

Computer Anxiety: Research Results

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Abstract— Literature reports the existence of computer anxiety when users are interacting with computers. The level of computer anxiety has been examined by many researchers in different business organizations. With the rapid development in computer technology with its latest software have given big challenges to users to learn and adapt with this issue. The objective of this study is to investigate the relationship between technological changes and the level of computer anxiety among employees in the commercial banks. Data were obtained through the survey method and were distributed randomly to the participants. 319 samples were analyzed in this study. The results reveal that some of the employees experience low levels of computer anxiety, but high levels of acceptance of computer applications. Additionally, statistical analysis shows small differences in computer anxiety scores among the executives and non-executives, younger-aged adults and middle-aged adults, and among the races and their levels of education. Using stepwise regression, the results indicate that the variables which determine the level of computer anxiety are composed of computer skills and acceptance of technology. Attitude towards computers are proven to have significant relationship on technological changes and on computer anxiety after running hierarchical regression. The above results suggest that computer users who experience computer anxiety are not anti-technology. With the presence of skills and knowledge when interacting with computers, they only need to manage their usage of the various computer applications in the workplace. Especially, when performing routine job tasks that demand more of those applications with timelines.

Keywords: *Computer Anxiety, Attitude toward computer, computer skills and computer knowledge*

I. INTRODUCTION

Today, it is very difficult not to use technology in the workplace since various job tasks must be done using computer applications. Computer applications such as the internet, e-mails, word processing, spreadsheets, and databases, have become a great assistance to employees in completing various job tasks. They are widely and heavily used by working adults in many organizations [1]. The usage of these computer applications has influenced the acceptance of users toward technology. With rapid changes in computers and development of computer applications, it is not surprising that some employees are struggling to interact with those applications. In other words, some computer users are comfortable with those new applications, but at the same time they continuously face the challenges at hand. Many employees feel frustrated with the issues created by

computers. Several studies which have shown that a state of frustration, also known as computer anxiety, do exist and have affected computer users, especially when they interact with office technology. The applications are either complicated or too advanced to cope with or sometimes when the system is down or malfunction [1]. [2] reported that higher and low task proficiency were correlated with computer anxiety. Literature highlighted that students, teachers, managers and business professionals are among those who have experienced computer anxiety. Past studies have also reported that computer anxiety was associated with anger, irritation, feeling of uneasy, and these feelings were associated with attitude toward computers [3]. With the existence of this phenomenon, the current study provides robust analysis to compare and to support other studies. Research questions and hypothesis are answered by analysing the data using the SPSS.

II. LITERATURE REVIEW

Earlier studies in computer anxiety were conducted as early as 1984 and the issues in technology with rapid changes in its creation and innovation have impacted computer users with a feeling of relief that computer technology has various applications. Technology has helped working adults to ease their workload, giving accurate calculations or deliver beautiful presentation of reports and many others. Computer users especially employees in business organizations interact with computers more than their official working time [4] and widely and heavily use various applications such the internet, e-mail, word processing, databases, spreadsheets and so on [5]. However, the presence of this rapid development has given a state of frustration to some computer users. Computer anxiety has been addressed by many researchers [6-18]. Most of the researchers agree that computer anxiety is related to negative emotional feelings associated with direct experiences. Interestingly, [19] addressed the source of computer anxiety, which was caused by the lack of operational experience with computers, inadequate knowledge about computer and psychological fear of technology.

There were interrelationships between computer use, perceived ease of use and perceived usefulness; and behavioural intention [20]. Even [21] revealed in her study that self-efficacy beliefs, computer experience and computer use were strong predictors of computer anxiety and anger. [22] reported that computer experience, ease of use from technology acceptance model were strong predictors for computer novice to suffer anxiety symptoms when interacting with computers.

[23] also found that for both younger and older adults, higher levels of computer experience were correlated with lower levels of computer anxiety as well as a more positive attitude toward computers. As a matter of fact, computer knowledge mediated the effects of age and education on computer interest [24]. A study conducted by [25] identified age, men and education to be negatively related to computer anxiety. Interestingly, there was a significant effect between computer confidence on task complexity and minimal computer-liking as reported by [26] when he conducted this study involving teachers. He argued that when teachers increased their computer experience through the accomplishment of various task levels this had helped them to minimize computer anxiety provided that teachers continuously enhance their knowledge and understanding task complexity. Pointing at all the above researchers' studies, the current study examines the level of computer anxiety among employees in commercial banks who have acquired the skills and knowledge in operating the computer applications and performing pressured timelines of work duties.

