

Correlation Between Mentors' Communication in E-Mentoring, Mentees' Self-Efficacy and Mentees' Academic Performance: Evidence from a Malaysian Public Research University



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Abstract: *E-mentoring is often viewed as an informal teaching and learning method in excellent higher education institutions. Recent studies highlight that well-designed e-mentoring programs will not be able to support their objectives if mentors do not have capabilities to communicate effectively in the mentoring system. Even though this relationship has widely been examined, the role of mentors' communication in e-mentoring as a significant determinant is not adequately discussed in the higher education institution literature. Thus, this study was done to assess the correlation between mentors' communication in e-mentoring, mentees' self-efficacy and mentees' academic performance. A survey method was utilized to collect data from students at a public research university in Malaysia. The outcomes of the Statistical Package for Social Science displayed that the competency of mentors to openly deliver mentoring information through technology media had strongly invoked mentees' self-efficacy. As a result, this situation could lead to an enhanced mentees' academic performance in the examined higher education institution.*

Keywords: *E-mentoring, mentors' communication, self-efficacy, academic performance*

I. INTRODUCTION

In a Western society, mentoring is known since Odysseus has appointed his loyal friend, namely Mentor to care and educate his son, namely Telemachus before he went to the Trojan wars [1,2].

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This legendary story has inspired leaders to use mentoring as an informal teaching and learning tool to strengthen the positive relationship of students, boost the personal and professional reputation of students, acclimatize students with new higher education settings, increase students' leadership skills in higher education institutions and encourage students to connect with broader society in future [3,4, 5].

In line with the era of industrial revolution 4.0, most leaders in higher education institutions have taken proactive actions by shifting the mentoring paradigms based on traditional face to face interaction to e-mentoring in order to support their strategies and objectives. According to [6] and [7], state that e-mentoring consists of two distinct words, namely electronic and mentoring. Electronic refers to automation and information technology devices that assist mentors to easily and faster communicate with mentees through such electronic devices. While, mentoring refer to mentors (lecturers as a knowledgeable and experienced person) informally and formally interact with mentees (students as an immature, less knowledgeable and experienced person) to achieve particular objectives. In a higher education context, e-mentoring is defined as mentors carry out one or more roles simultaneously, such as role model, sponsor, guide, teacher, advisor, source of information, coach or friend in facilitating and guiding mentees' advancement through electronic devices [6,7,8]. The competence development of mentee occurred not only during mentoring, but also in the locus of the mentor's organizational community. Thus learning and connection were not limited only to what occurred within the one-to-one mentor-protégé dyad [9]. According to [10], [11] and [12], modus operandi of e-mentoring is different with traditional mentoring programs because it has unique characteristics: First, set up efficient electronic communication devices and networks that can be connected with online software, computer-mediated means (e.g., emails, chat groups and video conferencing) and/or telephones (instant messages, web conferencing wireless communication). Second, mentors and mentees can actively use synchronous and asynchronous interactions at any time and anywhere. Implementation of e-mentoring may raise many significant impacts, especially mentors and mentee have more chance to enhance communication and engagement at any time (e.g., within and outside office hours) and any where (e.g., inside and outside campus) in order to accomplish the mentoring objectives [3,13].



A review of recent literature on higher education mentoring shows that planned e-mentoring programs will not be able to achieve their goals if mentors and mentees do not communicate effectively in the mentoring programmes [14,15].

Good communication is typically practiced as two-way communication, namely communication between mentors and mentees and contact between mentees and mentors. Communication from mentors to mentees is usually defined as mentors' willingness to share their ideas and experiences, as well as providing guidance and sharing evaluations, such as advice, observations, criticism, feedback or praise about mentees' teaching and learning. Conversely, contact between mentees and mentors is seen as reflective communication in which mentees can communicate freely their positive and/or negative views about learning and teaching activities [16]. The willingness of mentors to effectively exercise this communication system in e-mentoring can have a significant impact on mentee outcomes in institutions of higher education, in particular enhancing the self-efficacy of mentees. Based on an educational psychology viewpoint, self-efficacy is widely interpreted as mentees trust in their ability to organize and perform tasks to achieve a desired level of performance [17,18,19,20].

