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Exploring the Relationship between Mentors' Roles and Mentee Learning Outcomes: A Study at a Research Public University*

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Abstract

Higher education mentoring is an informal learning process that supports mentees to achieve their study objectives and preparing them to transit into the industry and society. This study aims to examine the relationship between mentors' roles and mentee learning outcomes. The cross-sectional survey data were collected from undergraduate business students who have studied at a public research university in the Peninsular Malaysia. The SmartPLS is used to assess the measurement model and structural model. The findings of the SmartPLS path model analysis show that the ability of mentors to appropriately implement communication and support in mentoring relationships has enhanced mentees' self-efficacy and academic performance. This finding can help practitioners to understand the various perspectives of mentoring program and formulate the quality of mentoring programs to maintain and achieve their universities' learning strategies and goals. Further, it also elaborates the overall discussion, implications and conclusions that can be drawn from the study findings.

Keywords: *Mentors' Communication, Mentors' Support, Mentees' Self-Efficacy, Mentees' Study Performance, Public Research University*

Mentorluk Programı ve Mentinin Öğrenme Çıktıları Arasındaki İlişkinin Araştırılması: Kamu Araştırma Üniversitesinde Bir Uygulama

Öz

Yüksek öğretimde mentorluk, mentilerin çalışma hedeflerine ulaşmalarını desteklemekle kalmayıp aynı zamanda onları endüstriye ve topluma entegre olmalarına yardımcı olan kritik bir sürekli öğrenme aracıdır. Bu çalışma, mentorların rol ve işlevlerinin menti öğrenme sonuçları üzerindeki etkisini incelemeyi hedeflemektedir. Araştırma, Batı Malezya'daki önde gelen bir kamu araştırma üniversitesinde öğrenim gören işletme lisans öğrencilerinin katılımıyla yapılan kesitsel bir anket verisini temel almıştır. Ölçüm modeli ve yapısal modeli değerlendirmek için SmartPLS programı kullanılmıştır. SmartPLS yol modeli analizinin bulguları, mentorların mentorluk ilişkilerinde iletişim ve desteği uygun bir şekilde uygulama becerisinin, mentilerin öz-yeterlik düzeyini artırdığını ve akademik performansını olumlu yönde etkilediğini göstermektedir. Bu bulgular, mentorluk programlarını geliştirmek isteyen uygulayıcılar için farklı perspektifler sunarak katkı sağlamaktadır. Bu gelişmeler, mentorluk programlarının üniversitelerin öğrenme stratejileri ve genel hedefleriyle daha uyumlu hale gelmesine yardımcı olabilir. Ayrıca, çalışma sonuçları üzerine detaylı bir tartışma, etkilerin incelenmesi ve sonuçların çıkarılması sağlanmıştır. Bu, mentorluk alanında yapılan araştırmalara ve eğitim uygulamalarına önemli bir katkı sunabilir.

Keywords: *İletişim, Mentor Desteği, Mentilerin Öz Yeterliliği, Mentilerin Çalışma Performansı, Kamu Araştırma Üniversitesi*

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1. Introduction

Mentoring programs have recently been recognized as a cutting-edge of the student development initiative, where it is often implemented by the leadership of higher learning institutions to facilitate personal and professional growth (e.g., Nikoçeviq-Kurti, 2023; Silver & Gavini, 2023). Numerous higher education mentoring studies have shown that mentoring program effectiveness is generally influenced by two categories of determinants, namely mentees' personal traits (e.g., race, gender, year of study, and motivation) (Hernandez et al., 2017; Kamali Arslantaş & Kocaöz, 2021); and environmental variables (e.g., education system and university environment) (Tinoco-Giraldo et al., 2020; Tominaga & Kogo, 2018). The significance of such determinants is extensively discussed, but only a few recently published studies have investigated the specific effect of mentors' roles (Padilla Carrascal, 2023; Yue & Ye, 2022). Mentors are knowledgeable and experience persons appointed by universities, faculties, schools and/or departments, in which they are given important roles as a teacher, sponsor, advisor, agent, role model, coach, and confidante (Ismail et al., 2021) to lead mentees achieve intended objectives, and prepare their transition to face the industrial and societal demands in a time of rapid global challenges (Baroudi & David, 2020; Yue & Ye, 2022).

