women experiencing high Internet self-efficacy. Also, recognizing that men and women make use of the Internet for different purposes could help contribute to the streamlining of Internet self-efficacy constructs to take these differences into consideration. It must be noted that self-efficacy is considered to be a dynamic construct and should, therefore, be flexible enough to incorporate changes brought about by new information or experiences (Torkzadeh et al, 2006).

CONCLUSIONS AND IMPLICATIONS

User acceptance and the effective use of information technology have been considered essential success factors for technology management (Torkzadeh & Van Dyke, 2002). In developing strategies to manage information and communication technologies such as the Internet more effectively, there is a need to recognize and understand why individuals either readily accept and use Internet applications or have difficulty in accepting and using such, strive to learn new Internet technologies and applications as they are introduced in the market or encounter a stumbling block in learning them, seek ways to make their Internet experience more productive or are afraid to explore the Internet world and eventually find themselves either succeeding or failing in their Internet-related tasks or activities.

With the Philippines having more women in the population as evidenced by educational institutional populations as well as workforce configurations and with the changes being brought about by the automation of business processes such as product development and delivery of services such as education, banking and food, it is imperative for women to become more adept in learning and using Internet technologies.

Environments such as the home, school and workplace should encourage everyone regardless of gender to become familiar with information and communication technologies such as the Internet so that men and women would be ready to face the challenges being brought about by an increasingly digital and information technology-centric world and thus being able to effectively combat what Tapscott (1998) identifies as “The issue is not just access to . . . new (technology), but rather whether differences in availability of services, technology fluency, motivation, and opportunities to learn may lead to a two-tiered world of knowers and know-nots, doers and do-nots”. Hsiao, Zhu and Chen (2017) posit that Internet anxiety, as well as varying levels of Internet self-efficacy beliefs and varying levels of Internet skills, still exist in those who describe themselves as digital natives. In both school and the workplace, training programs that expose people more to Internet technologies should be developed as the exposure would surely impact positively on the confidence of those who become familiar with such technologies and are able to use them productively.

Even if there is a general perception that males seem to be more dominant in the Internet-related tasks, nonetheless, gender differences in Internet self-efficacy can be proactively dealt with and eliminated in the long run. In addition, pre-experience, influence of others and

psychological and affective states can be very strong predictors of a person's Internet self-efficacy, and support mechanisms in the different environments (home, school, workplace, etc.) that people interact in should be present to encourage higher Internet self-efficacy. Hsiao, Zhu and Chen (2017) reason that when people feel anxious and uncomfortable when it comes to using the Internet, they would most like say that the Internet is something that they would rather not exert effort to become comfortable with which results in not being able to take advantage of a plethora of opportunities available in participating in the internet community. Van Deursen and van Dijk (2015) also reiterate that we should remember that, in the end, the focus is not on internet skills but, rather, ensuring the narrowing of inequality gap in such day to day phenomena like employability or general well-being in order to ensure more participation rather than exclusion.

Finally, since this is an exploratory study, more research can be done to look into what affects Internet self-efficacy of Filipinos and other nationalities whether solely or in interaction with other factors and what can be done to mitigate the effects of such factors to help improve the Internet self-efficacy of people in their differing environments. It is recommended that future research may be conducted utilizing the current surveys to explore the relationship among Internet self-efficacy, sources of Internet self-efficacy, and other constructs. There may be other factors aside from gender (such as age, educational background or socio-economic class) that may influence a person's level of comfort with anything that has to do with the Internet, whether it be sending encrypted and secure documents through email or getting updated with what is happening through Facebook or Twitter. Cross-cultural studies can also be done to determine if there are any factors that are culture-specific or cross-cultural in nature so that recommendations can be formulated given these considerations in improving Internet self-efficacy across borders.

