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Understanding The Influence of E-Leadership on Trainee and E-Learning Effectiveness among Executives in Malaysia

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Abstract: electronic leadership (e-leadership) is crucial for the success of e-learning initiatives, particularly in executive education. E-leaders must navigate digital technologies, foster trust and collaboration, and inspire their teams to succeed in a technology-driven workplace. In Malaysia, the National Policy on e-Learning aims to enhance the quality and accessibility of e-learning in higher education institutions. However, many failure rates of e-learning programs are due to the need for more effective e-leadership skills and execution by trainers. The study used snowball sampling to collect data from a target population that needed help to identify. This method involves starting with a few known participants and referring others to meet the study criteria. This approach helps reach hidden or hard-to-reach populations. An online questionnaire was distributed to executives in Malaysia, and data was collected from 191 participants. Structural equation modeling using SmartPLS Version 4 was used to analyze the relationships. The study examined the relationships between Computer Self-Efficacy (CSE), E-Leadership (EL), Motivation to Learn (MTL), and E-learning Effectiveness (EE). Results showed that CSE, EL, and MTL significantly influence EE. However, the model had limited predictive power for CSE, EL, and MTL. Institutions can improve e-learning effectiveness by offering pre-emptive training programs, boosting motivation to learn through engaging course materials, and strengthening e-leadership knowledge. Future research should explore additional variables, consider organizational context, and examine potential interaction effects. Developing strategies and interventions based on findings can contribute to improving E-learning experiences in various educational settings.

Key Words: *E-leadership, E-learning effectiveness, Computer Self-efficacy, Motivation to Learn, Malaysia*

1. Introduction

Electronic leadership (e-leadership) has emerged as a critical factor in the success of e-learning initiatives, particularly in executive education. Effective e-leadership can enhance the overall effectiveness of e-learning programs, leading to improved outcomes for trainees and organizations (Wart et al., 2017; Gurr, 2004). The rise of digital technologies has transformed how leaders interact with their teams, necessitating a deeper understanding of the unique challenges and opportunities presented by e-leaderships. The importance of having e-leadership capabilities to drive the success of e-learning initiatives among executives can be significant. E-leadership, also known as technology-mediated leadership, refers to influencing others through information and communication technologies to achieve organizational goals (Avolio et al., 2014). It requires unique skills and competencies beyond traditional leadership, such as effective communication, team-building, and change management in a virtual environment (Bencsik et al., 2022). E-leaders must navigate the complexities of digital technologies, foster trust and collaboration, and inspire their teams to succeed in a distributed technology-driven workplace.

As in many other parts of the world, executives in Malaysia have increasingly turned to e-learning to acquire new skills and knowledge to stay competitive in a rapidly changing business landscape. These e-learning programs' effectiveness largely depends on the quality of e-leadership provided by the program's instructors and facilitators. Moreover, Malaysia's unique socio-economic and cultural context, with its diverse population and distinct learning preferences, presents additional challenges for e-leadership in the e-learning domain (Bahar et al., 2020). Additionally, e-learning in Malaysia is gaining traction with the recent introduction of the National Policy on e-learning, which aims to enhance the quality and accessibility of e-learning in the country's higher education institutions (Musid et al., 2023, Konting, 2012). A similar setting is also applicable among executives and senior management in business settings. Nonetheless, it has been mentioned that many failure rates of e-learning programs are due to the lack of practical e-leadership skills and execution by the trainers or

instructors (Ariffin & Rami, 2023, Pulley & Sessa, 2001, Wart et al., 2017, Bencsik et al., 2022). The trainees may face challenges, such as lack of engagement, poor communication, and ineffective feedback mechanisms due to the absence of solid e-leadership (Wart et al., 2017). This indirectly leads to poor effectiveness and adoption of e-learning among executives in Malaysia (Konting, 2012, Hu & AlSaqqaf, 2021). Against this backdrop, the ability of e-leaders to effectively leverage digital technologies, foster virtual collaboration, and inspire their teams can be crucial in determining the success of e-learning initiatives among executives in Malaysia.