A recent meta-analysis of higher education system published in the 21st century shows that having well-designed mentoring programs will not be able to reach their aims if mentors have not implemented effective roles in the mentoring programs (Chiranmai et al., 2023; Kim & Kim, 2023). In successful mentoring programs, mentors have adequate abilities to perform communication (e.g., knowledge exchange and sharing) and support (moral and instrumental aid) (Chiranmai et al., 2023; Padilla Carrascal, 2023). The ability of mentors to deliver such roles may have a significant impact on mentee learning outcomes, by enhancing their self-efficacy (Mok et al., 2023; Scott et al., 2023) and academic performance (Chiranmai et al., 2023; Locke et al., 2023). Even though this relationship has widely been investigated, the effect size and nature of mentors' role as an important predictor is little discussed in the higher education mentoring literature (Kim & Kim, 2023; Padilla Carrascal, 2023).

To address these gaps, many scholars argue that this condition is probably caused by several reasons: Firstly, numerous past studies have conceptually discussed the similarities and differences of university mentoring characteristics, such as definitions, objectives, types, and the importance of the variable in universities and colleges (Abdullah et al., 2015; Andersen & West, 2020). Second, most prior studies have emphasized the association between the various types of university mentoring program and mentee attitudes and behavior. This association has been tested using simple behavior statistics (e.g., descriptive and bivariate analyses) and results of this test can only describe the degree of strength and nature of the association between the variables of interest. However, the effect size and nature of mentors' roles as an essential determinant of mentees' self-efficacy and academic performance are not thoroughly discussed in the model testing (Mok et al., 2023; Jones et al., 2023).

This paper advances the existing knowledge by exploring the effect of combined dimensions of mentors' roles as determinants of mentee learning outcomes, revealing that mentees' self-efficacy and

academic performance are strongly influenced by two major dimensions, namely mentors' communication and support (Chiranmai et al., 2023; Mok et al., 2023). Hence, this research study extends the notion of the Communication Accommodation Theory (Giles, 1973; Giles & Ogay, 2007) and Early Adult Transition Model (Levinson, 1978) in a Malaysian public research university, which provides a useful lens for assessing how mentors' roles in mentoring relationships, such as their communication and support may develop mentees' self-efficacy and academic performance. The notion of these theories justifies testing a model where mentors' roles will be the significant determinants of mentees' learning outcomes. Thus, this study aims to examine four essential relationships: a) between mentors' communication and mentees' self-efficacy; b) between mentors' communication and mentees' academic performance; c) between mentors' support and mentees' self-efficacy; and d) between mentors' support and mentees' academic performance.

2. Literature Review

2.1. Explanation about the Study Constructs

Mentors' roles consist of two dimensions: communication and support. Mentors' communication is normally seen as mentors (e.g., faculty lecturers) are willing to exchange the various types of information concerning education, personal, social, and employment issues with mentees (e.g., faculty undergraduate students) in face-to-face and/or online mentoring methods (Ismail et al., 2017; Kanten et al., 2017; Napierkowski & Migliore, 2022). While, mentors' support is always valued as mentors (e.g., faculty lecturers) providing numerous educational support in terms of moral aid (e.g., awareness, inspiration, compassion, resilience, and caring) and instrumental aid (e.g., time management skills, study techniques, social adaptability skills, problem-solving techniques, and lending some money) to assist mentees (e.g., faculty undergraduate students) in carrying out their tasks and responsibilities effectively (Chelberg & Bosman, 2020; Napierkowski & Migliore, 2022). Further studies in higher education mentoring recognize that implementation of mentors' communication and support are useful to enhance mentees' self-efficacy (Scott et al., 2023; Yue & Ye, 2022) and academic performance (Chiranmai et al., 2023; Locke et al., 2023).

