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Research Article

Analysis of the relationship between general computer self-efficacy and task-specific self-efficacy in the use of computer technology

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Abstract

This study aims to examine the relationship between General Computer Self-Efficacy (GCSE) and Task-Specific Self-Efficacy (TSE) in the context of computer technology usage. Using a quantitative correlational research design, data were collected through questionnaires and analyzed using Pearson and Spearman correlation coefficients. The results revealed a strong and significant positive correlation between GCSE and TSE, indicating that individuals with high general confidence in using computers tend to also have high confidence in performing specific computer tasks. These findings highlight the importance of developing both general and task-specific self-efficacy to enhance user competence and technology adoption. The implications of this study include recommendations for educational and training programs aimed at improving users' computer skills and self-confidence. The study also discusses its limitations and suggests directions for future research to explore causal relationships and intervention strategies.

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Introduction

Computer Self-Efficacy (CSE) refers to an individual's belief in their ability to use computer technology to accomplish specific tasks. This concept was developed by Compeau and Higgins (1995) in their article *"Computer Self-Efficacy: Development of a Measure and Initial Test"*, published in *MIS Quarterly*. In their study, CSE was found to have a significant influence on outcome expectations, emotional reactions such as anxiety and affect, and actual behavior in using computers. Moreover, self-confidence and positive outcome expectations were influenced by the support and computer use of coworkers in the workplace. Thus, understanding CSE is important in the context of information systems implementation in organizations, as it can moderate organizational influence on individual decisions to use computers (Compeau & Higgins, 1995).

General Computer Self-Efficacy (GCSE) refers to an individual's belief in their general ability to use computers, without referring to specific tasks or applications. According to Agarwal, Sambamurthy, and Stair (2000), GCSE reflects a person's perception of their ability to operate in various application domains, resulting from accumulated experience and learning over time. They emphasized that GCSE is distinct from Specific Computer Self-Efficacy (SCSE), which focuses on confidence in performing specific computer-related tasks. Their research showed that GCSE significantly influences SCSE, where individuals with high GCSE tend to be more confident in learning and using specific computer applications. This implies that developing GCSE is an essential step in improving individuals' ability to face various information technology challenges (Agarwal et al., 2000).

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Task-Specific Computer Self-Efficacy (TSE) refers to a person's belief in their ability to complete particular computing tasks, such as using word processors, reference managers, or citation features. Research by Marakas, Yi, and Johnson (1998) found that TSE is a crucial dimension of CSE, separate from GCSE. TSE emphasizes confidence in specific tasks. Their study indicated that TSE significantly affects individual performance in using specific applications, suggesting that improving TSE is an important step in enhancing the ability to deal with IT-related challenges (Gupta & Bostrom, 2019).

The importance of distinguishing between GCSE and TSE was highlighted by Marakas, Yi, and Johnson (1998) in their article *"The Multilevel and Multifaceted Character of Computer Self-Efficacy: Toward Clarification of the Construct and an Integrative Framework for Research"* published in *Information Systems Research*. They noted that failure to differentiate the two levels can lead to ambiguous or unreliable research results. GCSE reflects general belief, while TSE focuses on beliefs about specific task performance. Not separating these constructs can lead to blurred interpretations since each has a different impact on user behavior. Therefore, clear understanding and accurate measurement of GCSE and TSE are essential for producing valid and reliable results in studies of user behavior toward technology (Marakas et al., 1998).

These concepts are rooted in Bandura's self-efficacy theory, which emphasizes that belief in one's abilities strongly affects motivation and behavioral outcomes. In the context of computer use, such belief influences how individuals learn new digital skills and adopt new technologies in both daily life and professional settings. Marakas, Yi, and Johnson (1998) showed that understanding self-efficacy is essential not only in learning technology but also in determining the likelihood of using and benefiting from it. Therefore, self-efficacy is a crucial theoretical foundation for understanding and improving technology adoption in academic and professional contexts (Marakas et al., 1998).

As a measurement tool, the Computer Self-Efficacy Scale developed by Compeau and Higgins (1995) has been widely recognized as a valid and reliable instrument to assess GCSE. This scale has been used in various studies and contexts, consistently demonstrating strong psychometric properties, including reliability and validity. Cross-study validation supports its use as one of the most widely adopted tools in research on technology usage behavior (Agarwal et al., 2000).

Method

The research method in this study employed a quantitative approach with a correlational design. This study aimed to explore the relationship between general computer self-efficacy (CSE) and task-specific self-efficacy (TSEs) through statistical analysis. Data were collected from respondents relevant to the research topic and analyzed using appropriate statistical techniques to identify patterns and relationships between the variables. This approach allowed the researcher to objectively and systematically measure and test the existing relationship between CSE and TSEs (Agarwal et al., 2000).