In Malaysia, such statistics are not readily available, but the importance of e-leadership in ensuring the success of e-learning initiatives among executives is well-recognized in past and present research (Ariffin & Rami, 2023, Konting, 2012). Therefore, it is crucial to investigate the influence of e-leadership on the effectiveness of e-learning programs among executives in Malaysia to develop a deeper understanding of the critical success factors and provide insights that can inform the design and implementation of more effective e-learning initiatives in the future.

2. Literature Review and Hypothesis Development

E-Learning Effectiveness

E-learning effectiveness can be defined as the extent to which e-learning initiatives achieve their intended learning outcomes, enhance learner engagement, and lead to the successful adoption and implementation of the e-learning program (Encarnacion et al., 2020, Alariqi et al., 2019). The effectiveness of e-learning among executives has garnered significant attention in recent years, particularly as organizations increasingly adopt digital training solutions to enhance employee skills and competencies. This literature review synthesizes current research on the subject, focusing on the factors influencing the success of e-learning initiatives in corporate settings.

One of the critical aspects of e-learning effectiveness is the integration of educational factors within corporate environments. Nam and Tutar (2023) highlight that the rise of web applications in corporate functions has led to a more seamless incorporation of e-learning into employee training programs. This integration is essential for fostering a continuous and accessible online learning environment that supports skill acquisition. Furthermore, Sharma and Rathore (2022) emphasize that e-learning can significantly impact employees' job performance, productivity, and organizational commitment, suggesting that the delivery method and content relevance are crucial for achieving desired outcomes. The role of interactive learning methods in enhancing e-learning effectiveness is also noteworthy. Chang (2016) advocates for a blended approach that combines interactive e-learning with traditional face-to-face instruction, which can stimulate learner engagement and facilitate better knowledge retention. This aligns with findings from Pena (2016), who discusses the importance of effective management methodologies in e-learning projects, particularly in industries with stringent financial and time constraints. The case study presented in Pena's work indicates that organizations must adopt structured approaches to assess and enhance the effectiveness of their e-learning initiatives.

Moreover, the demographic factors influencing e-learning adoption among executives must be considered. Balakrishnan (2021) points out that the intersection of organizational, human, and technological aspects plays a vital role in the success of e-learning programs. Understanding these factors can help tailor e-learning solutions to meet the specific needs of executives, thereby improving overall satisfaction and effectiveness. Rahayu et al. (2016) further support this notion by demonstrating that user satisfaction is a critical indicator of successful e-learning implementation in corporate environments. Evaluating the outcomes of e-learning programs is essential for continuous improvement. Beinicke and Kyndt (2019) provide evidence-based actions to maximize training effectiveness in both e-learning and traditional classroom settings. Their findings suggest that implementing specific strategies before and during training can significantly enhance learning outcomes. Dover et al. (2018) propose a framework for assessing executive education programs, emphasizing the need for clear objectives and performance metrics to evaluate the impact of e-learning on individual and organizational levels.

Computer Self-Efficacy on E-Learning Effectiveness

The concept of computer self-efficacy plays a pivotal role in determining the effectiveness of e-learning, particularly among executives who may have varying levels of technological proficiency. Computer self-efficacy refers to an individual's belief in their ability to successfully use computer technology, significantly influencing their engagement and success in e-learning environments. This literature review synthesizes recent studies to explore the relationship between computer self-efficacy and e-learning effectiveness among executives.

Research indicates that higher levels of computer self-efficacy correlate positively with perceived ease of use and perceived usefulness of e-learning systems. For instance, Li et al. found that computer self-efficacy significantly impacts users' perceptions of e-learning systems, enhancing their overall experience and effectiveness (Li et al., 2010). Similarly, Nguyen et al. highlighted that individuals with strong computer skills are likelier to adopt e-learning systems as they feel more confident and motivated to engage with the technology (Nguyen et al., 2020). This is particularly relevant for executives who often must balance their professional responsibilities with continuous learning through e-learning platforms.

