

Does Gender Perception toward Computing Exist in Thailand? – A Comparison Study between Thai and the US

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Abstract

Number of studies show that computing has been long perceived as a male domain. With this perception, females may experience negative outcomes in the computing-related occupation or activities, such as discrimination, pay differentials and the “glass ceiling effect”. Does this perception exist in Thailand, where the large number of computing workforces consists of female? If so, such perception could discourage female to participate in computing-related careers or be productive in their jobs. This paper investigated the gender perception of computing in Thailand in comparison with the US. The study involved 346 undergrad business students. This study also investigated computer-and-Internet usages, computer anxiety, and computer self-efficacy. Interestingly, the study found that gender perception toward computing does not exist in Thailand.

1. Introduction

When computing is perceived as a domain of one gender in work places, it can impact participation and success of the opposite gender in computing fields. The subject of gender perception toward computing has been studied within the MIS discipline for quite sometimes. Number of studies, which were conducted in the US, showed that computing in the US was a male domain. Such perception could discourage female to participate or prevent them from being successful in their computing-related careers. The Information Technology Association of America (ITAA) estimates the number of women professionals at only 25.3% out of an IT workforce of 3.6 million workers [1]. However, the gender perception toward computing might be different from one country to another. It is interesting to see whether the gender perception toward computing exists in countries where female workers are a large composition of computing-related workforces, and understand how the gender perception toward computing impacts the success of women in computing-related careers. Thailand was one of the countries that had a large number of female IT workforces. In fact, Thailand had the highest percentage of female IT workforces among Asian and the Pacific countries [2]. The objectives of this study are to investigate whether the gender perception toward computing exists in Thailand and how it is different from the US. The study also examined the differences between Thai male and female in other aspects of computing-related aspects, including computer-and-Internet usage, computer anxiety, and computer self-efficacy.

Based on these objectives, it is logical to pose the question of whether gender perception toward computing exists in Thailand. To answer this question the following research questions were identified.

Research question 1: How does gender perception toward computing of male subjects differ from that of female subjects?

- ✓ Research question 1.1: How does gender perception toward computing of Thai males differ from that of Thai females?
- ✓ Research question 1.2: How does gender perception toward computing of American males differ from that of

American females?

- ✓ Research question 1.3: How does gender perception toward computing of Thai males differ from that of American males?
- ✓ Research question 1.4: How does gender perception toward computing of Thai females differ from that of American females?

Research question 2: How does computer anxiety of male subjects differ from that of female subjects?

- ✓ Research question 2.1: How does computer anxiety of Thai males differ from that of Thai females?
- ✓ Research question 2.2: How does computer anxiety of American males differ from that of American females?
- ✓ Research question 2.3: How does computer anxiety of Thai males differ from that of American males?
- ✓ Research question 2.4: How does computer anxiety of Thai females differ from that of American females?

Research question 3: How does computer self-efficacy of male subjects differ from that of female subjects?

- ✓ Research question 3.1: How does computer self-efficacy of Thai males differ from that of Thai females?
- ✓ Research question 3.2: How does computer self-efficacy of American males differ from that of American females?
- ✓ Research question 3.3: How does computer self-efficacy of Thai males differ from that of American males?
- ✓ Research question 3.4: How does computer self-efficacy of Thai females differ from that of American females?

2. Literature Review

2.1 Women and Computing in Thailand and the US

Increasing numbers of men and women have been exposed to, and are using, computers, the Internet, and other types of IT in their jobs and in their personal life. The U.S. Census Bureau [3] reported national trends of an increased overall exposure to computers and the Internet. The report showed that in 2003, more women than men used a computer at home by a small margin, reversing the computer use “gender gap” exhibited during the 1980s and 1990s. Women’s Internet use at home also exceeded men’s in 2003. At work, 63 percent of women and 51 percent of men used a computer at work. Forty-seven percent of women and 39 percent of men use the Internet on the job in 2003.

