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Computer usage: the impact of computer anxiety and computer self-efficacy

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Abstract

Computer has become an imperative instrument in every organization, particularly in today's era of globalization. However, previous studies indicated that employee still facing problem using the computer due to the rapid changes in computer application. Hence, this article purported to expose the association of computer anxiety and computer self-efficacy. From the findings it was found that that there is a weak (r=.329*) relationship between computer anxiety and computer self-efficacy among employees. Therefore, it can be reasoned from the findings, the anxious feelings operating computer in the system had slightly affected employees' self-efficacy.

Keywords: computer anxiety; computer self-efficacy; computer usage; reliability; analysis

1. Introduction

The advent of the technology has caused a lot of change in human life. It is not a new phenomenon in this era. This also brings a huge change to the computer application. Concerning to the changes in the technology, which also related to the changes in the computer applications has led many organizations and employee to rely on the using of the computer as the main medium to complete task (data entry and processing). It is almost difficult to imagine a job or a task that should be completed without using computers [27], due to the facts that these days employees performing a lot of tasks using computer and supporting devices. The rapid changes in the latest software of computer application

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have made the employees equipped themselves with the latest knowledge. As a result of the modernization in the technology, most organizations expect their employees to be more competent and adapt to the latest computer applications. The organizations are taking in more employees to learn and adapt with these new technology applications [16]. Hence, employees are not exceptional in encountering the challenges of embarking into using latest computer applications.

However, there are many cases from previous study indicates that the employee in the organization still having issues dealing with the computer. Past researchers reported that employees interacting with Information Technology (IT) applications experience a situation that is known as computer anxiety (CA) or techno-stress [16]. The existing of the computer anxiety among employee is not the new singularities any more in this modern era. There is a lot of research has been conducted in order to know the existing of this anxiety regarding to the computer. The computer anxiety also will affect the performance of the employee. In addition, computer anxiety has affected cooperative extension workers and personnel in the business world [19]. These will lead to the need for self-efficacy among employee on how to manage the situation of the latest computer application. According to [27] claimed that lower computer anxiety and higher computer self-efficacy might be important factors in learning computer skills and employing them efficiently.

Despite of that, there is less evidence or research has been conducted exploring the relationship of computer anxiety and computer self-efficacy among employees in this particular industry. Therefore, the researchers believes that there are association between computer anxiety and computer self-efficacy among employees. Hence, the aim of this study is to know is there any relationship between computer anxiety and self-efficacy among employees.

1.1 Anxiety and computer anxiety

A dependency towards computer has become more prevalent in the workplace. Particularly, in these new of era and global technology, employees were challenged to be advanced with the technology and also to maintain and upgrade their knowledge and skills in using various computer devices. However, for some new and untrained employees as well, maybe for different generation of employees (e.g.; baby-boomers) this may cause a feeling of fear and anxiety on collaborating the computer and technology devices. Nevertheless, this paper does not look into detail at the factors causing the anxiety of using a computer and its application.

There are many definitions and interpretations of anxiety. Commonly, anxiety refers to a complex combination of negative emotional responses that include worry, fear, apprehension and agitation [24]. According to [20] stated that anxiety by definition is an intense dread, apprehension or nagging worry. Anxiety is a natural and unavoidable reaction to a perception of danger or risk [18]. All human beings experience anxiety in particular contexts and situations, not all types of anxiety are alike [3]. According to [24], there are three types of anxieties: trait, state, and concept-specific. Trait anxiety defined as a general pervasive anxiety that is experienced by a person over the entire range of life experience. A person in this kind of anxiety will feel chronically anxious and constantly under pressure regardless of their situation. Following, state anxiety is described as anxiety that fluctuates over time and/or arises in a responsive situation where related to a person's learning background which a person may have experienced some anxiety in a situation and that anxiety is transferred to a similar situation when it occurred. Finally, concept-specific anxiety is referring to a transitory-neurotic type of anxiety that the range between the trait and state anxieties.