Moreover, the influence of computer self-efficacy extends to self-regulation and learning outcomes in e-learning contexts. Gupta's study revealed a significant relationship between domain-specific self-efficacy and self-regulation, suggesting that executives with high computer self-efficacy are better equipped to manage their learning processes effectively (Gupta, 2023). This self-regulation is crucial for executives, allowing them to navigate complex e-learning environments and achieve their learning objectives.

The impact of computer self-efficacy is further supported by findings from Chien, who emphasized that high self-efficacy leads to improved training effectiveness in e-learning settings. This suggests that organizations should prioritize enhancing employees' computer skills and confidence to maximize the benefits of e-learning initiatives (Chien, 2012). Additionally, Ramírez-Correa et al. noted that perceived external control, which relates to an individual's belief in the support available for using technology, also significantly affects perceived ease of use and, consequently, the effectiveness of e-learning systems (Ramírez-Correa et al., 2015). Therefore, this research posits the hypothesis as below:

H1: There is a significant relationship between computer self-efficacy and e-learning effectiveness among executives in Malaysia.

Motivation to Learn on E-Learning Effectiveness

Various motivational factors significantly influence the effectiveness of e-learning among executives. Understanding these factors is crucial for enhancing the learning experience and outcomes in a corporate environment. This literature review synthesizes current research on motivation to learn in e-learning contexts, mainly focusing on executives.

Motivation plays a pivotal role in e-learning effectiveness, as evidenced by several studies. Siregar (2022) highlights that technological competence and motivation are critical antecedents of e-learning readiness. This indicates that executives, who often possess varying technological skills, may require tailored motivational strategies to engage effectively in e-learning environments. Similarly, Wang et al. (2021) found that e-learning monitoring significantly influences e-learning strategies, which in turn affects overall effectiveness. This suggests that a structured monitoring and feedback approach can enhance executives' motivation and learning outcomes.

Extrinsic factors also contribute significantly to motivation in e-learning. Lee & Faulkner (2011) emphasize the importance of social, cognitive, and teaching presences in the community of inquiry model, which can enhance the e-learning experience. These presences are moderated by extrinsic factors such as content richness and perceived ease of use. These are particularly relevant for busy executives who may prioritize efficiency and relevance in their learning experiences—furthermore, Osei et al. (2022) demonstrate that basic psychological needs, supported by motivation, influence attitudes toward e-learning, suggesting that fulfilling these needs can enhance executive engagement.

The flexibility and convenience of e-learning are often cited as motivational factors that appeal to adult learners, including executives. Berestova et al. (2022) argue that controlling the pace and timing of learning is

crucial for success in distance education. This flexibility allows executives to integrate learning into their busy schedules, increasing their motivation to use e-learning platforms. Additionally, Kim & Frick (2011) found that perceived relevance and quality of instruction are critical predictors of motivation during online learning, underscoring the need for e-learning content that resonates with executives' professional contexts.

Moreover, applying motivational design principles, such as gamification, has enhanced engagement and motivation in e-learning environments. Hamzah et al. (2015) suggest that incorporating gamification can significantly increase motivation among learners, making it a valuable strategy for organizations aiming to improve e-learning effectiveness among executives. This aligns with findings from Krishan (2023), who emphasizes the importance of interactive and engaging content in maintaining motivation and improving academic results. Therefore, this research posits the hypothesis as below:
H2: There is a significant relationship between motivation to learn and e-learning effectiveness among executives in Malaysia.

E-Leadership And Its Mediation Effect
E-leadership can be defined as (Tahir et al., 2021) the ability to influence and guide individuals and teams in effectively utilizing information and communication technologies to achieve organizational goals. The existing literature has emphasized the critical role of e-leadership in enhancing the effectiveness of e-learning among executives. Studies have shown that effective e-leadership, characterized by skills such as virtual communication, team-building, and change management, can significantly contribute to improved engagement, learning outcomes, and adoption of e-learning initiatives (Avolio et al., 2014; Hambley et al., 2007).