Self-efficacy is grounded in the Social Cognitive Theory (Bandura, 1994), which states that "people's beliefs about their capabilities to produce designated levels of performance that exercise influence over events that affect their lives". It consists of two different levels: persons with high self-efficacy and persons with low self-efficacy (Bandura, 1994). In the context of higher education mentoring, mentees with high self-efficacy can carry out challenging responsibilities, learn skills and inculcate positive personal attributes, as well as attain mentoring results (Lejonberg & Tiplic, 2016; van Dinther et al., 2011). While, mentees with low self-efficacy are not able to apply knowledge and skills in performing difficult tasks, find reasons for completing challenging tasks, and learn new knowledge, attitudes, and behavior in tertiary education institutions (Pajares & Schunk, 2005; Rayle et al., 2006). Recent studies in higher education mentoring prove that mentees' self-efficacy is an important result of mentors' roles (Mok et al., 2023; Scott et al., 2023).

Academic performance is usually perceived as a student demonstrates the level of accomplishment in his/her study, such as overcoming academic procrastination (Klassen et al., 2008), improving proficiency scores in coursework, tests and academic projects (Cho & Bridgeman, 2012), graduating on time and do not experience dropout (Locke et al., 2023), and upgrading current cumulative grade point average (Bo et al., 2023). Additionally, individual student attributes, self-efficacy, social integration, study skills proficiency, and socio-demographic characteristics such as age and nationality, are considered predictive elements of academic success in various models of academic performance (Leidenfrost et al., 2014; Le et al., 2005). Extant studies in higher education mentoring advocate that mentees' academic performance is a significant outcome of mentors' roles (Chiranmai et al., 2023; Locke et al., 2023)

2.2. Mentors' Roles and Mentee Learning Outcomes

Effect of mentors' communication on mentee learning outcomes is consistent with the principal meaning of Communication Accommodation Theory (Giles, 1973) reveals that convergent-based information exchange is normally used than divergent-based information exchange to strengthen social integration, approve good relationship among group members, and avoid differences that create distance among group members. In the context of higher education mentoring, the essence of communication accommodation is often interpreted as mentors' communication (Chiranmai et al., 2023; Kim & Kim, 2023). This notion is strongly supported by studies on higher education mentoring, revealing that mentors effectively communicate information to mentees through verbal encouragement, imparting relevant knowledge and skills, and building strong rapport (Baroudi & David, 2020). Mentors show a willingness to discuss social issues and challenging matters with mentees, offering potential problem-solving techniques (Yue & Ye, 2022). They provide feedback on lesson plans and group work, deliver information transparently about program functions (Kim & Kim, 2023), and offer constructive criticism, sharing goals for mentoring development (Locke et al., 2023).

These communication practices, including the use of online platforms and both physical and virtual interactions, help mentors stay abreast of new academic trends (Chiranmai et al., 2023). Moreover, mentors clarify expected objectives and learning outcomes (Padilla Carrascal, 2023). Such communication practices are linked to positive mentee learning outcomes by enhancing self-efficacy (Baroudi & David, 2020; Kim & Kim, 2023; Mok et al., 2023; Yue & Ye, 2022) and study performance (Chiranmai et al., 2023; Locke et al., 2023; Padilla Carrascal, 2023).

Influence of mentors' support on mentee outcomes is in line with the notion of Early Adult Transition Model (Levinson, 1978), which explains that psychological and physiological support from an experienced and knowledgeable person is necessary to facilitate a healthy transition for a person from childhood (dependent on his/her family) to adulthood (independent from his/her family). This support may assist adults to understand their main duties and responsibilities, as well as more confidence in handling new lifestyles and confronting dysfunctional conflicts in daily life. In the circumstance of

higher education mentoring, the notion of social support is often interpreted as mentors' support (Locke et al., 2023; Mok et al., 2023).