For that reason, a person with computer anxiety may experience fear of the unknown, feeling of frustration, possible embarrassment, failure and disappointment hence, resulted avoidance towards computer usage [20]. In addition, [8] found that people who reported to have medium to high levels of computer anxiety performed less well than those with low level of computer anxiety in an examination involving the use of computers. Moreover, [27] added that computer anxiety is also considered as an affective response which [15] explained that the feelings of anxiety may be mediated by beliefs about lack of ability to use a computer knotted to a lack of mathematical and mechanical skills.

Therefore, computer anxiety has influenced an individual's choice of learning about computers and achieving a realistic level of competency in computer usage [1]. [21] added, studies on computer anxiety are essential as research reports have shown that users avoid computers because of its phobic condition that is repelled to change. Certain measurement must be taken to reduce the anxiety and it has to start with micro step that is tackling individual's self-confidence.

1.2 Self-efficacy and computer self-efficacy

Computer self-efficacy plays a significant role in mediating the impact of anxiety on perceived ease of use [24]. The more the employee incorporates with the computer, the more they feel confident in handling the computer at their workplace. This rule observed by computer self-efficacy is firstly, reducing the strength and significance of the impact of anxiety on perceived ease of use the computer and secondly, having a significant impact with computer anxiety [24]. Many researches have focused on the association of self-efficacy to a number of situational factors. [6] considers that self-efficacy believes seem to foresee many academic outcomes and significantly related to other motivation constructs and academic performances. In addition, according to [29] students with high self-efficacy perceived failure experiences as challenges rather than threats due to stronger self-efficacy expectations. Later, [14] added, teacher's and student's attitudes and self-efficacy perceptions concerning computer supported education is the primary factor to achieve success in computer supported education practices. However, based on the self-efficacy believes measured by researchers at Historically Black College or University (HBCU) in the South, not all students are proficient with office applications [9]. The study uses self-efficacy, as a domain specific measure of computer anxiety due to its greater predictive power over general and task specific measures [1].

Besides that, self-efficacy also has been reported by several other researchers to relate positively to work engagement and employee wellbeing [30a]. In situations where training aims to develop management skills, the measurement of skills transfer is often a considerable challenge. Consequently, many researchers have opined for the measurement of self-efficacy as the main outcome of training, and some coaching studies have begun to do the same [4].

There are many studies regarding computer-supported education, perceptions of computer self-efficacy, computer anxiety and the technological attitudes of teachers and teacher candidates [32]. In general, this study is conducted in order to see how computer anxiety has an influence on employees' computer self-efficacy. Sources of computer self-efficacy were measured using a 24-item Sources of Computer Self-efficacy (SCSE) scale adapted from the 24-item Sources of Mathematics Scale [28]. Consequently, computer self-efficacy can be measure using Meta-analytic review, first and most obvious objective is to test theories. Meta-analytic review can serve two critical purposes of informing empirical work on computer self-efficacy: theory testing and theory building [11]. A carefully conducted meta-analytic review provides a true estimate of relationship strengths.

2.0 Research framework

Based on the above discussion, the variable that has been recognized is anxiety for an employee to use computer and computer self-efficacy. Figure I explain the conceptual framework of this study.
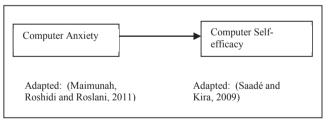

Fig. 1.   Conceptual framework of the study.

Past researchers reported that employees interacting with Information Technology (IT) applications experience a situation in which known as computer anxiety (CA) or techno-stress [16]. For the independent variable, computer self-efficacy has been recognized as the factor variable. According to [24] computer self-efficacy plays a significant role in mediating the impact of anxiety on perceived ease of use. This rule is observed by computer self-efficacy (1) reducing the strength and significance of the impact of anxiety on perceived ease of use the computer and (2) having a strong and significant relationship with computer anxiety.

3.0 Methodology

The survey was conducted at the Malaysia Civil Defense Department Head Quarters, in Wilayah Persekutuan Kuala Lumpur, Malaysia. The population in this study refers to the employees in the department selected in Malaysia Civil Defenses Head Quarters. The employees were categories in rank. The ranks are Senior Officer, Officer, Staff Officer and other rank. The unit of analysis of this study was the Officer and Staff Officer.