Women were also significant proportion of the IT work force. In 1999, they represented only nine percent of engineers, 26.9 percent of system analysts and 28.5 percent of computer programmers [2]. Conversely, they made up the majority of data entry workers, at 85 percent. When the administrative support positions of data entry and computer operators were removed, women comprehensively represented only 25 percent of the professional IT workforce [2]. This number had not changed much during the past several years. According to Messmer [1], in 2002 the Information Technology Association of America (ITAA) estimated the number of women professionals at 25.3% out of an IT workforce of 3.6 million workers.

In Asian and the Pacific, women represented nearly 40 percent of the labor force, two-fifth of the overall working population [2]. Among skilled IT workers in eight selected Asian countries, only 16 percent on an average were women. In Thailand, women represented 45 percent of the labor force, the highest percentage among Asia and the Pacific countries. Thailand also had the highest percentage of skilled IT workers, 40 percent of women workers, among Asian and Pacific countries.

2.2 Gender Perception of Computing

A gender-typed activity/occupation is defined as one where males and females are perceived as possessing different abilities or levels of ability, personality attributes, and/or interpersonal interaction styles [4]. Activities that require abilities, attributes, and interaction styles expected of males are gender type male, and those requiring feminine attributes are gender type female [4]. There are two techniques that have been used to determine if an activity or occupation is gender type male, female or considered neutral. First technique is to use actual rates of participation of men and women in a career field and compare them to some arbitrary cut off [5], [6]. Second technique is to use subjective ratings such as a scale of masculinity/femininity [7], [8], [9], the perception of the number of males or females employed in a career [8], the personality traits associated with jobholders [10], [8], or the perception of undergrad/graduate students to identify gender-typed activities [4], [11], [12], [13].

Studies attempting to gender type of computing have arrived at different conclusions. Astone [4] used a gender stereotyping of computing scale to measure perceptions. She reported that overall computing was viewed as slightly feminine. Rainer et al. [17] investigated how gender perception toward computing of college students has changed between year 1995 and 2002. They found in 1995 both men and women perceived gender type of computing as female. However, women perceived gender type of computing more female than did men. From 1995 to 2002, both men and women had gender type of computing as more male, but no significant differences between male and female perception in 2002. Leingpibul et al. [18]

investigated the difference of gender-stereotyping of computing between American students and Indian students. They found that both American and Indian students perceived gender-stereotyping of computing as male. American males and females perceived computing as male domain more than Indian males and females. In addition, Indian males perceived computing as male domain than Indian students. Wilder et al. [9] in studies with children and youth determined that the computer was perceived to be more suitable for males than females. In a second study using, 334 college freshmen, Wilder et al. [9] reported that the difference in perceptions between males and females was not significant. In another study, Clarke [16] examined 595 Australian adults and gender-typed forty occupations. Five computer-related jobs were included in the list of occupations and all but one, data entry operator was gender typed male. Smith [14], [15] measured the gender-typing perceptions of teachers and students in grades K-12. Even though respondents showed a positive favoring of the equality of the sexes, more men than women seemed to believe that males were better suited to computer competencies.

2.3 Computer Anxiety

Igbaria & Parasuraman [19] defined computer anxiety as “the tendency of an individual to be uneasy, apprehensive, or fearful about the current or future use of computers”. Number of studies from the 1970s to the 1990s indicated that computer anxiety is related to the belief that computers are part of the male domain [20], [21], [10], [22]. Dambrot et al. [20] found that college females are more negative and fearful of computers. Heinszen et al. [21] suggested that the feeling of computer anxiety might be mediated by beliefs about lack of ability to use computers, math and mechanical skills, and the belief that computers are a male domain. Wilder et al. [9] found that females felt significantly less comfortable than males in using computers. Temple and Lips [22] found that males were more comfortable and confident with computers than females.

2.4 Computer Self-Efficacy

According to Miura [23], a self-efficacy judgment is an individual's belief that he or she successfully executes a certain course of behavior. Harry and Stone (1999) defined self-efficacy as an individual's belief that he or she possesses the requisite skills and ability. Several researchers have tied computer self-efficacy to gender typing of computing [24], [23], [25], [15], [16]. Several studies report that males report greater computer self-efficacy than females [24], [23], [25], [17]. Collis [24] reported that secondary-school males were more positive about using computers than females. Miura [23] found that undergraduate males reported higher computer self-efficacy ratings than did females. Ogletree and Williams [25] found that males had significantly higher confidence in their ability to program computer than did females. Rainer et al. [17] found that undergraduate males reported significant higher confidence in conceptual skills of computers than did females. On the other hands, Smith [15], [16] and Henry and Stone [26] found no statistically significant difference in computer self-efficacy between males and females.

