

## Role of social factors, self-efficacy and technological support on the use of virtual learning environment among teachers

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### ABSTRACT

Virtual learning environment (VLE) has been introduced in educational institutions such as schools, colleges, and universities to encourage a systematic online teaching and learning platform. This paper aims to examine the effect of social factors, self-efficacy, and technological support on the utilization of VLE in the educational process. A quantitative approach was employed and the data was collected through a set of questionnaires administered to selected respondents. A total of 356 accounting teachers from secondary schools in Peninsular Malaysia were chosen as the samples. A reflective measurement model in partial least square-structural equation modeling was utilized to measure the effect of the exogenous latent variable on the endogenous latent variable. Results indicated that social factors namely (colleagues, administrators, and school culture) significantly affect the use of VLE among teachers. Further, self-efficacy and technological support namely (facilities quality, internet access, and technical support) positively influence teachers to apply VLE during teaching. The quality of technological facilities in schools needs to be developed to promote effective educational processes and motivate teachers to use digital technology. Further, it is strongly suggested that teachers need to be given appropriate training and ongoing support to develop their skills in using digital technology.

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## 1. INTRODUCTION

Digital technology has become one of the main focuses in the education sector due to the variety of resources, approaches, and techniques that can be employed during teaching and learning activities [1]. In line with this, the Malaysian government moves towards a technology-based education system to strengthen the quality of delivering process through the use of a virtual learning environment (VLE) [2]. VLE is considered a platform in the education transformation system to ensure Malaysia's education moves in line with developed countries. The application of VLE was suggested as one of the mediators to vary the delivery process thus teaching and learning process will be easier and more interesting [3]. VLE is an educational channel that emphasizes learning flexibility and ensures that interactive processes between teachers and students take place successfully. It entitles the teachers and students to interact, collaborate and obtain a range of content that varies according to their respective learning abilities [4].

Past studies indicated that there are various benefits gained by educators and students through this platform [5]. Each type of VLE has its functions and advantages that assist educational activities such as quizzes, tutorials, e-books, and forum discussions [6], [7]. With the introduction of this new technology, teachers are considered important figures in the use of digital technology. The use of digital technology altered the teacher's role from an instructor to a facilitator. The implementation of VLE in schools changed teachers' teaching patterns in the classroom from conventional to modern teaching methods [8], [9] claimed that teaching and learning processes that utilized digital technology are more effectual than traditional methods in the classroom. The differences in the main features between the modern teaching method and traditional learning environment derive from the level of technological use, education resources, teacher's control of the classroom, and the delivery process.

As discussed by Hrtoňová *et al.* [10], digital technology allows students and teachers to communicate online and help in developing students' understanding and analytical skills. Teachers can produce and share resources with each other and conduct teaching collaboration with their colleagues [7], [11]. Student learning schedules also become more flexible and independent [12]. VLE has the ability to offer students the opportunity to learn independently according to their own time, space, and experience [13]. Students are able to enhance self-learning and develop critical thinking when they are encouraged to use technology in learning [14]. Further, students do not have to rely entirely on textbooks, and learning is not limited to the classroom [4].

Moore [15] defined self-efficacy as a domain of self-confidence and it is focused on the self-perceptions of individuals regarding their skills and abilities. In other words, self-efficacy is an individual's belief in performing related tasks to meet their goals and expectations [16]. Explained self-efficacy in technological aspects as the ability of individuals to use computers in a variety of information technology contexts. However, a lack of confidence to utilize VLE in education induces one's frustration and indirectly discourages the use of digital technology in classroom settings. Findings from Ghavifekr *et al.* [17] revealed that individuals who are proactive, tend to have greater self-efficacy due to the ability to learn. Therefore, Honicke and Broadbent [18] suggested the efficient way to increase teachers' self-efficacy is through effective training and courses to ensure teachers' motivation is induced. Thus, appropriate action needs to be taken by a related party for the success of implementing VLE in the education system.

Social factors refer to the extent to of extrinsic factors such as family support, co-worker, employers, and the environment influence individuals to employ technology [19]. These variables explained that the behavior of these individuals might influence others to use technology. As discussed by Alves, Miranda, and Morais [20], factors such as support from peers, administrators, and school culture influences teachers to utilize technology in teaching. Teachers are seen to be more enthusiastic about using the VLE when they get support from colleagues, administrators, and a positive school environment [21].