In the context of Malaysia, researchers have highlighted the unique socio-economic and cultural factors that present additional challenges for e-leadership in the e-learning domain (Ahmad & Karim, 2013; Razak et al., 2018). Understanding the specific learning preferences and challenges Malaysian executives face is crucial for e-leaders to adapt their approaches and ensure the success of e-learning programs. Furthermore, the literature has emphasized the need to address the high failure rates of e-learning programs, often attributed to the lack of practical e-leadership skills and execution by instructors and facilitators (Bento & Schuster, 2003; Eom et al., 2006). Developing e-leadership competencies can be a critical factor in improving the overall effectiveness of e-learning initiatives among executives in Malaysia.

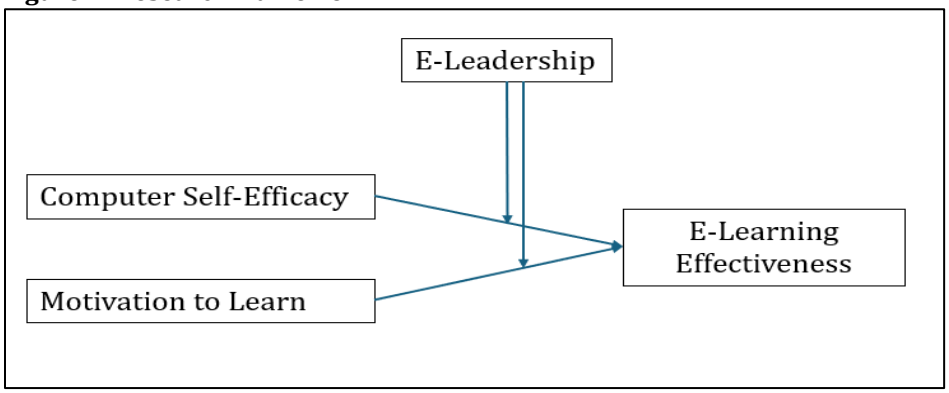
The existing literature has emphasized the critical role of e-leadership in enhancing the effectiveness of e-learning among executives. Studies have shown that effective e-leadership, characterized by skills such as virtual communication, team-building, and change management, can significantly contribute to improved engagement, learning outcomes, and adoption of e-learning initiatives (Avolio et al., 2014; Hambley et al., 2007; Purvanova & Bono, 2009).

In the context of Malaysia, researchers have highlighted the unique socio-economic and cultural factors that present additional challenges for e-leadership in the e-learning domain (Abdullah & Kassim, 2008; Hashim & Mahmood, 2012). Understanding the specific learning preferences and challenges faced by Malaysian executives is crucial for e-leaders to adapt their approaches and ensure the success of e-learning programs. Therefore, this research posits the mediation hypothesis as below:
H3: There is a mediation effect of e-leadership between trainee dimensions on e-learning effectiveness among executives in Malaysia.

Underpinning Theory
The e-leadership theory and the social cognitive theory guide this study. The e-leadership theory emphasizes the unique challenges and skills required for leaders to effectively guide and influence virtual teams and leverage digital technologies to achieve organizational goals. The social cognitive theory, on the other hand, provides a framework for understanding the cognitive and behavioral factors that influence the effectiveness of e-learning, such as self-efficacy, motivation, and engagement. By integrating these two theoretical perspectives, the study explores the interplay between e-leadership and e-learning effectiveness, considering the unique contextual factors of the Malaysian executive environment.

The conceptual framework for this study is illustrated in Figure 1:

Figure 1: Research framework.



Source: (Authors)

Research Methodology

This study utilized the snowball sampling technique to collect the data. Snowball sampling works best when the target population is difficult to access or identify. This sampling technique involves starting with a few known participants and then asking them to refer other potential participants who meet the study criteria. This method is beneficial for reaching hidden or hard-to-reach populations, as it leverages existing social networks and connections to build the sample size (Samkange-Zeeb et al., 2019; Kirchherr & Charles, 2018). Using the snowball sampling approach, researchers can efficiently access a broader range of participants that may not be easily identified through other sampling methods. An online questionnaire was distributed to executives in Malaysia through various professional networks and associations. The variables were operationalized and adapted from past research; CSE and MTL (Shiau et al., 2020), EL (Roman et al., 2019), and EE (Wang et al., 2021). Overall, the data was collected from 191 participants. To analyze the data, the study employed structural equation modeling using SmartPLS Version 4 to examine the relationships between the critical constructs of e-leadership and e-learning effectiveness and the moderating role.