In this study, the method used was a correlational survey with a cross-sectional design, aimed at identifying the relationship between Computer Self-Efficacy (CSE) and related variables at a specific point in time. Data were collected through a questionnaire designed to measure the level of CSE and other relevant factors. Data analysis was conducted using Pearson's correlation coefficient, a common statistical method used to assess the strength and direction of the linear relationship between two quantitative variables. This design enabled the researcher to observe associations between variables without manipulation, making it suitable for studies aiming to identify patterns or trends in a population. However, it is important to note that this approach cannot determine causal relationships between the examined variables (Handayani et al., 2022).

In statistical research practice concerning Computer Self-Efficacy (CSE) and Task-Specific Self-Efficacy (TSE), the Pearson correlation coefficient (r) is often used to measure the strength and direction of the linear relationship between the two variables. For instance, in the study by Compeau and Higgins (1995), Pearson correlation analysis was used to evaluate the relationship between CSE and other related variables, such as outcome expectations and computer usage. Using Pearson's correlation allows researchers to determine the extent to which changes in CSE are related to changes in TSE or other variables, with r values ranging from -1 to +1, indicating the strength and direction of the linear relationship

between the variables. This analysis is important in understanding how individuals' beliefs about their general computer abilities (CSE) influence their confidence in completing specific computer-related tasks (TSE) and their overall behavior in using technology (Agarwal et al., 2000).

In statistical practice and research reporting on Computer Self-Efficacy (CSE), reliability analysis using Cronbach's alpha coefficient is an important method to assess the internal consistency of measurement instruments. Compeau and Higgins (1995) developed a widely used CSE scale, and in their study, the obtained Cronbach's alpha values showed high reliability. High alpha values indicate that the items on the scale consistently measure the same construct, namely individuals' confidence in their ability to use computers. The use of this reliability analysis ensures that the instrument provides stable and trustworthy results in various research contexts. Thus, the validity and reliability of the CSE scale developed by Compeau and Higgins support its use as an effective tool in studies related to self-efficacy in computer technology usage (Compeau & Higgins, 1995).

In statistical practice and research reporting related to Computer Self-Efficacy (CSE) and Task-Specific Self-Efficacy (TSE), data visualization plays an important role in illustrating the relationship between variables. Scatterplots are used to show the strength, direction, and form of the relationship between two quantitative variables, such as CSE and TSE. By plotting data on the x and y axes, scatterplots allow researchers to identify linear or non-linear relationship patterns and detect the presence of outliers that may affect the analysis results. In addition, descriptive tables present basic statistics such as mean, standard deviation, and other measures that provide a general overview of the data distribution. The use of such visualizations, as applied in the study by Compeau and Higgins (1995), assists in interpreting Pearson correlation analysis results, which measure the strength and direction of the linear relationship between variables. Thus, the combination of scatterplots and descriptive tables provides a deeper understanding of the data and the relationships between variables in CSE and TSE research (Agarwal et al., 2000).

This research was conducted in the city of Malang. The research subjects were 40 male seminary students. The sampling technique used was purposive sampling, i.e., selecting participants based on specific characteristics aligned with the research objectives. The subjects were individuals who understood the issues being investigated. The characteristics of the research subjects were as follows:

a. Subjects were male

b. Subjects were aged between 18 and 40 years

c. They had experience completing academic tasks using word processing applications, reference managers, or citation tools.

Results and Discussion

Interpretation and Development of Correlation Analysis Results

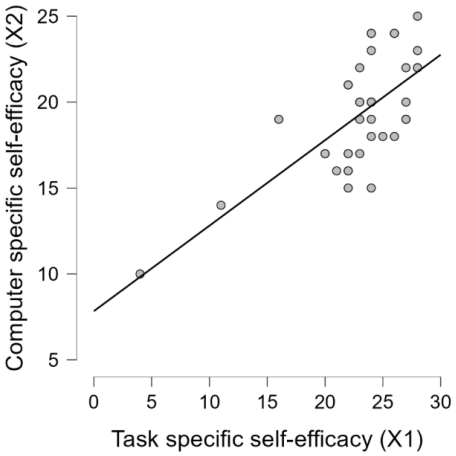
The results of the correlation analysis between Task-Specific Self-Efficacy (X1) and Computer-Specific Self-Efficacy (X2) showed a Pearson correlation coefficient of 0.695 with a significance value of $p < 0.001$, and a Spearman correlation coefficient of 0.631 with the same level of significance. Both values indicate a strong and statistically significant positive relationship between the two variables.

Correlation Table

			Pearson		Spearman	
			r	p	rho	p
Task specific self-efficacy (X1)	-	Computer specific self-efficacy (X2)	0.695	< .001	0.631	< .001

Scatter plots

Task specific self-efficacy (X1) vs. Computer specific self-efficacy (X2)



Meaning of the Positive Relationship

This positive correlation suggests that individuals with high confidence in completing specific tasks also tend to have high confidence in their ability to use computers. In other words, a high level of self-efficacy in a specific task domain may be associated with high self-efficacy in technology usage, especially computers.