REFERENCES

- Akyol, Z. & Garrison, D.R. (2011). Assessing metacognition in an online community of inquiry. *The Internet and Higher Education, 14*, 183–190.
- Andreassen, C. S., Torsheim, T., Brunborg, G. S., & Pallesen, S. (2012). Development of a Facebook addiction scale. *Psychological Reports, 110*(2), 501-517.
- Bandura, A. (1977). Toward a unifying theory of behavioral change. *Psychological Review 84*, 191–215.
- Bandura, A. (1982). Self-efficacy mechanism in human agency. *American Psychologist, 37*, 122 – 147.
- Bandura, A. (1986). *Social foundations of thought and action: a social cognitive theory*. Englewood Cliffs, NJ: Prentice-Hall.
- Bandura A. (1989). Social cognitive theory. In E. Barnouw (Ed.), *International encyclopedia of communications* (pp. 92). New York, NY: Oxford University Press.
- Bandura, A. (1997). *Self-efficacy: the exercise of control*. New York: Freeman.
- Bonetti, L., Campbell, M. A., & Gilmore, L. (2010). The relationship of loneliness and social anxiety with children's and adolescents' online communication. *Cyberpsychology, Behavior, and Social Networking, 13*(3), 279-285.
- Broos, A. (2005). Gender and Information and Communication Technologies (ICT) Anxiety: Male Self-Assurance and Female Hesitation. *Cyber Psychology & Behavior, 8*(1), 21-31.
- Busselle, R., Reagan, J., Pinkleton, B., & Jackson, K. (1999). Factors Affecting Internet Use in a Saturated-Access Population. *Telematics and Informatics, 16*, 45–58.
- Chan, T. K., Cheung, C. M., Shi, N., & Lee, M. K. (2015). Gender differences in satisfaction with Facebook users. *Industrial Management & Data Systems, 115*(1), 182-206.
- Chou, C. (2003). Incidences and correlates of Internet anxiety among high school teachers in Taiwan. *Computers in Human Behavior, 19*, 731–749.
- Chu, R.J.C. (2010). How family support and Internet self-efficacy influence the effects of e-learning among higher aged adults—Analyses of gender and age differences. *Computers & Education, 55*, 255–264.