4. Results

Respondent's Profile

Table 1 summarizes the respondents' demographic information, including gender, age, marital status, and highest education level. Most respondents are female (49.2%), followed by male (50.8%). The age group of 31-35 years old is the most represented, with 34% of respondents falling within this category. Most respondents are married (53.4%), while a smaller proportion is single (46.6%). Regarding education, a significant majority (86.9%) hold a Bachelor's degree, followed by a Master's degree (11.5%). Only a tiny percentage (0.5%) have completed SPM, Diploma, or Advanced Diploma.

Table 1: Respondent's background and profile

Variables	Descriptions	Frequencies	Percentages
Gender	Male	97	50.8
	Female	94	49.2
	Total	**191**	
Age	21 – 25 years old	38	19.9
	26 – 30 years old	46	24.1
	31 – 35 years old	65	34.0
	36 – 40 years old	34	17.8
	41 years old and above	8	4.2
	Total	**191**	
Marital Status	Married	102	

	Single	89	
	Total	**191**	
Highest Education	Sijil Pelajaran Malaysia (SPM)	1	0.5
	Diploma	1	0.5
	Advanced Diploma	1	0.5
	Bachelor's degree	166	86.9
	Master's degree	22	11.5
	Total	**191**	

Measurement Model

Reliability and Validity: Overall, the results in Table 2 suggest that the measurement model is of good quality. The high loadings, acceptable AVE values, and satisfactory Cronbach's Alpha and composite reliability coefficients indicate that the variables are valid and reliable constructs. This provides confidence in the use of these measures in the research study.

Table 2: Measurement model analysis

Variables	Items	Loadings	AVE	Cronbach's Alpha	Composite Reliability
Computer Self-Efficacy (CSE)	**TCS1**	0.830	0.738	0.647	0.662
	TCS3	0.887			
Motivation to Learn (MTL)	**TML1**	0.795	0.589	0.655	0.656
	TML2	0.750			
	TML3	0.755			
E-Leadership (EL)	**ELE10**	0.759	0.631	0.854	0.857
	ELE14	0.789			
	ELE15	0.816			
	ELE17	0.780			
	ELE18	0.824			
E-learning Effectiveness (EE)	**EFE2**	0.772	0.578	0.817	0.818
	EFE3	0.735			
	EFE4	0.761			
	EFE5	0.771			
	EFE6	0.761			

However, several items from the variables were dropped due to an unmet threshold below 0.7. One item was dropped from CSE; TCS2, one item was dropped from EE; EFE1 while 13 items were dropped from EL; ELE1, ELE2, ELE3, ELE4, ELE5, ELE6, ELE7, ELE8 and ELE9ELE11, ELE12, ELE13, ELE16. Though 13 items were excluded from the subsequent analysis, this study conforms to the past research, which particularly mentions that the fragmented nature of E-leadership research limits its applicability in certain settings (Wart et al., 2017). Additionally, the validity of the constructs must be assessed when considering item reduction. Sohail and Chen Sohail and Chen (2022) emphasize that the items retained should contribute meaningfully to the construct's content validity. If certain items do not align well with the theoretical framework or do not correlate strongly with the construct, they may be candidates for removal.