3. Methodology and Data Collection

The researchers investigated six samples of university students, two from Thailand (105 undergraduate students majoring business) and four from the US (241 undergraduate students majoring business). All samples were from 4 year institutions. All students were offered extra credit as an incentive to complete the online survey. The survey instrument gathered gender, age, and computer and Internet usages.

The survey contained the gender-typing scale (GTS) developed by Astone [4]. This 13-item scale measures perception of the gender stereotyping of computing on 5-point Likert scales, ranging from "1" meaning "strongly disagree" to "5" meaning "strongly agree." According to Astone [4], previous analysis of the GTS demonstrated two underlying latent constructs, “the technical and managerial aspects of computing” and “the clerical and office uses of computers and affective responses to computing”. The study employed two versions of the survey to mitigate survey-wording bias in the GTS section. The first version listed all GTS items as "male first." For example, "More men than women design computer systems". The second version reversed the GTS items. For example, "More women than men design computer systems". The researchers tried to distribute each version equally to respondents. The first version's scores were reversed, so that all scores used and reported in the data analysis are in the "female first" direction.

The survey also contained the Computer Anxiety Rating Scale (CARS) and Computer Self-efficacy Rating Scale (CSE). CARS was developed by Heinszen et al. [21]. This 19-item scale measures perceptions of computer anxiety on 5-point Likert scales. According to Harrison and Rainer [27], previous analysis of the CARS demonstrated two underlying latent constructs, high anxiety toward computer use and enthusiasm or anticipation regarding computer use. CSE was developed by Murphy et al. [28]. This 32-item scale measures perceptions of computer self-efficacy on 5-point Likert scales. According to Harrison and Rainer [27], previous analysis of the CSE demonstrated three underlying latent constructs, beginning computer skills, more conceptual computer skills, and mainframe computer skills. The mainframe computer skills construct was not included in this study because students did not use mainframe computers. To compare male and female responses within each subject country and between subject countries, t-tests were performed.

4. Data Analysis

4.1 Demographic and Computer-and-Internet Usages

Table 1 shows the demographic data of respondents as well as the computer-and-Internet usages. Demographic data included the proportions of males and females and age. Forty seven percent of Thai respondents were male, and 53 percent were Thai female. Forty nine percent of American respondents were male, and 51 percent were American female. The average age of Thai male and Thai female respondents was 22 years old. The average age of American male and American female respondents were also 22 years old.

Table 1: Demographics and computer-and-Internet usages

| | Mean | | | | | |
|---------------------------------|------|------|-----|--------|------|-----|
| | Male | | | Female | | |
| | Thai | US | | Thai | US | |
| Number of participants | 49 | 118 | | 56 | 123 | |
| Age | 22 | 22 | | 22 | 22 | |
| Word processing software | 3.48 | 2.97 | *** | 3.71 | 3.32 | *** |
| Spreadsheet software | 2.30 | 2.24 | | 2.30 | 2.51 | |
| Presentation software | 2.91 | 1.97 | *** | 3.05 | 2.26 | *** |
| Database software | 2.18 | 1.54 | *** | 2.16 | 1.61 | *** |
| Statistics software | 1.48 | 1.24 | | 1.68 | 1.20 | *** |
| Multimedia software | 4.24 | 3.09 | *** | 3.79 | 2.61 | *** |
| Communication software (E-mail) | 4.42 | 4.29 | | 4.60 | 4.47 | |
| Online shopping | 1.73 | 2.62 | *** | 1.93 | 2.97 | *** |
| Online research | 1.94 | 3.33 | *** | 2.42 | 3.34 | *** |
| Online news | 3.24 | 3.47 | | 3.34 | 3.12 | |
| Upload/Download digital files | 4.12 | 3.25 | *** | 3.99 | 2.92 | *** |
| Online games | 3.48 | 2.29 | *** | 3.34 | 1.89 | *** |
| Chat | 4.21 | 2.80 | *** | 4.14 | 2.38 | *** |