III. METHODOLOGY

A. Population and sample

It was estimated that 20,000 employees working for commercial banks based on the statistics given from each bank located in the headquarters. 377 were required for data analysis. When the researcher estimated that about 70 percent of employees would complete the survey, with 5 percent error tolerance, the number of questionnaires distributed turned up to 539. 333 cases were returned and only 319 were analyzed; this brought to the percentage of return rate to 88.3 percent (333/377). The unit of analysis was employees from commercial banks located in Kuala Lumpur. Specifically, both executives and non-executives were involved in this study. Employees from commercial banks were selected in the study because they were the people who directly used computer applications, computer skills and computer knowledge when performing various job tasks.

B. Sampling technique

The employees in commercial banks located in Kuala Lumpur were identified to participate in the study. The main aim was to get as many responses as possible. The bank managers were given a short brief as to how the questionnaires should be distributed randomly to both executives and non-executives in the department. A cover letter was attached with each of the questionnaires before distribution was administered by the bank managers. The employees were requested to respond within a few days before returning them to the manager. Those responded questionnaires were returned to the researcher for further checking and screening.

C. Instruments

All the instruments used in this study were taken from established questionnaires which have been used by former

researchers. Based on the literature, all these instruments had been tested for their reliability and validity and the Cronbach's Alpha scores were more than 0.7 which means these alpha scores were acceptable in order to proceed with further data analysis.

1. Technology Acceptance Model (TAM) was developed by [27]. It has 12-item statements. The Cronbach's alpha score in the current study was .94.
2. Computer skills and computer knowledge were developed by [1] with 5-item statements each. The score was .82 and .86 respectively.
3. Computer applications were identified by [5] and applications included the frequent use of computer users.
4. Attitude towards computer was the moderating variable of the study. The scale measuring attitude towards computer was developed by [28]. It has 12 items with negative statements and the values were reversed in order to get accurate results for the analysis. The alpha score was .79
5. Computer anxiety was the dependent variable in the current study. Computer Anxiety Rating Scale (CARS) was used to measure computer anxiety [9]. It has 9 negative statements. The values were reversed to get accurate results for the data analysis. It has alpha score of .88.

D. Data Analysis Procedure

The SPSS was used to analyse the data. The SPSS can calculate the score of computer anxiety by providing the correct figure and grouping them according to the level of computer anxiety. For example, scores of no computer anxiety, low computer anxiety and moderate/high computer anxiety. Besides, the software could also provide the output which was easy to interpret. Furthermore, it could show the direction of the relationships between the independent and dependent variables. Graphs will be presented to further explain the results of the study. Some of the demographic profiles were tested in the current study. For example, those with two categories were tested using t-tests and those items with more than two items used the Anova test to seek the relationship of the variables. The t-test was used to seek the differences in the mean scores and the values of the standard deviation. Since the data of the current study was normal, the Pearson Correlation Coefficient was used to test all the research questions and hypothesis.

IV. RESEARCH RESULTS

A. Summary of research results

Some items in the demographic profile were tested using t-tests and Anova to see the differences and relationship of the

items when the groups were experiencing computer anxiety. The preliminary results of the demographic profiles are as follows:

- 43 percent of the respondents in the study experienced low computer anxiety.
- In terms of gender, there was no difference with the scores of computer anxiety.
- Non-executives experienced higher computer anxiety than executive employees.
- T-test showed that younger adults experienced higher computer anxiety than middle-aged adults.
- As for the race, Chinese employees experienced higher score of computer anxiety than the Malays and others.
- In terms of education background, employees with only SPM/MCE certificates experienced higher score in computer than those with higher level of education.
- Employees who have served 1-10 years in the premise experienced higher score in computer anxiety than those with 11 to 19 years of service and 20 to 30 years of service.