The sampling technique chosen in this research is convenience sampling. By using this sampling technique, the researcher can decide and choose whomever he or she can find that is qualified to be involved in this research and who agrees to participate. This technique is easy to be used and cost effective. The sample size of this study is focusing on the various ranges of the staffs and at one department. The sample size consists of 50 employees.

Therefore, 50 from the total number of 55 employees in the organization is equivalent to 90.91% and represented as the respondents of this study. According to [13] table, if the population size is 55, then the required sample size is 48. In this research, the sample size is 50 to ensure that less error is made. Plus, this is also to ensure the feedbacks that are collected are adequate to the population and also are valid for the population.

The primary data was collected using a set of questionnaire that is distributed to the employees at the Policy Planning and Coordination Division, Training Management Division, and Disasters Operation Management Division. The reason these divisions were selected because the employees uses a computer more as to support their day to day work. The questionnaires are distributed by hand to the respondents and are collected as soon as the respondents finishes filling in.

The study used a set of questionnaire as an instrument for data collection. This questionnaire covers four sections, which are Section A, Section B, Section B (II), and Section C. Section A includes the demographic of the respondents. Section B was divided into two includes the elements of the computer anxiety and section B (II) computer self-efficacy. The computer anxiety rating scale was used in determining the levels of computer anxiety among employees. It was based on Computer Anxiety Rating Scale (CARS) developed by [10]. Meanwhile, computer self-efficacy rating scale (CSERS) was used in determining the level of computer self-efficacy which was developed by [7]. The data collected was keyed using the Statistical Package for Social Science (SPSS) Version 20.0. Descriptive analysis was used in analyzing the data, including percentage, median, mode, frequencies, and Pearson correlation. The presentation of the data was supported with illustration, figures and tables.

3.1 Reliability analysis

Reliability is the extent to which the researcher can rely on the source of the data and the data itself. Reliable data are dependable, trustworthy, unfailing, sure, authentic, reputable. Consistency is the main measure of reliability. Therefore, The Cronbach's coefficient alphas were used to determine the consistency of each items measurement. Table 1 shows the Cronbach's coefficient alphas for computer anxiety is 0.754 and computer self-efficacy is 0.933, these alpha values indicate acceptable and preferable reliability because 0.6 and above are considered as reliable.

Table 1. Reliability analysis

Variables	Cronbach's Alphas	No. of Items
Computer Anxiety	0.754	18
Computer Self-Efficacy	0.933	29

4.1. Employees' computer anxiety

This section provides findings on the level of computer anxiety among employees at Malaysia Civil Defense Department Head Quarters. In order to identify the level of computer anxiety among employees in this organization, Computer Anxiety Rating Scale (CARS) was used for the measurement. This actual study and attitude toward computer developed by [10]. In this study, the CARS consisted of 18 items and were scored from 1 to 4 with "1" indicating a response of "strongly disagree" to "4" indicating a response of "strongly agree". There are 8 questions have been reverse scored prior to analysis in order have the highest score in all items indicated high levels of computer anxiety. As a dependent variable of this study, the CARS were computed to get a total of computer anxiety scores and were grouped into five levels of computer anxiety. Higher scores indicated as high level of computer anxiety. Low score obtains indicated as low level of computer anxiety. The minimum and maximum scores range from 18 – 72.

The difference was then divided into five groups and categorized. The range between one category to another one was 10 scores. These ranged from (a) very relaxed, 18 to 28; (b) generally relaxed, 29 to 39; (c) mildly anxious, 40 to 50; (d) anxious, 51 to 61; (e) very anxious, 62 to 72.