*** = Significant at 0.05 level

Computer and Internet usage was measured on a 5-point Likert scale ranging from "1" meaning "I do not use at all" to "5" meaning use many times per day for extended periods of time. The survey collected data on usage of six common end-user applications. These applications include word processing, spreadsheet, database, statistics, multimedia, and communications (e-mail). In addition, data on six facets of Internet usage were also gathered. These facets included online shopping, online research, obtaining news or weather, downloading/uploading digital files, playing online games, and chatting. Table 1 provides computer and Internet usage results. Thai females reported significantly higher usages in almost every application, except spreadsheet software, than American females. Thai males also reported significantly higher usages in almost every application, except spreadsheet software and statistics software, than American males. As for Internet-related activities, Thai females reported significant lower in online shopping and online research activities than American females. The same finding was also found between Thai males and American males. According to Laosethakul et al. [29], Thai consumers still have not embraced online shopping lifestyle due to the convenient of traditional shopping in Thailand, inconvenience processes of online shopping, and the lack of trust with Thai online merchants. As for the low Internet access for online research, Thais still access information online for entertainment purpose. However, both Thai males and females reported significant higher Internet access for uploading/downloading digital files, playing online games, and chatting than American males and American females accordingly. As explained earlier, most Thai accesses the Internet for the entertainment purpose rather than educational purpose. Most popular websites are web community sites that allow Thais to chat, post messages, playing trivial games, and upload/download pictures.

4.2 Factor Analysis

(1) Gender Stereotyping of Computing (GTS)

The GTS consists of a 13-item factor. The items of the GTS were scored on five-point Likert scales ranging from "1" meaning "strongly disagree" to "5" meaning "strongly agree." Exploratory factor analyses with oblique rotation were used to examine the interrelationships among 13 items of the GTS for men and women in Thailand and the US. In all four analyses

(Thai males, Thai females, American males, and American females) a 2-factor solution resulted with identical items in each factor. The first factor, labeled GTS1, consisted of seven items. The items defining this factor represent technical and managerial aspects of computing. The second factor, labeled GTS2, consisted of six items. The items defining this factor represent the clerical and office uses of computers and affective responses to computing. Table 2 shows the alpha reliabilities for this factor for males and females in the two samples. With Cronbach alphas greater than .80, the two constructs of the GTS demonstrate adequate reliability for both genders in Thailand and the US. Likert responses were averaged to obtain GTS1 and GTS2 scores for males and females from both countries.

Research question 1: Thai males and Thai females demonstrated no significant difference in GTS1 and GTS2 scores. GTS1 scores from both Thai males ("2.87") and Thai females ("3.16") are centered around neutral ("3"), meaning that both genders did not perceive that technical and managerial aspects of computing are a male nor female domain. While there is no significant difference between GTS2 scores between Thai males ("3") and Thai females ("3.49") and both scores are around neutral, Thai females' GTS2 scores slightly leaned toward female, or "more female than male", meaning that they perceived clerical and office uses of computers and affective responses to computing are female domain. As for the American counterpart, GTS1 scores from both American males ("2.49") and American females ("2.75") demonstrated no significant difference. While both scores are centered around neutral ("3"), American males seemed to perceive that technical and managerial aspects of computing as a male domain. Both American males and females demonstrated GTS2 scores higher than neutral, but American females demonstrated significant higher GTS2 score ("4.10") than did American males ("3.34"). American females perceived these clerical and office uses of computers and affective responses of computing as a female domain.

When comparing GTS scores across countries, both Thai and American females showed GTS1 scores around the neutral, but Thai female demonstrated significant higher GTS1 score than did American females. While both Thai males and American males showed GTS2 scores around neutral, American males demonstrated significant higher GTS2 score than did Thai male. Both Thai and American females reported GTS2 scores above neutral, but American females demonstrated significant higher GTS2 score than did Thai females.