Environmental factor performs a significant role in determining the use of digital technology by an individual [20]. The technological facility is also considered an extrinsic factor influencing the use of VLE among teachers. Technological infrastructure involves technical support either from the technician, good internet coverage, or information and communication technology (ICT) tools when using the VLE during teaching. Prior research showed that effective technical support with high-quality technological tools gives rise to more acceptance and success in the technology-based teaching process [11]. A study by Kaur and Hussein [22] on the factors that are associated with the utilization of VLE among teachers in secondary schools found that the quality level of ICT facilities in schools is still low. Other factors that cause the lack of interest among teachers and students in using the VLE application are low internet access in school, a limited number of computers to be used for all students, and the equipment in the computer lab such as liquid crystal display (LCD) projectors are less satisfactory [23]. Thus, teachers argued that traditional teaching methods are simpler, more effective, and save time.

Nevertheless, previous literature revealed that many teachers still nurture traditional approaches in their teaching activities [24]. The involvement of students and teachers in online learning at both secondary and primary levels was not encouraging as only 2% of teachers employed digital technology in the classroom [25]. The issues in regard to teachers' demotivation to use VLE in their teaching should be further examined. This can be attributed to the challenges faced by the teachers and students in utilizing VLE. Among the issues highlighted were the lack of skills among teachers in using technology during the educational process, the quality of the technological facilities that do not reach the required standard [23], and minimal experience in using learning management tools, such as Blackboard, Moodle, and Canva [12].

As discussed by [2] teachers often have difficulty convincing themselves to use technological tools during teaching activities due to their lack of confidence when handling technical tools. Moreover, teachers assumed that VLE application burdens their workload and wastes their time. This exhibits the need to expose and nurture teachers' motivation to use VLE. Teachers are encouraged to participate in courses, seminars, workshops, and development training programs related to e-learning to help them gain self-confidence and

motivation in order to develop ICT skills in VLE application [26]. In this regard, to maximize the use of VLE and achieve this goal, related parties such as students, teachers, school administrators, and parents need to play their respective roles.

Despite the challenges of applying the VLE, studies also show that teachers still have a positive view of this platform [24]. Many previous studies have also examined the importance of VLE to the education system, however, studies that focus on the variables of social factors, self-efficacy, and technological support should be further explored in the Malaysian context. Thus, based on the significance of preparing the education delivery process that is more meaningful to students, this paper aims to explore the influence of social factors, self-efficacy, and technological support (facilities quality, internet access, technical support) on the success of implementing virtual learning in the classroom. Specifically, the hypotheses formed for this study are: i) There is a positive effect of social factors on the use of VLE ( $H_1$ ); ii) There is a positive effect of self-efficacy on the use of VLE ( $H_2$ ); and iii) There is a positive effect of technological support on the use of VLE ( $H_3$ ).

## 2. RESEARCH METHOD

This study employed a quantitative approach to collect information on teachers' profiles and the corresponding variables that influence the use of VLE during teaching. A questionnaire instrument was utilized to explore the effect of self-efficacy, social factors, and technological support on the use of VLE. The questionnaire was employed as it has the advantage of illustrating consistent and reliable items, providing a high percentage of success in collecting answers from respondents, ensuring a good level of confidentiality, and allowing effective time management [27].

The questionnaires were distributed to accounting teachers in the population to answer the research questions. This allows us to apprehend agreement on VLE among teachers belonging to the same context. The respondent consisted of 356 accounting teachers from selected secondary schools in Peninsular Malaysia. The questionnaire consists of five parts to measure the variables, namely parts A, B, C, D, and E. Part A consists of questions on profile information of the respondents, Part B contains 11 items measuring VLE, Parts C and D contain seven items for each section to test social factors and self-efficacy influence on VLE application. Part E contains nine items to measure technological support in terms of quality, internet access, and technical support. This paper used a 5-choice Likert Scale as a measurement of the collected data. The measurement involves a scale of 5 (Strongly Agree), 4 (Agree), 3 (Neutral), 2 (Disagree), and 1 (Strongly Disagree) to measure teachers' agreement regarding the research construct studied. The collected data were analyzed by using descriptive analysis and the reflective measurement model in PLS-SEM to measure the association of variables.