Irrefutably, mentees' self-efficacy have been seen as an impressive phenomenon in successful higher education institutions. Findings from higher education e-mentoring studies circulated in the 21st century revealed that the contact between mentors and the self-efficacy of mentees can lead to improved academic performance of mentees [21,22]. In a higher education institution, academic performance is normally defined as the ability of students to master the content of course works, as well as score high results in tests and examinations [23].

Although the relationship has been studied extensively, the role of the self-efficacy of mentees as an important intervention variable has been given less emphasis in the research literature on higher education e-mentoring [21,24]. Several researchers argue that this condition is due to numerous past studies that clarified the features of e-mentoring (e.g. conceptual concepts, styles and significance of e-mentoring) and assessed their effect on overall mentee results (e.g. commitment, success and growth of leadership) in different higher education settings [25]. In comparison, the magnitude and complexity of the self-efficacy of mentees as a significant intervention variable has been largely ignored in research literature on higher education e-mentoring [21,22]. This situation thus inspires the researchers to extend the existing literature by evaluating the intervening effect of the self-efficacy of mentees between the communication between mentors and the academic performance of mentees.

II. LITERATURE REVIEW

A. Mentors' communication in E-Mentoring and Mentee Outcomes

The effect of mentor contact on the self-efficacy of mentees and the study success of mentees is consistent with the main idea of the Contact Accommodation Theory by Giles and Tania [26]. This theory suggests that leaders often use contact accommodation as a means of promoting positive contributions and regulating negative social differences when

engaging with the experiences and aspirations of diverse followers [27,28]. Usage of this theory in an e-mentoring program shows that the concept of accommodation strategy is often interpreted as contact between mentors. It has received strong support from research papers in the e-mentoring literature in higher education. For example, results from studies by [2],[8],[29] and [30] showed that mentors had openly delivered mentoring information (e.g., goal clarity, process clarity, soft skills and academic content) through technology media to diverse mentees' backgrounds and needs. The desire of mentors to use technology media appropriately in the provision of mentoring information could lead to higher positive mentee outcomes, in particular improving the self-efficacy of mentees [8,30] and academic performance [2,29]. Thus, the hypothesis is established as follows:

H1: There is a positive relationship between mentors' communication and mentees' self-efficacy

H2: There is a positive relationship between mentors' communication and mentees' academic performance

B. Mentors' Communication in E-Mentoring, Mentees' Self-Efficacy and Mentees' Academic Performance

Influence of the self-efficacy of mentees in the relationship between the contact of mentors and the study success of mentees is consistent with the key idea of Social Cognitive Theory by Bandura [18,31]. This theory suggests that individuals believe the actions of particular successful individuals, such as willingness to perform tasks and constructive challenges, and dedicated themselves to teaching and learning in different situations [17,32]. Application of this principle in an e-mentoring program shows that mentees with high self-efficacy are seen as a significant intermediate variable between contact between mentors and academic performance of mentees. The notion of this theory has provided strong support from research articles in e-mentoring literature on higher education. For example, results from studies by [21],[22] and [24] reported the mentors' willingness to provide the mentoring details freely (e.g., objectives, process, soft skills and academic content) through online also frequently referenced the self-efficacy of mentees. This situation could therefore lead to a higher study output of the mentees in the respective higher institutions [21,22,24]. Thus, the hypothesis is formulated as follows:

H3: Relationship between mentors' communication and mentees' self-efficacy will impact on mentees' academic performance.

III. METHODOLOGY

A. Research Design

This research is conducted at a public research university in Malaysia. For confidential reasons, the organisation's actual name is kept anonymous. A self-report questionnaire was drawn up at the initial stage of data collection, based on the e-mentoring literature of higher education. Additionally, a back-translation technique was used to translate the survey questionnaire into English and Malay as a means of improving the quality of the research findings [33].