(2) Computer Anxiety Rating Scale (CARS)

The CARS consists of a 19-item factor. The items of the CARS were scored on five-point Likert scales ranging from "1" meaning "strongly disagree" to "5" meaning "strongly agree." Exploratory factor analyses with varimax rotation were used to examine the interrelationships among the 19 items of the CARS for men and women in Thailand and the US. In all four analyses, a 2-factor solution resulted in identical items in each factor. The first factor, labeled CARS1, consisted of ten items. The items defining this factor represent high anxiety toward computer use. The second factor, labeled CARS2, consisted of nine items. The items defining this factor represent confidence, enthusiasm, and/or anticipation toward computer use. Table 2 shows the alpha reliabilities for this factor for males and females in the two samples. With Cronbach alphas greater than .80, the two constructs of the CARS demonstrate adequate reliability for both genders in Thailand and the US. Likert responses were averaged to obtain CARS1 and CARS2 scores for males and females from both countries.

Research question 2: Thai females reported significantly higher CARS1 ("3.87") than did Thai males ("2.18"). It means that Thai females demonstrated significantly higher anxiety toward computer use than did Thai males. Thai females also reported significantly lower CARS2 ("3.29") than did Thai males ("4.31"). It means that Thai females demonstrated significantly lower confidence, enthusiasm, and/or anticipation toward computer use than did Thai males. As for American counterpart, there was no significant difference of CAR1 and CAR2 scores between American females and males.

When comparing CAR scores across countries, Thai males demonstrated significantly lower CAR1 score ("2.18") than did American males ("3.64"). It means that Thai males felt less anxiety toward computer use than did American males. Thai males also demonstrated significantly higher CAR2 score ("4.31") than did American males ("3.40"). It means that Thai males felt more confidence, enthusiasm, and/or anticipation toward computer use than did American males. There was no significant difference of CAR1 and CAR2 scores between Thai females and American females.

(3) Computer Self-efficacy (CSE)

The CSE consists of a 16-item factor. The items of the CSE were scored on five-point Likert scales ranging from "1" meaning "strongly disagree" to "5" meaning "strongly agree." Exploratory factor analyses with varimax rotation were used to examine the interrelationships among the 16 items of the CSE for men and women in Thailand and the US. In all four analyses, a 2-factor solution resulted in identical items in each factor. The first factor, labeled CSE1, consisted of 16 items. The items defining this factor represent the beginning level of computer skills. The second factor, labeled CSE2, consisted of 13 items. The items defining this factor represent high-level, conceptual computer skills. Table 2 shows the alpha reliabilities for this factor for males and females in the two samples. With Cronbach alphas greater than .80, the two constructs of the CSE demonstrate adequate reliability for both genders in Thailand and the US. Likert responses were averaged to obtain CSE1 and CSE2 scores for males and females from both countries.

Research question 3: Thai females reported significantly lower CSE1 ("3.33") than did Thai males ("4.02"). It means that

Thai females demonstrated significantly lower beginning level of computer skills that did Thai males. Thai females also reported significantly lower CSE2 score ("3.41") than did Thai males ("3.79"). It means that Thai females demonstrated significantly lower high-level, conceptual computer skills than did Thai males. As for American counterpart, there was no significant difference of CSE1 and CSE2 scores between American females and males. When comparing CSE scores across countries, Thai males demonstrated significantly higher CSE1 score ("4.02") than did American males ("3.41"). It means that Thai males showed significantly higher beginning level of computer skills than did American males.