This theory is strongly supported by studies on higher education mentoring, indicating that mentors have aided mentees by demonstrating teaching planning and techniques (Mok et al., 2023). Mentors set individualized and flexible goals, provide personalized support, enhance the overall college experience, and foster social awareness (Locke et al., 2023). They leverage online platforms and various interactions, both physical and virtual, to carry out mentoring tasks and stay abreast of the latest academic trends (Chiranmai et al., 2023). Additionally, mentors employ authentic real-life objects and a mix of teaching and learning techniques to address the specific needs of different students (Padilla Carrascal, 2023). They expose students to real-world experiences beyond classroom teaching and assignments (Jones et al., 2023; Scott, et al., 2023). Implementation of this support system in mentoring relationships can lead to higher mentees' self-efficacy (Jones et al., 2023; Mok et al., 2023; Scott et al., 2023), and study performance (Chiranmai et al., 2023; Locke et al., 2023; Padilla Carrascal, 2023).

The research literature has been used as a foundation to formulate the study framework as illustrated in Figure 1. It shows the relationship between mentors' roles and mentee learning outcomes.

Figure 1: Study Framework

Based on the framework, hypotheses are formulated as follow:

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.

H3: There is a positive relationship between mentors' support and mentees' self-efficacy.

H4: There is a positive relationship between mentors' support and mentees' academic performance.

3. Methodology

3.1. Research Design

A cross-sectional research design is utilized to gather survey questionnaires from a specific subject group at a single time point (Schmidt & Brown, 2019). This approach facilitates the collection of related data, less biased data, and high-quality data from a larger population within a short period of time (Sekaran & Bougie, 2016). The current study was conducted at a public research university in Malaysia. Mentoring programs are implemented in faculties, schools, and academic departments, where mentors are consisting of internal mentors (e.g., lecturers) and external mentors (e.g., industrialists), and mentees are undergraduate students assigned to their mentors. Mentors communicate mentoring information and

provide support to improve mentee learning outcomes, by promoting their self-efficacy and academic performance. This positive outcome may contribute to achieve the university's and students' objectives.

3.2. Measures

The survey questionnaire was planned according to the university mentoring literature. A reverse translation technique was used to maintain the consistency of the questions' meanings (Brislin, 1970). The questionnaire was divided into three parts, with the first part focusing on mentors' roles, specifically their communication (MTRCOM) and support (MTRSUP) sub-variables. MTRCOM consisted of 5 items adapted from prior research on mentoring communication (Ismail et al., 2021). Indicators of this variable were explanation, discussion, and feedback. While, MTRSUP had 10 items adapted from the higher mentoring support literature (Ismail et al., 2021; Rayle et al., 2006). Indicators of this variable were moral and instrumental aid.

The survey questionnaire comprised three sections. The first section addressed mentors' roles and included two sub-variables: mentors' communication (MTRCOM) and mentors' support (MTRSUP). MTRCOM consisted of five items adapted from higher mentoring communication literature (Ismail et al., 2021) and assessed explanation, discussion, and feedback. MTRSUP was assessed using ten items adapted from higher mentoring support literature (Ismail et al., 2021; Rayle et al., 2006). Indicators of this variable were moral and instrumental aid.

The second section addressed mentees' self-efficacy (MTESEF) which was evaluated using one item adapted from the literature on self-efficacy of college students (Bandura, 1977, 1994; Pajares & Schunk, 2005; Propst & Koesler, 1998). The indicators for this variable were the mentees' beliefs in their ability to enhance study performance, communication skills, personal life, and social relationships. In the last section, mentees' academic performance (MTESTP) was measured using five items adapted from the literature on undergraduate students' academic performance (Ismail et al., 2015; Rayle et al., 2006). The indicators for this variable were the ability of mentees to achieve a high cumulative grade point average (CGPA), identify effective study methods, and improve their test/exam answering skills. All items were evaluated using a seven-point Likert scale, ranging from 1 indicating "strongly disagree/dissatisfied" to 7 indicating "strongly agree/satisfied." Control variables were employed using respondents' characteristics, as this paper focuses on the general attitudes of undergraduate students.