B. Measures

The survey questionnaire consists of three major sections: Firstly, mentors' contact (MENTCOM) had 4 elements adapted from e-mentoring program literature [29,34]. This construct was assessed using two dimensions: delivery of mentoring information and clarity of mentoring message via electronic devices. Furthermore, mentees' self-efficacy (MENTSCY) had 7 items adapted from higher education e-mentoring based self-efficacy literature [8,35]. This construct is evaluated using four dimensions: trust in making assignments, answering tests / exams, taking part in class discussion and managing study time. Finally, the academic performance of mentees (MENTSPE) had 4 subjects adapted from the research performance literature of college and university students [14,21]. Two dimensions are used to determine this construct: cumulative grade point average and assignment. Both items were assessed using a Likert scale of 7 items ranging from "strongly disagreeable / unsatisfied" (1) to "strongly agreed / satisfied" (7). Participant characteristics were used as control variables, because this study focused on student attitudes.

C. Sample

The target population is undergraduate students at the faculty of economics and management at the examined university. A purposive sampling plan was utilized to distribute 300 survey questionnaires to undergraduate students who specialize in economy, accounting, entrepreneurship and management at the university. For the specific aim, this sampling plan was chosen because the management of the faculty had not provided a list of registered students for privacy reasons. Without this list, the researchers would not be able to select participants for this study using a random technique. Of the distributed questionnaires, the researchers were presented with only 136 (45.3 percent) accessible questionnaires. Participants

responded volunteer and anonymous to survey questionnaires based on their consents. Hence, the IBM Statistical Package for Social Science (IBMSPSS) was utilized to assess the survey questionnaire data.

IV. RESULTS

A. Descriptive Statistics

The majority participants were female (80.1%), aged from 19 to 21 years old (73.5%), matriculation certificates (75.0%), third year students (77.9%), students who had cumulative grade point averages from 3.33 to 3.66 (51.5%), and students who specialized in management (54.4%).

B. Validity and Reliability of Instrument

The outcomes of data analysis produced based on [36] and [37] guideline. This outcome displayed five important findings: First, the factor analysis with direct obliminary rotation was applied on 15 items related to three constructs, namely communication between mentors (4 items), self-efficacy of mentees (7 items), and performance of academic by mentees (4 items). Second, all research constructs exceeded the acceptable Kaiser-Meyer-Olkin standard of 0.60, and were significant in Bartlett's Sphericity test. This result indicates that the adequacy of this sample was fulfilled. Third, the factor analysis value for all the items representing each research construct was more than 0.50, indicating that the items met the standard of validity analysis. Fourth, all research constructs had eigenvalues more than 1.0, and they also had variance explained more than 0.45 [36]. This result indicates that the research constructs meet the standard of validity analysis. Finally, all research constructs had Cronbach alpha values of more than 0.70 [37], indicating that they had high internal consistency. These statistical analyses further confirmed that the measurement scales met the criteria of validity and reliability analyses.

Table- 1: The Results of Validity and Reliability Analyses for Instrument

Measure	No. of Items	Factor Loadings	KMO	Bartlett Test of Sphericity	Eigen value	Variance Explained	Cronbach Alpha
MENTCOM	4	0.813 to 0.919	0.821	388/462 p=0.00	3.199	79.974	0.835
MENTSCY	7	0.741 to 0.885	0.886	831.698 p=0.00	5.114	73.054	0.937
MENTSPE	4	0.772 to 0.885	0.839	374.135 p=0.00	3.149	78.729	0.905

D. Construct Analysis

Table 2 shows that the mean for the variables is from 5,3571 to 5,7215, indicating that the levels of mentors' communication, mentees' self-efficacy and mentees' academic performance range from the high level (4) to the highest level (7). The correlation coefficients for the

correlation between mentors' communication and mentees' self-efficacy; and the correlation between mentees' self-efficacy and mentees' academic performance are less than 0.90, signifying the collinearity problem does not present in the sample data [36].