Table 2: Psychological Constructs

| Psychological Constructs | Thailand (Cronbach's alpha) | US (Cronbach's alpha) | Significant Difference (across countries) |
|---|--------------------------------|--------------------------|--|
| GTS1 (technical and managerial aspects) | | | |
| Male | 2.87 (0.92) | 2.49 (0.95) | |
| Female | 3.16 (0.90) | 2.75(0.94) | *** |
| GTS2 (clerical and office uses) | | | |
| Male | 3.00 (0.87) | 3.34 (0.93) | *** |
| Female | 3.49 (0.85) | 4.10 (0.92)*** | *** |
| CARS1 (anxiety) | | | |
| Male | 2.18 (0.97) | 3.64 (0.99) | *** |
| Female | 3.87 (0.98)*** | 3.66 (0.98) | |
| CARS2 (anticipation) | | | |
| Male | 4.31 (0.89) | 3.40 (0.96) | *** |
| Female | 3.29 (0.96)*** | 3.33 (0.95) | |
| CSE1 (beginning skills) | | | |
| Male | 4.02 (0.96) | 3.41 (0.99) | *** |
| Female | 3.33 (0.95)*** | 3.33 (0.99) | |
| CSE2 (conceptual skills) | | | |
| Male | 3.79 (0.85) | 3.49 (0.95) | |
| Female | 3.41 (0.89)*** | 3.41 (0.90) | |

*** = Significant at 0.05 level

5. Discussion

With regard to gender stereotyping of computing (GTS), the findings suggest that there is no difference of gender perception toward computing between Thai females and Thai males. In general, both Thai males and Thai females believe that computing is neutral, meaning that they do not perceive that computing is gender typed male nor female. However, with regard to computer anxiety rating scale (CARS) and computer self-efficacy (CSE), the findings suggest that Thai females have higher anxiety and less confidence, enthusiasm, and/or anticipation toward computer use than do Thai males. Thai females also have lower beginning computer skills and high level, conceptual computer skills. When compared with American females, Thai females' computer anxiety and confidence, and computer skills are not different from them.

6. Conclusion

Several studies in the US showed that computing was perceived as a male domain. Such perception could discourage or even prevent female to participate in computing-related activities and/or careers. Limited studies, however, have been investigated whether gender perception toward computing existed in other countries. Thailand's workforce composition has large number of female workers. It means that female workers play an important role in almost any industries. IT-related industries also have large number of female workers. If computing is perceived as a male domain in Thailand, such perception will discourage female to participate in the industries or even do well in their careers, which, in return, could affect productivity of companies and industries as a whole. Our findings provide evidence that computing as a male domain does not exist. Both Thai males and females perceive computing as neither male nor female. This finding is welcome, as it suggests that computing is not a deterrent to the success of women in the workplace. However, findings also provide evidence that Thai women have higher anxiety toward computer use and less confidence and enthusiasm toward computer use than Thai men. Moreover, Thai women also have less computer skills than Thai male. These findings suggest that in order to increase Thai female IT or computing-related workers' productivity in workplace, companies should provide extra computer-related training to them. Institutions should also recognize that Thai female students may require different teaching methods to lessen their computer anxiety and enhance their computer skills to the same level as Thai male students.