3.3. Sample

The target population was undergraduate students. A purposive sampling plan was implemented to distribute 300 self-administered questionnaires to the students. The sampling plan was chosen due to the university management's inability to provide a complete list of registered undergraduate students for confidentiality reasons. This limitation prevented the researchers from selecting the study sample using a random method. Ultimately, only 136 (45%) usable questionnaires were returned to the researchers. The majority of participants were female (80.1%), aged 19-21 years (73.5%), hold a matriculation certificate (75%), are third-year students (77.9%), and have a cumulative GPA between 2.51 to 3.00 (51.5%).

The survey data was first filtered using the SPSS program. The survey data utilized in this research had no missing values, extreme values, no straight-line responses, and nonnormal data distribution (all items had Kurtosis and Skewness values less than +/-2.0). The adequacy of the sample was assessed based on the rule of thumb, which requires that the number of formative indicators in the survey questionnaire exceeds 10 time and that the outer loadings of measurement model items surpass the standard threshold of 0.70 (Hair et al., 2017). The survey questionnaire contained 10 items that measured MTRSUP, which were the most significant formative indicators. The study sample met the minimum requirement of 100 participants as recommended. Furthermore, the response bias was assessed according to Harman's single-factor test, and the value of the percentage of variance for all items was 41.52, which was less than 1.0 (Podsakoff et al., 2003), indicating that the questionnaire data were free from the bias problem.

3.4. Data Analysis

The survey questionnaire data were analyzed based on Hair et al.'s (2017) procedure. This package is used because it can analyze the study model either relative or/and formative simultaneously through path analysis, does not need normal data distribution, can analyze data with a small sample, and user-friendly with an attractive interface display (Hair et al., 2017). At the first step of this data analysis, the quality of measurement model (relationship between items and constructs) is screened using the PLS Algorithm. Further, the structural model (relationship between latent constructs) is tested using the Bootstrapping, Blindfolding and Important-Performance Model Analysis.

4. Results

4.1. Model Measurement

Table 1 shows that all study variables had item loadings higher than 0.70, and the average variance extracted (AVE) values are higher than 0.50 (Henseler et al., 2009), revealing that they have met the convergent validity criteria. The composite reliability values for the study variables are higher than 0.80 (Nunnally & Bernstein, 1994), disclosing that the study instrument meets the internal consistency criteria.

Table 1. The Results of Convergent Validity Analysis

Construct	Number of Items	Factor Loading	AVE	Composite Reliability
MTRCOM	5	0.761-0.888	0.664	0.952
MTRSUP	10	0.737-0.862	0.701	0.963
MTESEF	11	0.764-0.869	0.695	0.919
MTESTP	5	0.803-0.849	0.734	0.932

Table 2 presents the values of heterotrait monotrait (HTMT) ratio of correlation for the study variables are smaller than 0.90, and the values of confidential interval for the study variables as shown in the parenthesis are lower than 1.0 (Hair et al., 2017), revealing that all study variables have met the discriminant validity standards.

Table 2. The Results of Discriminant Validity Analyses

Construct	HTMT	
	MTRCOM	MTRSUP
MTESEF	0.740 0.267, 0.546	0.778 0.335, 0.633
MTESTP	0.483 0.050, 0.460	0.477 0.001, 0.504

The values in the parenthesis are the values of confidential interval at 2.5% and 97.5%

Table 3 shows the means for the study variables are between 5.2164 and 5.5912, disclosing that most participants view that the levels of MTRCOM, MTRSUP, MTESEF, and MTESTP are starting from high (4) to the highest level (7). Hence, the variance inflation factor values for the correlation between the study variables are smaller than 5.0, disclosing that the correlation is not affected by the colinearity problem (Hair et al., 2017).