Table- 2: Pearson Correlation Analysis and Descriptive Statistics

Constructs	Mean	Standard Deviation	Pearson Correlation Analysis		
			1	2	3
1. MENTCOM	5.7215	.80934	1		
2. MENTSCY	5.5021	.88695	.641**	1	
3. MENTSPE	5.3571	.93779	.488**	.708**	1

Note: Significant at **p<0.01 Reliability estimation are shown in a diagonal

C. Outcome of Testing H1

Table 3 shows that the results of linear regression analysis for H1. Outcomes of testing the research hypotheses showed that MENTCOM was significantly correlated with MENTSCY ($\beta=0.641$, $p<0.001$), therefore H1 was supported. This result indicates that MENTCOM acts as an important determinant of MENTSCY. In terms of explanatory power,

the inclusion of MENTCOM in the analysis had explained 41% of the variance in the dependent variable. This result shows that the model has substantial effect [38]. Further, the value of variance inflation factor for MENTCOM was lower than 10.0 [36], signifying that this construct was not affected by serious collinearity problem.

Table- 3: Linear Regression Analysis Showing the Results for Testing H1

Variable	Dependent Variable (MENTSCY)	
	Beta Standardized	T Statistics
<u>Independent Variable</u> MENTCOM	0.641***	9.669
R Square	0.411	
Adjusted R Square	0.407	
F	93.489***	

Note: Significant at ***p<0.001

D. Outcome of Testing H2

Table 4 shows the results of linear regression analysis for H2. Finding of testing the research hypotheses demonstrated that MENTCOM was significantly correlated with MENTSPE ($\beta=0.488$, $p<0.001$), therefore H2 was supported. This result indicates that MENTCOM acts as an important determinant of MENTSCY. In terms of explanatory power,

the inclusion of MENTCOM in the analysis had explained 24% of the variance in MENTSPE. This result shows that the model has moderate effect [38]. The value of variance inflation factor for MENTCOM and MENTSPE was lower than 10.0 [36], signifying that this construct was not affected by serious collinearity problem.

Table- 4: Linear Regression Analysis Showing the Results for Testing H2

Variable	Dependent Variable (MENTSPE)	
	Beta Standardized	T Statistics
<u>Independent Variable</u> MENTCOM	0.488***	6.470
R Square	0.238	
Adjusted R Square	0.232	
F	41.866***	

Note: Significant at ***p<0.001

E. Outcome of Testing H3

Table 5 shows the results of stepwise regression analysis for H3 in Step 2. Result of testing the research hypotheses displayed that relationship between MENTCOM and MENTSCY was significantly correlated with MENTSPE ($\beta=0.670$, $p<0.001$), therefore H3 was supported. This result indicates that effect of MENTCOM and MENTSPE has been indirectly affected by MENTSCY. In terms of explanatory power, the inclusion of MENTCOM and MENSTSCY in the

analysis had explained 50% of the variance in MENTSPE. This result shows that the model has substantial effect [38]. The values of variance inflation factors for the relationships: a) between MENTCOM and MENTSPE; and between MENTCOM and MENTSCY were lower than 10.0 [36], indicating that the constructs were not affected by serious collinearity problems.

Table- 5: Stepwise Regression Analysis Showing the Results for Testing H3

Variable	Dependent Variable (MENTSPE)			
	Step 1		Step 2	
	Standardized Beta	T Statistics	Standardized Beta	T Statistics
<u>Independent Variable</u> MENTCOM	0.488***	6.470	0.058	0.732
<u>Intervening Variable</u> MENTSCY			0.670***	8.410***
R Square	0.228		0.503	
Adjusted R Square	0.232		0.495	
R Square Change	0.338		0.265	
F	41.866***		67.193***	
F Change R Square	41.866***		70.733***	

Note: Significant at ***p<0.001

V. DISCUSSIONS AND IMPLICATIONS

This study shows that MENTSCY acts as an important intervening variable in the relationship between MENTCOM and MENTSPE. In the context of this study, leadership has spent a lot of money to set up information technology infrastructures in order to improve e-teaching and learning programs. Later, this technology is used as a foundation to establish e-mentoring programs at every faculty and school in the institution. The majority of participants view that the levels of mentors' communication, mentees' self-efficacy and mentees' academic performance as high. This condition explains that the capability of mentors to deliver mentoring information and increase the clarity of mentoring message in e-mentoring activities will strongly invoke MENTSCY. As a result, this communication practice may induce a higher MENTSPE in the higher institution.