The reliability and validity analysis results show that the criteria for both components have been achieved. The loadings represent the correlation between each item and its corresponding variable. A high loading indicates a strong relationship between the item and the variable. For instance, the loading of 0.830 for TCS1 on CSE suggests that TCS1 is a good indicator of Computer Self-Efficacy. Next, the Average Variance Extracted (AVE) measures the convergent validity of a construct. It indicates the proportion of variance in a construct explained by its indicator variables. A higher AVE value suggests that the construct is well-represented by its items. In Table 2, all AVE values are above 0.5, indicating acceptable convergent validity for each construct.
Meanwhile, Cronbach's alpha measures the internal consistency reliability of a scale. It assesses the extent to which the items in a scale measure the same underlying construct. A higher Cronbach's Alpha value indicates

higher internal consistency. In Table 2, all Cronbach's Alpha values are above 0.6, suggesting good internal consistency for each construct. Lastly, composite reliability is another measure of internal consistency reliability. It is considered a more robust estimate than Cronbach's Alpha, especially for scales with a small number of items. Like Cronbach's Alpha, a higher composite reliability value indicates better internal consistency. Table 2 shows all composite reliability values above 0.6, indicating good internal consistency for each construct.

Discriminant Validity

HTMT (Heterotrait-Monotrait Ratio) is a statistical measure used to assess the discriminant validity of constructs in a structural equation model (SEM). It compares the correlations between a construct's indicators and those of other constructs to ensure that the constructs are distinct and not overly correlated. Generally, an HTMT value below 0.85 indicates acceptable discriminant validity. In this case, all HTMT values except for CSE-MTL are below 0.85. This suggests that the constructs of CSE, EL, and EE are reasonably distinct from each other. However, the HTMT value of 1.008 between CSE and MTL is above the recommended threshold of 0.85. This indicates a high correlation between these two constructs, suggesting they might not be as distinct as intended. It might be necessary to re-examine the conceptualization and measurement of these constructs to ensure their discriminant validity. Further investigation may be needed to address the correlation between CSE and MTL and ensure their distinctness.

Table 3: HTMT Criterion Analysis

	CSE	EL	EE	MTL	EL x CSE	EL x MTL
EL	0.503					
EE	0.684	0.692				
MTL	1.008	0.533	0.684			
EL x CSE	0.042	0.209	0.064	0.07		
EL x MTL	0.021	0.111	0.024	0.077	0.792	

Collinearity Statistics (VIF)

The table presents the VIF (Variance Inflation Factor) values for the independent variables in the structural equation model. VIF measures the degree of multicollinearity among the predictors. A VIF value below ten is generally considered acceptable. In this case, all VIF values are below 10, indicating that multicollinearity is not a significant issue in the model. Therefore, the inclusion of these variables in the PLS-SEM analysis is permissible.

Table 4: Collinearity Statistics (VIF)

Collinearity Statistics - Inner Model	VIF
Motivation to Learn -> E-learning Effectiveness	1.851
E-Leadership x Motivation to Learn -> E-learning Effectiveness	2.719
E-Leadership x Computer Self-Efficacy -> E-learning Effectiveness	2.814
E-Leadership -> E-learning Effectiveness	1.295
Computer Self-Efficacy -> E-learning Effectiveness	1.796

Structural Analysis

Table 4 provides the results of the structural model analysis, which examines the relationships between the independent variables (CSE & MTL), the moderating variable (EL), and the dependent variable (EE). In contrast, The graphical output for the PLS-SEM analysis is illustrated in Figure 1. The results suggest that CSE, EL, and MTL directly and positively influence EE. The moderating effects between EL and the other variables were not found to be significant. The R^2 value of 0.458 indicates that the model explains 45.8% of the variance in EE, suggesting a moderately strong fit.

Table 4: Structural model analysis and hypothesis testing

	Path Coefficients	p-value	f^2 value	Decision	R^2 values
CSE → EE	0.210	0.004	0.046	Supported	
EL → EE	0.435	0.000	0.270	Supported	
MTL → EE	0.198	0.022	0.039	Supported	0.458
EL X CSE → EE	-0.053	0.635	0.003	Not supported	
EL X MTL → EE	0.004	0.973	0.000	Not supported	