- Chu, R.J.C. & Tsai, C.C. (2009). Self-directed learning readiness, Internet self-efficacy, and preferences for constructivist Internet-based learning environments among higher aged adults. *Journal of Computer Assisted Learning*, 25, 489–501.
- Chuang, S.C., Lin, F.M., & Tsai, C.C. (2015). An exploration of the relationship between Internet self-efficacy and sources of Internet self-efficacy among Taiwanese university students. *Computers in Human Behavior*, 48, 147–155.
- Cooper, J. (2006). The digital divide: The special case of gender. *Journal of Computer Assisted Learning*, 22, 320–334.
- Debrand, C. C., & Johnson, J. J. (2008). Gender differences in email and instant messaging: A study of undergraduate business information systems students. *Journal of Computer Information Systems*, 48(3), 20–30.
- Dhir, A., Pallesen, S., Torsheim, T., & Andreassen, C. S. (2016). Do age and gender differences exist in selfie-related behaviours? *Computers in Human Behavior*, 63, 549–555.
- Dittmar, H., Long, K. & Meek, R. (2004). Buying on the Internet: Gender Differences in On-line and Conventional Buying Motivations. *Sex Roles*, 50(5/6), 423–444.
- Durndell, A., Haag, Z., Asenova, D., & Laithwaite, H. (2000). Computer Self Efficacy and Gender. In E. Balka & R. Smith (Eds.), *Women, Work and Computerization: Charting a Course to the Future* (pp. 78–85). Boston, MA: Kluwer Academic Publishers.
- Durndell, A. & Haag, Z. (2002). Computer self efficacy, computer anxiety, attitudes towards the Internet and reported experience with the Internet, by gender, in an East European sample. *Computers in Human Behavior*, 18, 521–535.
- Durndell, A., & Thomson, K. (1997). Gender and computing: a decade of change? *Computers & Education*, 28(1), 1–9.
- Eastin, M. & LaRose, R. (2000). Internet self-efficacy and the psychology of the digital divide. *Journal of Computer Mediated Communication*, 6.
- Fallows, D. (2004). *The Internet and Daily Life*. Washington, DC: Pew Internet and American Life Project.
- Finding out who surfs the Internet is their business. (1996, November 12). Straits Times.
- Fletcher, K.M. (2005). Self-efficacy as an evaluation measure for programs in support of online learning literacies for undergraduates. *Internet and Higher Education*, 8, 307–322.
- Goldstein, J. & Puntambekar, S. (2004). The Brink of Change: Gender in Technology-Rich Collaborative Learning Environments. *Journal of Science Education and Technology*, 13(4). 505–522.
- Haferkamp, N., Eimler, S. C., Papadakis, A., & Kruck, J. (2012). Men are from Mars, women are from Venus? Examining gender differences in self-presentation on social networking sites. *Cyberpsychology, Behavior & Social Networking*, 15(2), 91–98.
- Hargittai, E. & Hsieh, Y.P. (2010). Predictors and consequences of differentiated practices on social network sites. *Information, Communication & Society*, 13(4), 515.
- Hargittai, E. & Shafer, S. (2006). Differences in actual and perceived online skills: The role of gender. *Social Science Quarterly*, 87(2), 432–448.
- Howard, P., Rainie, L., & Jones, S. (2002). Days and nights on the Internet: The impact of a diffusing technology. In B. Wellman & C. Haythornthwaite (Eds.), *The Internet and everyday life* (pp. 45–73). Oxford: Blackwell.
- Hsiao, B., Zhu, Y.Q & Chen, L.Y. (2017). Untangling the relationship between Internet anxiety and Internet identification in students: the role of Internet self-efficacy. *Information Research*, 22(2), paper 753. Retrieved from <http://InformationR.net/ir/22-2/paper753.html>, 15 June 2018.
- Hsu, M.H. & Chiu, C.M. (2004). Internet self-efficacy and electronic service acceptance. *Decision Support Systems*, 38(3), 369–381.
- Hung, M., Chou, C., Chen, C. & Own, Z.Y. (2010). Learner readiness for online learning: Scale development and student perceptions. *Computers in Education*, 55(3), 1080–1090.
- Imhof, M., Vollmeyer, R. & Beierlein, C. (2007). Computer use and the gender gap: The issue of access, use, motivation, and performance. *Computers in Human Behavior*, 23, 2823–2837.
- Jackson, L.A., Ervin, K.S., Gardner, P.D., Schmitt, N. (2001). Gender and the Internet: women communicating and men searching. *Sex Roles*, 44, 363–379.
- Joiner, R., Gavin, J., Brosnan, M., Cromby, J., Gregory, H., Guiller, J., Maras, P. & Moon, A. (2012). Gender, internet experience, internet identification, and internet anxiety: a ten-year followup. *Cyberpsychology, Behavior, and Social Networking*, 15(7), 370–372.
- Kelsey, D. (2002, January 18). U.S. Women's Net Use Grows at Triple the Rate of Men's. *Washington Post*.