The results of the current study revealed that 43 percent of the respondents working for commercial banks experienced low computer anxiety. This result is in line with previous researchers [18, 22, 29]. In terms of gender, the results of t-test in the current study confirmed that there was no gender difference in the score of computer anxiety. [30] reported similar result in his study. However, this result contradicted with a study reporting that female staff experienced higher computer anxiety than male staff [31, 32]. In the previous studies, female respondents were the teachers, business managers and professionals, students, bankers and so on. Regardless of the gender, it is very important to participate in learning and adapting to new applications implemented in the workplace. The process could be in a series of training or self-learning through reading the manual. This process would take time and patience and the feelings of acceptance and resistance towards technology or application varied from one individual to another individual. Sometimes, the process of adapting or to get familiar with certain applications depends on the age and education background of the respondents.

B. Correlation results

There is significant negative relationship between computer anxiety and other variables in the study. Based on the specific results, there is high negative relationship between computer anxiety and attitude towards computer. But, there is negative moderate relationship between computer anxiety and computer skills. However, there is negative low relationship between computer anxiety and computer knowledge. Lastly, there are small relationships between computer anxiety and computer knowledge, and computer anxiety and computer applications.

In the previous studies, computer anxiety has significant impact on computer use [33], computer skills [34], attitude towards computer [35]. Logically, employees with positive attitude towards computers, when they are interacting with computers, they probably know that they must be serious and focus on the job. Usually, individuals with positive attitude towards computers are very committed and hardworking. These individuals must have been very familiar with new applications by signing up for training courses to learn and adapt themselves to use various applications correctly.

Table 1: Correlations Coefficients between Variables (319)

	2	3	4	5	6
1. CA	-.723**	-.372**	-.583**	-.204**	-.157**
2. ATC		.309**	.483**	.116**	.151**
3. TA			.477**	.224**	.296**
4. CS				.211**	.220**
5. CK					.322**

C. Computer skills and technology acceptance constitute to computer anxiety

A stepwise multiple regression analysis was carried out to assess the relative contributions of technology acceptance, computer skills, computer knowledge, and computer applications. Computer skills alone explain 34 percent of the variance in computer anxiety. With the value added by technology acceptance, it explains an additional 1.2 percent of the variance in computer anxiety for a total of 35.2 percent. Both of these independent variables are statistically significant contributors, with p-value < .05. Other independent variables are not statistically significant in this assessment.

Based on the literature, working adults who have been using computers in the work place feel familiar with the applications and logically they will have low computer anxiety. However, the results in the current study reveal that high computer skills result in low computer anxiety. Probably, this is due to rapid changes in technology and computer applications, so those employees will have to learn and adapt with these new applications. Furthermore, more than 95 percent of the employees are using various computer applications mentioned earlier in the workplace. In the current study, 43 percent of the respondents experience computer anxiety. Lack of operational experience and inadequate knowledge about computers are some of the causes why computer users are experiencing computer anxiety [33]. They affirm that computer users would minimize their usage besides having negative attitude toward computers due to insufficient knowledge of computer-based learning [33]. In the current study, hierarchical regression is conducted to test the moderating effect of attitude towards computer on the relationship between the variables relating to technological changes, and computer anxiety. The results reveal that attitude towards computer do moderate the relationship between computer skills and computer knowledge, and computer

anxiety

Variables	Model I Beta	Model II Beta	Model III Beta
IV			
Technology Acceptance	-.114*	-.059	-.067
Computer Skills	-.516**	-.270**	-.281**
Computer Knowledge	-.075	-.078**	-.067
Computer Applications	.015	.031	-.003
MV			
Attitude Toward Computer		-.570**	-.542**
IV*MV			
Technology Acceptance*Attitude Toward Computer			-.030
Computer Skills*Attitude Toward Computer			.111**
Computer Knowledge*Attitude Toward Computer			-.117**
Computer Applications*Attitude Toward Computer			-.055
R ²	.356	.602	.626
ΔR ²	.356	.246	.023
F	43.405	94.851	57.428
P	0.00	0.00	0.00

Figure 1 A graph of attitude towards computer on computer anxiety and on computer skill