To reiterate, the direct relationships of CSE → EE: Computer Self-Efficacy (CSE) has a positive and significant relationship with E-learning Effectiveness (EE). This parallels the study by Nguyen et al. (2020), which emphasized that individuals possessing robust computer skills are more inclined to adopt e-learning systems as they exhibit greater confidence and motivation to interact with the technology. Next, EL → EE: E-Leadership (EL) has a positive and significant relationship with E-learning Effectiveness. Past research indicates that e-leadership practices can directly impact the effectiveness of e-learning by improving managerial competencies and fostering a supportive environment for learning. For instance, Jumaiyah et al. (2021) highlight that e-leadership facilitates data-driven decision-making and enhances monitoring capabilities, which is essential for effective school management and, by extension, e-learning outcomes. Effective e-leaders cultivate trust among team members, vital for enhancing collaboration in virtual environments. Jawadi (2013) noted that high levels of trust fostered by e-leaders lead to improved team performance, which is critical for successful e-learning initiatives. Lastly, MTL → EE: Motivation to Learn (MTL) has a positive and significant relationship with E-learning Effectiveness. This is similar to the study by Siregar (2022) and Wang et al. (2021), which mention that motivation and e-learning monitoring can influence the better outcomes of e-learning effectiveness.

However, the moderating effects of E-Leadership were not found in all the interactions. It has been suggested that e-leadership does not significantly moderate the influence of digital culture on employee performance, indicating that while e-leadership is beneficial, it may not always serve as a moderating variable in every context (Sapta et al., 2023). This finding aligns with the notion that while e-leadership can enhance certain aspects of team dynamics, its moderating effects may be limited or context-dependent. Similarly, research has shown that the relationship between e-leadership and team performance is influenced by factors such as corporate culture and technology self-efficacy, suggesting that the effectiveness of e-leadership may be contingent upon these contextual elements (Weerawardane & Jayawardana, 2022).