This study offers three major implications: theoretical contribution, methodological robustness of research, and practical implications. As regards the theoretical contribution, the results of this study confirmed that MENTCOM's effect on MENTSPE had been indirectly affected by MENTSCY. This finding is in line with the notion of Bandura's (1993, 2000) Social Cognitive Theory, which indicates that mentors' ability to provide mentoring knowledge and improve the clarification of mentoring messages (e.g., goals, learning material and learning strategies) in e-mentoring activities would strongly invoke MENTSCY (e.g., willing to perform task and objective challenges, as well as commit to teaching and learning). Consequently, this condition may lead to a greater MENTSPE in higher education institutions. This result also is consistent and has extended studies by [21],[22] and [24].

As regards the robustness of the research methodology, the survey questionnaires used in this study have met the validity and reliability analysis criteria. This condition may help to produce accurate and reliable findings of the research. The results of this study may be used in terms of practical consequences to enhance the management of e-mentoring programs in Asian higher education institutions. In order to meet this objective, leaders should pay more attention on the following issues: firstly, mentors should understand different levels of students' trainabilities, and able to appropriately teach, facilitate, and guide students using an andragogy method to fulfil the e-mentoring objectives. Secondly, mentors should use different learning methods, such as

coaching, counselling, demonstration and case study, as they can help students to grasp and apply the learning content to improve their academic performance. Finally, mentors should plan diverse learning activities in order to create fun in e-mentoring activities, such as informal gathering, wellness, service to society and outing activities. These learning activities will upgrade cooperation, trust and sense of commitment among mentees to improve their academic and leadership performance. If these suggestions are given priority this may inspire mentees to support the e-mentoring goals.

VI. CONCLUSION

Based on the outcomes of testing the research hypotheses, it can be concluded that e-mentoring has played important roles in assisting mentors to communicate mentoring information through technology media to mentees at anytime and anywhere. This communication practice has strongly upgraded mentees' self-efficacy, which in turn, may lead to an enhanced academic performance at the examined university. This finding is also consistent and the previous study published in Asian and Western countries has been expanded. Current research and practice in the higher education institutions therefore need to incorporate the self-efficacy of mentees as a key dimension of the e-mentoring program domain. In addition, this study suggests that mentors' ability to communicate effectively with mentees in e-mentoring activities can strongly promote positive mentee attitudes (e.g. desire to learn and willingness to use new knowledge, skills and behaviour). This positive attitude can thus contribute to the protection and enhancement of the competitiveness and efficiency of higher education institutions at a time of global competition.

This study highlights some methodological and conceptual limitations. First, cross-sectional data can only clarify the general views of the participants about the topic being studied. Second, for the variables of interest, this study did not determine the association between particular elements. Third, it has just clarified general attitudes of undergraduate students towards the efficacy of mentor contact in one university's e-mentoring activities.

Finally, it is not possible for a purposeful sampling plan to avoid bias in response. The limitations set out above can decrease the ability of other higher educational institutions to generalize the results of this study.

This research offers a number of valuable recommendations for improving future analysis. First, some important participant characteristics, such as gender, age, academic performance and socio-economic background, should be explored because they can help to increase our understanding of how similarity and difference characteristics can affect the effectiveness of e-mentoring programs within higher education institutions. Second, longitudinal study is reasonable if future study wants to compare the e-mentoring models in more than one higher education institution. Third, other common aspects of the self-efficacy of mentees, such as job requirements, objective challenges and dedication to teaching and learning, should be considered because they have been widely recognized as a possible interfering variable between contact between mentors and mentee performance. Next, certain aspects of mentee growth, such as psychosocial and career development, need to be investigated because they have been widely recognized as a prospective outcome of the relationship between mentor contact and self-efficacy of mentees. Finally, as it may represent the studied population, a number of samples should be increased. Therefore, in order to improve future research such recommendations should be further advanced.

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