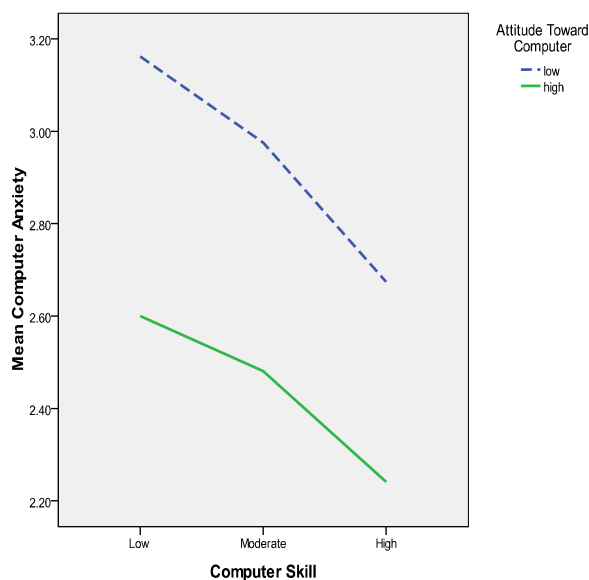


Figure 1 reveals the impact of attitude towards computer on computer skills and computer anxiety. It shows that employees with low attitude towards computer resulted in low computer skill, but high in computer anxiety. The impact is lower for employees with high attitude, but still their computer skills are

higher but a little lower on computer anxiety. This lower computer anxiety is not as high when compares to employees with low attitude towards computer.

Figure 2: A graph of attitude towards computer on computer anxiety and computer knowledge

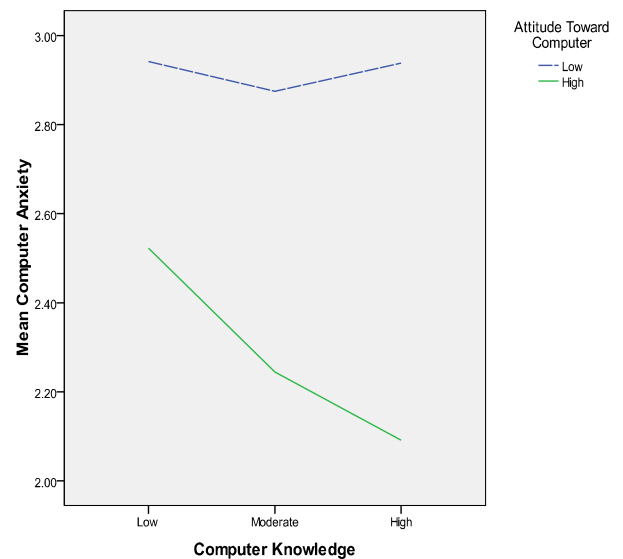


Figure 2 reveals the impact of attitude towards computer on computer knowledge and computer anxiety. It shows that employees with low attitude towards computer experience high computer knowledge and also high computer anxiety. However, employees with high attitude towards computer experience high computer knowledge but low computer anxiety. The possible reason being proper training or regular training are lacking so the results reveal low attitude towards computer among the employees impacted high computer anxiety although having higher computer skills. The same goes with employees having high attitude towards computer. The impact is not as bad on employees with high attitude towards computer although they are also experiencing higher computer skills and a bit lower on computer anxiety. The results explain that various activities are performed by employees using various computer applications. These applications may be either easy to adapt to by those who have high computer knowledge with high attitude towards computer. However, complex or complicated applications or having many trouble shootings may depress the employees to accept these applications if the attitude towards computer of the employees are low; of course this would lead to high computer anxiety. It could be possible that rapid changes in technology demand employees to master and acquire computer knowledge. So, computer anxiety is related to high and low task proficiency [2]. Moreover, with different backgrounds of employees, this may hinder the mastering of computer applications; thus, there will be a possibility that they will experience computer anxiety although at a low level.

V. CONCLUSION

Rapid changes in information technology demand business organizations to provide up-to-date facilities and computing environment to familiarize employees with the latest computer applications. These employees are the assets of the organization. They need stability in their emotions and comfortable with the applications of technology to maintain positive attitude. The findings of the present study indicate that either with low or high attitude towards computers, it does affect computer skills and computer anxiety. Computer skills have a quite strong effect on the level of computer anxiety. Therefore, a study on computer anxiety does not mean that computer users are anti-technology [36]. The most important thing is to manage the usage of those applications effectively so that routine jobs that depend on technology can be accomplished smoothly without much of a frustration. This is due to the presence of computer technology that does come as a package with computer anxiety. Therefore, with the right computer skills among the employees, this could minimize the level of computer anxiety. As the literature suggests this could be done by the business organizations focusing on computer training, computer-supported collaborative learning, promoting social interaction, implementing some innovative learning methods and avoiding negative consequences [37, 38].

VI. REFERENCES

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