This can be understood from the perspective of social and cognitive psychology, where self-efficacy refers to an individual's belief in their ability to organize and execute the actions required to achieve specific goals (Bandura, 1994). This belief is contextual and can be mutually reinforcing across related domains. For example, someone confident in completing a specific task may also feel more confident using tools or technologies that support task completion (Schunk & DiBenedetto, 2020).

Statistical and Practical Significance

The very small p-value (< 0.001) confirms that the observed relationship is not due to chance but rather reflects a genuine association within the sampled population. Practically, these findings emphasize the importance of simultaneously enhancing both aspects of self-efficacy, particularly in learning or work environments that require the use of computer technology.

For instance, in educational or job training settings, strengthening confidence in technical (computer-related) skills may positively impact confidence in performing specific job tasks. Conversely, improving task-specific competencies and confidence may also reinforce individuals' belief in their ability to use computer tools to complete those tasks.

Interpretation and Development of Correlation Analysis Results

The correlation analysis results between Task-Specific Self-Efficacy (X1) and Computer-Specific Self-Efficacy (X2) show a Pearson correlation coefficient of 0.695 with a significance value of $p < 0.001$, and a Spearman correlation coefficient of 0.631 with the same significance value. These values indicate a strong and significant positive relationship between the two variables.

Meaning of the Positive Relationship

This positive correlation suggests that individuals who have high self-confidence in completing specific tasks also tend to have high self-confidence in their ability to use computers. In other words, a high level of self-efficacy in one task domain may be associated with high self-efficacy in the domain of technology use, particularly computers.

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belief is contextual and can mutually reinforce related domains. For example, someone who is confident in completing a specific task may also feel more confident using the tools or technology that support the completion of that task (Schunk & DiBenedetto, 2020).

Statistical and Practical Significance

The very small p-value (<0.001) confirms that the observed relationship is unlikely due to chance, indicating that a true association exists in the sampled population. Practically, this finding emphasizes the importance of simultaneously enhancing both aspects of self-efficacy, especially in learning or work environments that require computer use.

For instance, in educational or job training contexts, boosting self-confidence in technical (computer-related) aspects can positively impact self-confidence in completing specific job-related tasks. Conversely, improving competence and confidence in task completion can reinforce confidence in using computers as tools for completing those tasks.

The Role of Self-Efficacy in Behavior and Performance

According to Bandura's theory (1997), self-efficacy not only influences how individuals act but also how much effort they put forth, how long they persist in the face of difficulties, and how they respond to failure. With this strong correlation, it can be assumed that individuals confident in their computer abilities will be more optimistic and persistent in completing tasks that require computer use.

This is especially relevant in today's digital era, where computer use is integral to many types of jobs. Therefore, developing self-efficacy in the technological domain can significantly contribute to success in both professional and academic tasks (Zimmerman, 2000).

Limitations and Implications

Although this correlation is strong, it is important to note that correlation does not imply causation. In other words, we cannot definitively conclude that an increase in computer self-efficacy causes an increase in task self-efficacy, or vice versa. Further research using experimental or longitudinal designs is needed to test the causal direction of this relationship (Creswell et al., 2014).

Nevertheless, this finding provides an opportunity for practitioners and educators to design integrated development programs—for instance, computer training programs combined with managerial or technical task training—so that both aspects of self-efficacy can grow simultaneously.

Data Visualization: Scatter Plot

The scatter plot presented in the file shows a positive distribution pattern between the two variables, which supports the statistical correlation interpretation. The pattern indicates that individuals with high task self-efficacy scores also tend to have high computer self-efficacy scores, although individual variations remain that can be the focus of further analysis.

Conclusion

This study successfully identified a strong and significant positive relationship between General Computer Self-Efficacy (GCSE) and Task-Specific Self-Efficacy (TSE) among users of computer technology. This finding indicates that individuals' confidence in their general ability to use computers plays a significant role in shaping their belief in performing more specific computer-related tasks. Therefore, the development of self-efficacy at both levels should be addressed simultaneously to enhance competence and effectiveness in using technology.

These findings provide practical implications for educational institutions and organizations in designing training programs that focus not only on mastering technical skills but also on improving users' overall confidence. However, given the correlational nature of this research, further studies using experimental or longitudinal approaches are needed to examine causal relationships and to develop more effective intervention strategies. Furthermore, it is recommended that educational institutions and companies design training programs that integrate the enhancement of both General Computer Self-Efficacy (GCSE) and Task-Specific Self-Efficacy (TSE). Such training programs can help participants not only acquire general technical computer skills but also build confidence in completing specific computer-related tasks they encounter.

Beyond technical aspects, it is important to incorporate approaches that strengthen psychological dimensions—particularly building user self-confidence (self-efficacy)—to motivate them and enhance their resilience when facing difficulties while learning to use new technologies. Future research is also encouraged to involve more diverse populations from various professional backgrounds, age groups, and educational levels, as well as to examine other variables that may influence self-efficacy, such as social support, prior experience, and stress levels. In addition, the use of adaptive and interactive technology-based learning applications may offer effective solutions for improving user self-efficacy, especially in the context of distance education and online training.

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