Table 2 shows the level of computer anxiety of employee at Malaysia Civil Defense Head Quarters, Kuala Lumpur. There are only 2.0 % (n=1) shows as relaxed and very anxious among employees. The table also shows that the some employees have mildly anxious by 16.0% (n=8). The highest percentage was anxious with 80.0% (n=40). The mean scores show 3.8200 and standard deviation scores show 0.48192. Based on the findings, most of the employees at the Malaysia Civil Defense Department were anxious when dealing with a computer. This result displayed those 40 out of 50 employees felt anxious when working with computers in the organization, even though we are in the era of Information and Technology. Not to mention, nowadays, the use of the computer as the main equipment and tools in performing a task can be seen everywhere in the organization. This result supported by [18], by stating that the increasing use of computer technology can lead to an increasing number of individuals who have computer anxiety.

Table 2. Level of computer anxiety

	Frequency (n)	Percent (%)
Very relaxed	0	0
Generally relaxed	0	0
Relaxed	1	2.0
Mildly anxious	8	16.0
Anxious	40	80.0
Very anxious	1	2.0
Total	50	100.0

4.2 Employees' computer self-efficacy

This section on the other hand, provides findings on the level of computer self-efficacy among employees at Head Quarters Malaysia Civil Defense Department. In order to identify the level of computer self-efficacy among employees in this organization, Computer Self-efficacy Rating Scale (CSRS) was used for the measurement of computer anxiety in this actual study developed by [7]. From this study, the CSRS consisted of 29 question items and were scored from 1 to 4 with "1" indicating a response of "strongly disagree" to "4" indicates a response of "strongly agree". The scores were ranged from 29 to 116 using all 29 questions. One question consists of 1 point as the lowest and 4 points as the highest score. All the 29 question times with 4 as the highest score to be obtained for each respondent. The question comes with four-point rating scale that are (1 = strongly disagree, 2 = disagree, 3 = agree, and 4= strongly agree). High score obtains from the question indicated as high level of computer self-efficacy. Low score obtains from the question indicated as low level of computer self-efficacy. The score was grouped into four categories. These have been ranged from (a) not confident by 29 to 50; (b) Having little confidence by 51 to 72: (c) confident by 73 to 94; and very confident with a score of 95 to 116.

Table 3 reveals the level of computer self-efficacy of employees at Malaysia Civil Defense Head Quarters, Kuala Lumpur. The lowest percentage from the table is feeling less confident with 4.0 % (n=2). While the highest percentage comes with 58.0% (n=29) is confident. The table also shows that the employees with very confident was 38% (n=19). There were no scores for the employees with any confidence. The mean scores show 3.3400 and standard deviation scores show 0.55733. Hence, the study revealed that most of the employee which has been participating in this study feels confident when using computer. The number of respondents who are feeling confident and very confident using computers were 48 out of 50 respondents. Most of the respondents also range age between 20 to 41 years old, which consider as adolescent and adult. From these results it showed that most of the employees in the organization have confidence in using the computer. This might due to the younger generation that easy to accept the use of computer in their daily task. [16] stated in their study that the younger generation was more exposed to computer usage and were easy to accept the change.

Table 3. Level of computer self-efficacy

	Frequency (n)	Percent (%)
Not Confident	0	0
Little Confident	2	4.0
Confident	29	58.0
Very Confident	19	38.0
Total	50	100.0

4.3 The association of computer anxiety and computer self-efficacy

This section provides findings on relationship of computer anxiety and computer self-efficacy among employees at Malaysia Civil Defense Head Quarters. In order to assess this relationship, Spearman's correlation has been used because of the normality test showed that the data was not normal it is below 0.05. The reason for conducting this test is because it will determine the degree of coefficient between the variables. This test was also conducted to find out how much one variable influenced the other. The Table IV shows that there is a weak relationship (r=0. 329*) between computer anxiety and computer self-efficacy among employees at Malaysia Civil Defense Head Quarters. According to [25], the correlation coefficient of.329* is positive, significant but weak relationship.