### 2.1. Validity and reliability test

To discover the reliability value, the researcher has employed the consistency method by considering the loading factor for each question item where the acceptable reliability of the questionnaire item is between 0.71-0.99 which at this level is the best level (71%-99%) [28]. Nevertheless, the value of the reliability coefficient that does not meet the indicator should be removed from the outer model and the analysis is then continued with the second-factor loading. Referring to Table 1, the third and eighth items from the VLE construct were discarded as they obtained a feasibility coefficient of less than 0.71. The first item from the self-efficacy construct was also deleted. Meanwhile, none of the items from the construct of social factors and technological support were discarded.

An analysis was performed to test for the reliability and validity of the construct by obtaining the value of average variance extracted (AVE). AVE values greater than 0.5, indicate that the construct explains more than half the variance of its indicator. Referring to Table 2, the value of AVE for each construct is more than 0.5 with a p-value less than a significance level of 5% ( $p < 0.05$ ), and Cronbach's Alpha values between 0.787–0.901 displays the questionnaire items are at a good level and it is acceptable to perform the actual study.

Table 1. Factor loading of the outer model

Items	First factor loading	Second factor loading
<b>Virtual learning environment</b>		
I know what is virtual learning environment (VLE)	0.823	0.835
I use VLE during my teaching activities on a daily basis.	0.725	0.802
VLE simplifies my teaching affairs in the classroom.	0.651	deleted
I use VLE in teaching and learning at least three times a week.	0.765	0.781
VLE application help me in teaching process more easily.	0.798	0.799
I am adept at delivering interactive learning elements using the VLE.	0.845	0.842
I am skillful to provide open and flexible learning environment for teaching purposes.	0.811	0.824
I know VLE applications can diversify my teaching techniques.	0.679	deleted
I am adept at sharing teaching materials through VLE applications.	0.798	0.775
I am adept at using technology and VLE applications in creating collaborative (group) learning.	0.821	0.838
VLE based learning can generate creative and innovative students.	0.897	0.874
<b>Social factor</b>		
Individuals who are close to me, encouraged me to use VLE for teaching purposes.	0.721	0.753
Most of my teacher friends, encouraged me to use VLE in the teaching process.	0.789	0.799
School administrators support the use of the VLE.	0.864	0.853
School culture encourages the use of VLE.	0.832	0.821
The implementation of the learning process using VLE by my friend, successfully resulted in an interesting learning environment.	0.754	0.773
Students are more interested in learning process that uses VLE.	0.897	0.869
To achieve school target, administrators are assertive in their efforts to encourage teachers to use the VLE.	0.811	0.801
<b>Self-efficacy</b>		
Teaching activities using VLE is an effective method.	0.398	Deleted
I am comfortable using VLE in the educational process.	0.784	0.778
I am confident that VLE can produce an exciting learning environment.	0.871	0.876
I am comfortable assisting my fellow colleague to employ the VLE.	0.798	0.783
I am able to overcome any difficulty that arose while using the VLE in the classroom.	0.812	0.830
Understanding students' learning styles, helped me plan the learning process using the VLE.	0.878	0.877
I am able to construct relevant learning process when using the VLE	0.856	0.852
<b>Technological support (Quality, internet access, technical support)</b>		
The quality of ICT infrastructures provided in my school are good (Example: computer, LCD Projector and printer).	0.881	0.887
My school provides adequate computer lab facilities in terms of hardware and software for the use of VLE applications.	0.895	0.890
I have my own personal computer to access VLE applications from home or out of school area.	0.767	0.772
I can easily access or use the VLE applications from home due to good internet line at home.	0.721	0.734
The internet speed access at my school is good and stable.	0.734	0.741
The whole area of my school has adequate internet access.	0.786	0.780
School management always provide support to teachers to use VLE during teaching and learning activities.	0.857	0.858
Relevant technicians or officers are always helpful in case of difficulty in using the VLE application.	0.877	0.878
Facilities and equipment for VLE applications in school are constantly being improved and maintained.	0.792	0.798

Table 2. Construct validity and reliability

Latent constructs	AVE	p-value	Cronbach's alpha	p-value	Composite reliability	p-value
VLE	0.707	0.000	0.924	0.000	0.876	0.000
Social factors	0.812	0.000	0.787	0.000	0.697	0.000
Self-efficacy	0.697	0.000	0.901	0.000	0.866	0.000
ICT support	0.719	0.000	0.854	0.000	0.783	0.000

### 3. RESULTS

The data were collected over a period of three months through the distribution of questionnaires to accounting teachers in West Malaysia. Participants were given 7-14 days to respond to the survey. After the questionnaire was completed, the collected data was then prepared for analysis. A partial least square-structural equation model (PLS-SEM) was utilized to analyze the findings. The reflective measurement model in PLS was employed to measure the relationship between the exogenous latent variable on the endogenous latent variable which allows the examination of causal relationships between variables [28].