Table 3. The Results of Variance Inflation Factor and Descriptive Statistics

Construct	Mean	Standard Deviation	Variance Inflation Factor	
			MTESEF	MTESTP
MTRCOM	5.7912	.76582	1.504	1.504
MTRSUP	5.2164	.95918	1.504	1.504
MTESEF	5.5428	.86449		
MTESTP	5.5912	.74351		

4.2. Structural Model

The structural model test presents five outcomes: First, the value of the standardized root means square residual (SRMR) is 0.075, which is lower than 0.1 (Hair et al., 2017). This result confirms that this model has a good fit. Second, the outcomes of the model strength test display that MTRCOM and MTRSUP have explained 66 percent of the variance in MTESEF, which is higher than 0.26 (Cohen, 1988), revealing that this model has a substantial effect. MTRCOM and MTRSUP have explained 25 percent of the variance in MTESTP, which is smaller than 0.26 (Cohen, 1988), disclosing that this model has a moderate effect. Third, the outcomes of the effect size test display that the correlation between MTRCOM and MTESEF has an f^2 value of 0.30, and the correlation between MTRSUP and MTESEF has an f^2 value of 0.52, which is greater 0.35 (Hair et al., 2017), revealing that MTRCOM and MTRSUP have a large effect on MTESEF. The correlation between MTRCOM and MTESTP has an f^2 value of 0.07, and the correlation between MTRSUP and MTESTP has an f^2 value of 0.07, which is greater than 0.02 and smaller than .15 (Hair et al., 2017), showing that MTRCOM and MTRSUP have a small effect on MTESTP. Fourth, the results of the predictive relevance test (Q^2) shows that MTESEF has a Q^2 value of 0.42 and MTESTP has a Q^2 value of .16, indicating that they have predictive relevance (Hair et al., 2017). Fifth, the outcomes of the predictive performance test show that the PLS-SEM values for all items have many lower prediction errors than the item values for LM RMSE, indicating that this model has high predictive performance power (Shmueli et al., 2016).

Table 4 shows seven important results of testing the research hypotheses. First, MTRSCOM is positively and significantly associated with MTESEF (β=0.391;t=6.023), therefore H1 is supported.

Second, MTRSUP is positively and significantly associated with MTESELF (β=0.519;t=7.718), therefore H2 is supported. Third, MTRCOM is positively and significantly associated with MTESTP (β=0.277;t=2.514), therefore, H3 is supported. Fourth, MTRSUP is positively and significantly associated with MTESTP (β=0.286;t=2.245), therefore H4 is supported. The outcome shows that mentees' career development and mentees' leadership development are significant results of mentors' information exchange and help. Hence, the effect of mentors' information exchange and help on mentees' leadership development is positively mediated by mentees' self-efficacy.

Table 4. The Results of the Research Hypothesis Testing

Hypothesis	β	t Statistics	Result	R^2	Decision
H1: MTRCOM → MTESEF	0.391	6.023	Supported	0.657	Large effect
H2: MTRSUP → MTESEF	0.519	7.718	Supported		
H3: MTRCOM → MTESTP	0.277	2.514	Supported	0.251	Moderate effect
H4: MTRSUP → MTESTP	0.286	2.245	Supported		

*Significant at t statistics > 1.96 (two-tail test)

As an extension of the hypothesis testing, Importance-Performance Map Analysis (IPMA) results show that MTESEF (75.817) has the highest performance and followed by MTRCOM (75.783), MTRSUP (69.966), and MTESTP (65.754), respectively. Further, MTR has been recognized as the most critical problem that should be appropriately treated to enhance the success of tertiary education mentoring programs.