This result was supported by [3] stated that in the current context, computer anxiety would be directly related to computer self-efficacy. Even though there is a relationship, but the relationship was weak relationship. The correlation co-efficient obtained from the study showed that (r=0. 329*). According to the [26] the eyeball method 0.2 and 0.4 are said to be weak relationship. This result proofed that computer anxiety is not necessarily the main contributing factor of employees' computer self-efficacy at Malaysia Civil Defense Department Head Quarters. This result rejected the previous study, which has been conducted by [22] and [27]. [22] in the finding showed that the level of computer self-efficacy have moderated negative correlation with computer anxiety. Apart from that, [27] revealed that the negative correlation between computer anxiety and computer self-efficacy. This indicated that there must be another dependable variable that can make the relationship to be more strong relationship compare to the current dependable variable. Summary of the finding stated in Table 4.

Table 4. The association of computer anxiety and computer self-efficacy

Variable		Computer Self-efficacy
Computer Anxiety	Spearman's Correlations	.329*
	Sig. (2-tailed)	.020
	Total	50

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

5.0 Recommendation and conclusion

Some conclusions were made based on the finding regarding the level of computer anxiety among employee at Malaysia Civil Defense Head Quarters. From the finding, it can be concluded that most of the respondents were anxious toward the computer with 80.0% (n=40) and there were only 2.0 % (n=1) showed as relaxed towards using the computer. This is because due to the rapid changes with the technology that always evolved from time to time. Due to this factor, most of the employees at Malaysia Civil Defense Department Head Quarters still anxious toward computer because they aware of the computer technology that keep on changing and did not cope with the computer technology. Apart from that, least updating the computer knowledge also can lead to this factor. When the employee did not upgrade his or her knowledge of computer usage, it will lead to fear and afraid of using the computer application. When this situation happened, they easily think that every step will lead to mistakes in using the computer because they do not have sufficient knowledge about the latest computer application.

The following conclusion was made regarding to know the level of computer self-efficacy among employee at Malaysia Civil Defense Head Quarters. These levels of computer self-efficacy to revealed the ability and the confidence of the respondent toward using the computer in their daily routine task at the work place. Most of the

respondents showed that almost 58.0% (n=29) as confident in using a computer and there is no recorded for not confident at all in using the computer in their daily routine task. Most of the employees at Malaysia Civil Defense Department Head Quarters used computer in performing their task. From the observation of the researcher at the organization, the employee mostly used Microsoft word, internet, and emailed when performing their daily task. Due to this kind of habit that using the same computer application daily, it leads them to be confident in handling the same routine task with the same computer application. When the person exposed to the same computer application daily, automatically it can bring confidence in the person in using the computer application. This can be concluded that most of the respondents were confident in using the computer in performing their routine task.

With regards to this question, the researcher explored if there is any significant relationship between computer anxiety and computer self-efficacy among employee at Malaysia Civil Defense Head Quarters. Based on the finding, the study revealed that there was a significant relationship between computer anxiety and computer self-efficacy but it was weak relationship. The study used Spearman's correlations with significant result 0.329*. The researcher thinks that respondent characteristic and background plays important role in giving impact to the result of the study. This can be seen that both [22] and [27] focused on the education field which can lead to the same result as inverse relationship. While the current study were only focused to the employee at Malaysia Civil Defense Department Head Quarters which meant that from different field of studied with [22] and [27]. This argument also has been supported by [22] which she mentioned that the difference in the result might be due to the nature of the populations. Hence, recommendations and suggestions of this study were made so that the top management of Malaysia Civil Defense Department Head Quarters can take advantages from these findings in order to make their employee more capable of handling computer and reduces anxious among their employees.

Firstly, the top management of the Malaysia Civil Defense Department should provide effective computer training to each of their employees to make sure that they are not anxious on handling computer in their daily office task. An effective training that suitable the employee's need can help to increase their knowledge, skills and ability. Secondly, both government and privately owned organization should enhance their computer training among their employees in order to improve the use of computer application in their daily routine task. According to [21] level of computer training however has a positive relationship with computer utilization. Thirdly, Information Technology (IT) Department at Malaysia Civil Defense Department Head Quarters should play their important role as computer educators to others department staff. According to [21], computers educators should emphasize the flexibility and wide application of computer. More importantly, the IT department also should provide computer user-friendly training software manuals to the employee at Malaysia Civil Defense Department Head Quarters. The software supposedly enforced by the computer educators to the employees [21].

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