Based on Table 3, a total of 356 respondents were involved in this study. Of these, 126 (35.4%) were male teachers while the other 230 (64.6%) were female teachers. A total of 175 respondents (49.1%) work in urban schools while the other 181 respondents (50.9%) work in rural schools. The majority of respondents (83.4%) have a bachelor's degree compared to only 16.6% who have a master's degree and Ph.D.

From the aspect of ICT handling ability in teaching, the majority of respondents about 220 (61.8%) have a moderate level of ICT skills, followed by 75 teachers (21.1%) with a high level of ICT skills and 61 respondents (17.1%) with a low level of handling ICT in teaching.

Table 4 depicts the direct effect between the variables. As shown in Table 4, the direct effect of social factors on VLE is significant (path coeff.=0.317;  $t=3.724$ ,  $p<0.05$ ), therefore the first hypothesis is accepted. The finding can be interpreted as teachers with a higher value of social factors having a higher intention to employ VLE in his/her teaching activities. Next, the attitude effect of self-efficacy on VLE (path coeff.=0.342;  $t=6.987$ ,  $p<0.05$ ) is significantly proven. The second hypothesis was supported and concluded that self-efficacy had a direct influence on the use of VLE. Further, technological support in terms of quality (path coeff.=0.297;  $t=5.531$ ,  $p<0.05$ ), internet coverage (path coeff.=0.219;  $t=4.154$ ,  $p<0.05$ ), and technical support (path coeff.=0.419;  $t=3.301$ ,  $p<0.05$ ) are significant too. Therefore, this means that better ICT infrastructure in terms of quality, internet coverage, and maintenance in school encourages teachers to use VLE in teaching and learning.

Table 3. Respondents demographic factor

Demographic factor		Frequency (n=356)	Percent (%)
Gender	Male	126	35.4
	Female	230	64.6
School location	Urban	175	49.1
	Rural area	181	50.9
Age	<25	30	8.42
	25-30	74	20.8
	31-40	95	26.7
	41-50	138	38.8
	>51	19	5.33
Education	Bachelor	297	83.4
	Master & PhD	59	16.6
ICT skills	Low	61	17.1
	Moderate	220	61.8
	High	75	21.1
Total		n=356	100.0

Table 4. Hypotheses testing

Latent constructs	Beta	p-value	T-statistics		R-square
Social factors--->VLE	0.317	0.000	3.724	Accepted	0.176
Self-efficacy---> VLE	0.342	0.000	6.987	Accepted	0.197
ICT-quality---> VLE	0.297	0.000	5.531	Accepted	0.066
ICT-internet access---> VLE	0.219	0.000	4.154	Accepted	0.083
ICT-maintenance---> VLE	0.419	0.000	3.301	Accepted	0.043

#### 4. DISCUSSION

The finding illustrates that teachers in this study have a moderate ability in creating flexible and interactive learning environments using technological approaches for teaching and learning purposes. Teachers have a positive view of digital learning. Teachers also agreed that through the use of digital technology, they were able to diversify teaching techniques and the education delivery process became more flexible. In addition, teachers agreed that the adoption of VLE may generate creative and innovative students. Teachers acknowledge that the learning platform is competent to construct creative teaching strategies with contemporary learning methods [29]. this application eases the sharing of teaching materials and is capable of advancing the learning environment for teachers and students [20].