5. Discussion

This paper confirms that all hypotheses for the direct effects model are supported. The hypothesis testing results show two significant findings: First, MTRCOM has successfully upgraded MTESEF and MTESTP. This result is consistent with the essence of Communication Accommodation Theory (Giles, 1973), which promotes convergent-based communication may strongly induce positive mentee learning outcomes, by reducing divergent opinions and improving social integration among group members. This essence has been supported by the previous higher education mentoring studies, which disclose that the ability of mentors to properly execute communication in formal and informal mentoring activities may lead to greater MTESEF (Baroudi & David, 2020; Kim & Kim, 2023; Mok et al., 2023; Yue & Ye, 2022), and MTESTP (Chiranmai et al., 2023; Locke et al., 2023; Padilla Carrascal, 2023). Second, MTRSUP have effectively enhanced MTESEF and MTESTP. This result is in line with the notion of Early Adult Transition Model (Levinson, 1978), which explains that support is done in the forms of psychological and physiological support by experienced and knowledgeable people. This notion has been backed up by the previous higher education mentoring studies, which reveal that the ability of mentors to appropriately implement support in formal and informal mentoring activities may lead to higher MTESEF (Jones et al., 2023; Mok et al., 2023: Scott et al., 2023) and MTRSUP (Chiranmai et al., 2023; Locke et al., 2023; Padilla Carrascal, 2023).

The IPMA results have recognized that MTESTP is a critical management problem in this study. To overcome this problem, practitioners should emphasize the following aspects: Firstly, training methods

and content should be revisited to assist mentors practice mentoring tasks effectively. Secondly, mentoring relationships should be done based on respect, trust, honesty, cooperation, and support to promote developmental relationships. Thirdly, entrepreneurship mentoring should be given priority to solve unemployment problem due to the limited job opportunities offered by the government sector and high competition among graduates to fulfill job vacancies in the industry. Finally, talented lecturers should be hired to improve the quality of mentoring programs. If the above suggestions are heavily considered this can inspire mentees to support their higher education mentoring's strategies and objectives.

7. Conclusion

This research paper evaluated the study framework developed based on the higher education mentoring research literature. The measurement scale has met the validity and reliability criteria. The hypothesis testing results have shown that mentors' roles (MTRCOM and MTRSUP) are significant determinants of mentee learning outcomes (MTESEF and MTESTP). This result also is consistent with and has broadened the higher education mentoring studies mostly published in Western and Asian countries. Therefore, present research and practice within higher education institutions need to incorporate MTRCOM and MTRSUP as a critical aspect of the undergraduate mentoring domain. This study further proposes that the ability of mentors to properly implement their roles will strongly invoke subsequent positive mentee learning outcomes (e.g., career, psychosocial, leadership and employability). Thus, this positive behavior may lead to maintaining and enhancing the performance of higher education.

The study conclusion should be cautious with several constraints. Firstly, a cross-sectional research method is used to gather data to assess the correlation between the study constructs. Second, this study only assesses the correlation between the latent constructs. Third, participants' characteristics are only used as the controlling variables in this study. Fourth, survey data gathered using a purposive sampling plan do not sufficient to represent the study population. Finally, one public research university is only used in this study. These constraints may reduce the ability to generalize the study findings to other higher education institutions.

The paper suggests some important recommendations to strengthen future research. First, gender, age, education, academic discipline, and mentor gender are critical participants' characteristics that should be considered to understand the similarities and differences of their perceptions toward the correlation of the study constructs. Second, longitudinal studies could be considered in future research if we want to understand the effectiveness of mentoring programs in different times. Third, private universities should be used in future research to get a better understanding of the effectiveness of mentoring programs within Malaysian higher education institutions. Fourth, other important dimensions of mentors' roles, such as career and psychosocial functions should be considered because they have widely been acknowledged as a crucial antecedent of mentee learning outcomes. Finally, several significant dimensions of mentee learning outcomes such as social integration, and leadership should be

used because they have widely been discussed in previous higher education mentoring research reports. Thus, the significance of the above suggestions should be further explored in future research.

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