References

- [1] Tonetti R. Bianca; E-commerce: New Job Opportunities? Seminar on Education and Career Options in conjunction with the 9th Asian and Pacific International Trade Fair, 2000
- [2] Messmer Ellen; Female IT Professionals Cope in a Male-dominated Industry, Network World, Sept 29, 2003, Available: <http://www.networkworld.com/news/2003/0929women.html>, accessed on March 4, 2007
- [3] The US Census Bureau, 2005
- [4] Astone, M. K.; Gender Stereotyping of Computing, Dissertation, Auburn University, 1995
- [5] Betz, N.E. and G. Hackett; The Relationship of Career-related Self Efficacy Expectations to perceived Career Options in College Men and Women, Journal of Counseling Psychology, V. 28, pp 399-410, 1981
- [6] Stephan, C.W. and Holahan, C.K.; The Influence of Status and Sex-Typing on Assessments of Occupational Outcome, Sex Roles, V.8:8, pp 823-833, 1982
- [7] Panek, P.E., Rush, M.C. and Greenawalt, J.P.; Current Sex Stereotypes of 25 Occupations, Psychological Reports, V.40, pp 212-214, 1977
- [8] Shinar, E.H.; Sexual Stereotypes of Occupations, Journal of Vocational Behavior, V.7, pp 99-111, 1975
- [9] Wilder, G, Mackie, D., & Cooper, J.; Gender and Computers: Two Surveys of Computer-related Attitudes, Sex Roles, V.13: 3/4, pp 215-228, 1985
- [10] Glick, P.; Trait-Based and Sex-Based Discrimination in Occupational Prestige, Occupational Salary and Hiring, Sex Roles, V.25, pp 351-378, 1991.
- [11] Cash, T.F, B. Gillen, and D.W. Burns; Sexism and 'Beautyism' in Personnel Consultant Decision Making, Journal of Applied Psychology, V.62, pp 301-310, 1977
- [12] Scheresky, R.; Rural, Suburban, and Central City Children: Sex-Type Roles in Occupations, Psychological Reports, V.43:2, pp 407-411, 1978
- [13] Shepard, W. and D. Hess.; Attitudes in Four Age Groups Toward Sex Role Division in Adult Occupations and Activities, Journal of Vocational Behavior, V.6, pp 27-39, 1975
- [14] Smith, S.D.; Relationships of Computer Attitudes to Sex, Grade Level, and Teacher Influence, Education, V.106, pp 338-344, 1986
- [15] Smith, S. D.; Computer Attitudes of Teachers and Students in Relationship to Gender and Grade Level, Journal of Educational Computing Research, V.3:4, pp 479-494, 1987
- [16] Clarke, V.A.; Occupational sex-typing: A declining problem in Australia, Psychological Reports, V.65, pp 1011-1016, 1989
- [17] Rainer Jr., R. K., Laosethakul, K. and Astone, M. K.; Are Gender Perceptions of Computing Changing over Time?, Journal of Computer Information Systems, V.43:4, pp 108-114, 2002
- [18] Leingpibul, T., Laosethakul, K., Mehta, N. and Mehta, A.; The Cross Cultural Study Concerning Gender Stereotyping in Computing: Comparison between the US and India, Proceeding of the Twelfth Americas Conference on Information Systems, 1352-1360, 2006
- [19] Igbaria, M., & Parasuraman, S.; A Path Analytic Study of Individual Characteristics, Computer Anxiety and Attitudes Toward Microcomputers." Journal of Management, V.15:3, pp 373-388, 1989

- [20] Dambrot, F.H., Watkins-Malek, M.A., Silling, M.S., Marshall, R.S. & Garver, J.A.; Correlates of Sex Differences in Attitudes Towards and Involvement with Computers, *Journal of Vocational Behavior*, V. 27:1, pp 71-86, 1985
- [21] Heinessen, R.K., Jr., Glass, C. R., & Knight, L. A.; Assessing Computer Anxiety: Development and Validation of the Computer Anxiety Rating Scale, *Computers in Human Behavior*, V.3, pp 49-59, 1987
- [22] Temple, L. and Lips, H. M.; Gender Differences and Similarities in Attitudes toward Computers, *Computers in Human Behavior*, V.5, pp 215-226, 1989
- [23] Miura, I.T.; The Relationship of Computer Self-efficacy Expectations to Computer Interest and Course Enrollment in College, *Sex Roles*, V.16, pp 303-311, 1987
- [24] Collis, B.; Psychological Implications of Sex Differences in Attitudes Towards Computers: Results of a Survey,” *Intl Journal of Women’s Studies*, V.8:3, pp 207– 213, 1985
- [25] Ogletree, S. M., & Williams, S.W.; Sex and Sex typing Effects on Computer Attitudes and Aptitude, *Sex Roles*, V.23:11/12, pp 703-712, 1990
- [26] Henry J. W., Stone R. W.; The Impacts of End-user Gender, Education, Performance, and System Use on Computer Self-efficacy and Outcome Expectancy, *Southern Business Review*, V.25:1, pp 10-16, 1999
- [27] Harrison, A.W., & Rainer, R. K., Jr.; Sex Typing in computing: Where Men and Women differ. *Proceedings of the 1993 Academy of Management Conference*, Atlanta, GA.
- [28] Murphy, C.A., Coover, D., & Owen, S.V.; Development and Validation of the Computer Self-efficacy Scale, *Educational and Psychological Measurement*, V.49:4, pp 893-899, 1989
- [29] Laosethakul, K., Oswald, S. and Boulton, W.; Critical Success Factors for E-commerce in Thailand: A Multiple Case Study Analysis, *Proceeding of the Twelfth Americas Conference on Information Systems*, 2006