This study has proven that social factors have a significant positive impact on VLE applications among teachers in schools. Peers and individuals who are close to the teachers, encourage and help them to employ VLE in the teaching and learning process. As discussed by Sang *et al.* [11], teachers who are proficient in ICT integration could be mentors to their colleagues. Studies showed that the teaching process using VLE by fellow teachers successfully resulted in an engaging learning environment. Findings revealed that the collaboration in teaching process between teachers is necessary to support a fellow colleague who lacks ICT skills to administer the online platform. This suggests that teachers could attract their colleagues to utilize VLE in the classroom due to the innovation demonstrated by fellow teachers, and the success in implementing interesting learning outcomes. Next, the finding indicated that students are more interested in following learning activities using digital technology. This result is in line with [3], [30] who found that collaborative learning attracts and increases student engagement when teachers use digital technology as a learning platform. Further, this study shows that the role of school administrators in cultivating the

integration of technology in teaching is crucial [22]. teachers will be less motivated to accept new teaching platforms if administrators do not provide decent support and ultimately create a sense of disinterest in using the innovation that has been implemented [31]. However, the result showed that the support teachers received from school administrators are not widely implemented in terms of monitoring, ICT assistance training, and ICT facilities availability. Thus, positive school culture and support from the school administration exerted a significant influence on teachers to utilize VLE in the education process.

Self-efficacy has been identified to have a significant positive impact on the use of VLE [32]. This study revealed that teachers have high self-efficacy and they agreed that the utilization of VLE in teaching activities may generate an interesting learning environment. This study captured that through higher self-efficacy in teachers, their confidence and motivation develop, and significantly influence the acceptance of VLE application. A study conducted by researchers [33], [34] acknowledged that teachers who utilize “Smart Board” technology perceived that the application provided benefits and value to students and themselves. However, the lack of ICT skills reduces teachers’ confidence to employ VLE applications [11]. Results showed that the success of utilizing VLE comes from the confidence teachers have within them and it is associated with the ability in handling technological tools.

In terms of technical support such as guidelines, technicians, or people that help in case teachers have difficulties while using VLE, the study found that this support is at a moderate level. Teachers need technical support when employing VLE innovations since such assistance encourages teachers to expand their knowledge and skills to integrate technology [35]. User-friendly features (easy to use) possessed by the VLE application also show to be at a moderate level. Most teachers are less willing to use such applications because the navigation of the VLE system in schools does not reflect user-friendliness. Based on the teachers’ perspective, applying digital technology during teaching will take their valuable time to finish off the prescribed syllabus, thus increasing the teaching burden.

Studies showed that ICT and computer facilities are equipped by the school for educational purposes. Results illustrated that ICT support in terms of the quality of facilities, good internet network, and effective technical support encourages teachers to utilize VLE in the classroom. However, teachers rank the quality of ICT facilities to be at a moderate level. Teachers emphasized that ICT equipment in the computer lab, internet access, and the number of computers should be sufficient for teaching and learning activities to be efficient. There were complaints by respondents regarding the limitation of internet access and the lack of necessary resources to use digital technology during the teaching process. The result is consistent with [36], which highlighted that internet access provided in schools is still at an unsatisfactory level causing difficulties for teachers to employ VLE during teaching activities.

By understanding the challenges faced by teachers in using VLE, related parties such as school administrators and the ministry should provide adequate computer facilities and good internet access while technological devices should always be maintained by technicians to ease the learning process. Further, teachers need to be given early exposure to digital technology so that they are highly motivated and fit to use technological innovations [37]. E-learning will be successful if teachers have the appropriate technological knowledge, training, and time to practice the applications [38]. Teachers also agreed that using VLE in learning activities calls for better participation from students in class as it allows students to address their ideas, learn collaboratively, communicate and discuss with peers and teachers as well as share their resources online both in and out of the classroom hours [39], [40]. In addition, teachers believed that VLE is an interesting learning platform and may generate creative and innovative students. VLE application can diversify teachers' teaching methods and provide a flexible learning environment for educational purposes [38], [41]. Thus, the availability of extensive skills and knowledge in digital technology can develop the readiness and confidence among teachers to use VLE in teaching.

## 5. CONCLUSION

Social factors, self-efficacy, and ICT facility conditions were found to have an influence on the use of digital technology in teaching activities. Social factors namely school culture, administrator, and peers may influence teachers' behavior to employ digital technology during teaching. There is an association between self-efficacy and confidence level, where the more confident the teachers are in utilizing digital technology, the higher their motivation will be in employing VLE. Further, technological support has a significant impact on the usage of VLE since it can increase the use and acceptance of technology, thus raising the integration of digital technology among teachers. This study suggested that teachers need to improve their skills in technology by attending courses held by the school administration or through their own initiative. Therefore, the study highlighted that adequate technical support, good ICT facilities, and guidance from certain parties either administrators or colleagues are significant to motivate teachers to use digital technology during teaching.

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