- Kennedy, T., Wellman, B. & Klement, K. (2003). Gendering the Digital Divide. *IT & Society, 1*, 149–72.
- Kimbrough, D. (1999). On-Line "Chat Room" Tutorials: An Unusual Gender Bias in Computer Use. *Journal of Science Education and Technology, 8*(3), 227-234.
- Liang, J.C. & Wu, S.H. (2010). Nurses' motivations for Web-based learning and the role of Internet self-efficacy. *Innovations in Education and Teaching International, 47*, 25–37.
- Malik, A., Dhir, A., & Nieminen, M. (2016). Uses and gratifications of digital photo sharing on Facebook. *Telematics and Informatics, 33*(1), 129-138.
- Morahan-Martin, J. & Schumacher, P. (2000). Incidence and correlates of pathological Internet use among college students. *Computers in Human Behavior, 16*, 13–29.
- Ono, H. & Zavodny, M. (2004). *Gender Differences in Information Technology Usage: A U.S.-Japan Comparison*. (Federal Reserve Bank of Atlanta Working Paper No. 2004-2).
- Rogers, E.M. (1983). *Diffusion of Innovations*. (3rd ed.), New York: Free Press.
- Schumacher, P. & Morahan-Martin, J. (2001). Gender, Internet and Computer Attitudes and Experiences. *Computers in Human Behavior, 17*, 95-110.
- Sherman, R.C., End, C., Kraan, E., Cole, A., Campbell, J., Birchmeier, Z., & Klausner, J. (2000). The Internet gender gap among college students: forgotten but not gone? *CyberPsychology & Behavior, 3*, 885–894.
- Special, W.P. & Li-Barber, K.T. (2012). Self-disclosure and student satisfaction with facebook. *Computers in Human Behavior, 28*(2), 624-630.
- Tak-Kee Hui & Wan, D. (2007). Factors Affecting Internet Shopping Behaviour in Singapore: Gender and Educational Issues. *International Journal of Consumer Studies, 13*(3), 310-316.
- Tapscott, D. (1998). *Growing up digital: the rise of the Net generation*. New York: McGraw-Hill.
- Teo, T.S.H (2001). Demographic and motivation variables associated with Internet usage activities. *Internet Research: Electronic Networking Applications and Policy, 11*(2), 125-137.
- Teo, T.S.H. & Lim, V.K.G. (1997). Usage patterns and perceptions of the Internet: the gender gap. *Equal Opportunities International, 16*(6/7), 1-8.
- Teo, T.S.H. & Lim, V.K.G. (2000). Gender differences in Internet usage and task preferences, Behaviour and Information Technology, 19(4), 283-95.
- Teppers, E., Luyckx, K., Klimstra, T. A., & Goossens, L. (2014). Loneliness and Facebook motives in adolescence: A longitudinal inquiry into directionality of effect. *Journal of Adolescence, 37*(5), 691-699.
- Torkzadeh, G., Chang, J. & Demirhan, D. (2006). A contingency model of computer and internet self-efficacy. *Information and Management, 43*(4), 541-550.
- Torkzadeh, G., Plfughoeft, K., & Hall, L. (1999). Computer self-efficacy, training effectiveness and user attitudes: an empirical study. *Behaviour & Information Technology, 18*(4), 299–309.
- Torkzadeh, G. & Van Dyke, T. (2001). Development and validation of an Internet self-efficacy scale. *Behaviour & Information Technology, 20*(4), 275-280.
- Torkzadeh, G. & Van Dyke, T. (2002). Effects of training on Internet self- efficacy. *Computers in Human Behavior, 18*, 479–494.
- Tsai, C.C., Chuang, S.C., Liang, J.C., & Tsai, M.J. (2011). Self-efficacy in Internet-based learning environments: A literature review. *Educational Technology & Society, 14*, 222–240.
- Tsai, M.J. & Tsai, C.C. (2003). Information searching strategies in web-based science learning: The role of internet self-efficacy. *Innovations in Education and Teaching International, 40*, 43–50.
- van Deursen, A.J.A.M. & van Dijk, J.A.G.M. (2010). Measuring Internet skills. *International Journal of Human Computer Interaction, 26*(10), 891–916.
- van Deursen, A.J.A.M. & van Dijk, J.A.G.M. (2011). Internet skills and the digital divide. *New Media and Society, 13*(6), 893–911.
- van Deursen, A.J.A.M. & van Dijk, J.A.G.M. (2015). Toward a Multifaceted Model of Internet Access for Understanding Digital Divides: An Empirical Investigation. *Information society, 31*(5), 379-391.
- Vekiri, I. & Chronaki, A. (2008). Gender issues in technology use: Perceived social support, computer self-efficacy and value beliefs, and computer use beyond school. *Computers and Education, 51*, 1392-1404.
- Wasserman, I. M., & Richmond-Abbott, M. (2005). Gender and the Internet: Causes of variation in access, level, and scope of use. *Social Science Quarterly, 86*(1), 252–270.
- Weiser, E.B. (2000). Gender differences in Internet use patterns and Internet application preferences: a two-sample comparison. *CyberPsychology & Behavior, 3*, 167–177.
- Whitty, M.T. & McLaughlin, D. (2007). Online recreation: The relationship between loneliness, Internet self-efficacy and the use of the Internet for entertainment purposes. *Computers in Human Behavior, 23*, 1435–1446.

- Wu, Y.T. & Tsai, C.C. (2006). University students' Internet attitudes and Internet self-efficacy: A study at three universities in Taiwan. *CyberPsychology & Behavior*, 9, 441–450.
- Zhang, Y. (2005). Age, gender, and Internet attitudes among employees in the business world. *Computers in Human Behavior*, 21, 1–10.