Figure 1: Graphical output of PLS-SEM

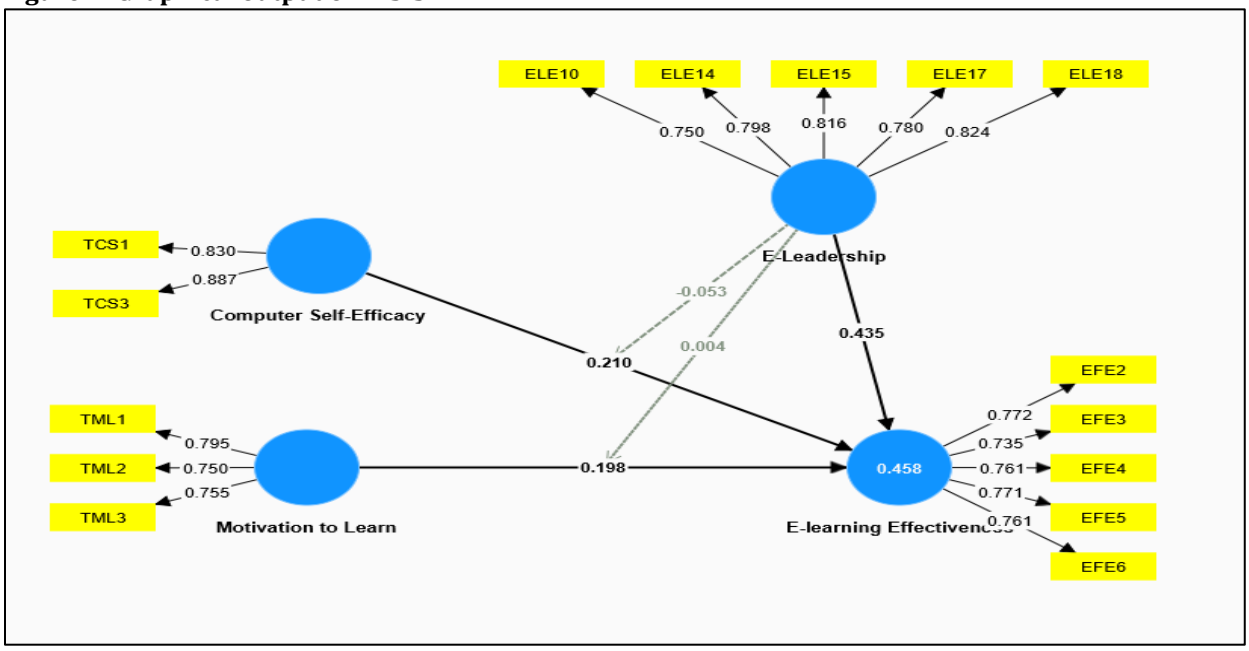


Table 5 presents the Q^2 values for the endogenous variables in the structural equation model. Q^2 is a measure of the predictive relevance of a model, indicating the degree to which the model can predict the variance in the dependent variable. A Q^2 value greater than 0 indicates the model has predictive relevance, while a Q^2 value close to 0 suggests that the model has limited predictive power. In this model, only E-Learning Effectiveness has a value above 0. The Q^2 value for EE is 0.254, suggesting that the model has some predictive relevance for EE. This means that the model can explain a portion of the variance in EE. The results suggest that the model has limited predictive power for CSE, EL, and MTL. However, it shows some predictive relevance for EE, indicating that the model can explain some of the variance in E-learning Effectiveness.

Table 5: Q^2 values

Variables	Q^2 values
Computer Self-Efficacy (CSE)	0.000
E-Leadership (EL)	0.000
E-Learning Effectiveness (EE)	0.254
Motivation to Learn (MTL)	0.000

5. Conclusion and Recommendations

Based on the analysis of the data provided, the study successfully investigated the relationships between Computer Self-Efficacy (CSE), E-Leadership (EL), Motivation to Learn (MTL), and E-learning Effectiveness (EE). The results indicate that CSE, EL, and MTL significantly influence EE. However, the moderation effects between EL and the other variables were not found to be significant. The model demonstrated moderate predictive power for EE, suggesting that the included variables can explain a portion of the variance in E-learning Effectiveness. However, the model had limited predictive power for CSE, EL, and MTL.

This research has provided practical insights to institutions in influencing better outcomes of e-learning effectiveness. First, institutions may enhance CSE among employees by offering preemptive training programs like user briefing or focal training to help learners develop the necessary technical skills and confidence to use E-learning platforms effectively. Second, institutions may boost motivation to learn among employees. Creating engaging and relevant course materials aligned with learners' goals better connects their motivation. Lastly, institutions may strengthen their e-leadership knowledge and capabilities. Though no moderating effect was presented, the data showed a direct effect between e-leadership and e-learning effectiveness. Therefore, institutions may train e-learning leaders on effective instructional strategies and techniques for online environments. This will ensure that E-learning leaders have the resources and support to manage and facilitate online learning effectively.

To further advance the understanding of trainee-related factors, e-leadership, and e-learning effectiveness, future research could explore additional variables or refine existing ones to enhance the model's predictive power. Note that this research only focuses on the trainee aspects, which measure CSE and MTL as the independent variables. Future research should include more context in the parameters, such as measuring the e-learning content and considering measuring the organization's context. Additionally, investigating potential interaction effects between variables, employing longitudinal research designs, and examining cultural and contextual factors could provide deeper insights into these relationships. Furthermore, focusing on practical implications by developing strategies and interventions based on the findings can improve E-learning experiences in various educational settings.

This framework provides a clear understanding of what drives successful e-learning outcomes, highlighting the importance of these elements in designing and implementing effective e-learning programs (Nguyen et al., 2020). Additionally, the research underscores the critical role of e-leadership in managing and facilitating e-learning initiatives. Effective e-leadership can directly enhance engagement, learning outcomes, and the overall adoption of e-learning programs, making it a pivotal factor in the success of these initiatives (Avolio et al., 2014). The study acknowledges the unique socio-economic and cultural factors that impact e-learning by focusing on the Malaysian context. This localized approach ensures that the findings are relevant and applicable

to the specific needs of Malaysian executives, addressing the challenges and preferences unique to this demographic (Bahar et al., 2020). Finally, integrating these theoretical insights will significantly aid organizations in formulating policies aimed at enhancing the effectiveness of e-learning within their structures.

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