

Teachers' Continuous Intention to Use the Virtual Learning Environment (VLE) Platform: Do Gender Differences Still Matter[†]

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Abstract: The lacking and obsolete empirical evidence on the manner in which gender influences VLE adoption indicates the need to conduct new research regarding this matter. Presently, the usage trend of ICT gadgets, equipment, or any sort of technology including VLE has dramatically changed, which perhaps created the possibility of gender effect abolishment, although its existence was previously proven in certain studies conducted in previous decades. Therefore, this study investigates the difference between male and female teachers' continuous intention to use the VLE platform. The data were gathered from primary and secondary school teachers across the northern region of Malaysia and were analyzed using *t*-test analysis. The findings confirmed that there is no difference in terms of gender when it comes to the extent of teachers' intention to continue using VLE in their pedagogical routines. This implies that increased familiarity with ICT tools has eliminated the gender effect in VLE adoption among teachers.

Keywords: gender; Information Systems; Virtual Learning Environment; Google Classroom; VLE adoption; intention to use



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1. Introduction

The past twenty years have seen rapid advances in the field of school education, congruent with the increasing awareness of Information and Communication Technology (ICT) that has occurred globally. As a result, educational authorities continue to invest heavily in the acquisition of educational technology, including implementing a Virtual Learning Environment (VLE) in schools. There are various justifications behind this investment, but one of the expected outcomes should be an increase in teachers' productivity, particularly in terms of effectiveness, efficiency, and quality [1]. This is mainly because VLE offers unlimited opportunities for teachers and other related parties such as students, school administrators, and parents. Nevertheless, the provision of VLE does not guarantee its sustainable usage, especially when considering that it is voluntarily used. As noted by [2], the usage patterns of any Information System (IS) may vary significantly when the nature of its use is optional. Moreover, this notion is ratified to be true as the resistance toward VLE among teachers has recently been recognized as a serious, worldwide educational technology concern [3–6].

Thus far, the existing literature on VLE has unveiled various factors that contribute to its usage, which also provides a fundamental understanding of the reasons behind teachers' resistance to this platform [7]. Despite this, the evidence of the gender effect on continuous VLE intention is inconclusive. Presently, there is a general lack of empirical research conducted to compare the extent of male and female teachers' intention to continuously use

VLE in their teaching routines. In fact, the available literature on gender roles in technology adoption has mostly been conducted within recent decades [8–10]. However, with the progress of time, caution must be applied, as the findings might not be relevant anymore. Today's society is familiar with technology, regardless of personal traits, where some doubt may exist on the possibility of gender effect abolishment. This notion makes sense because increased familiarity with technology usage will enhance the user's knowledge structure, which will help in the learning process [8,11]. As a result, there is a possibility of alleviation in the resistance to a particular technology, in this case, VLE, that will lead to further enhancement of their attitude (intention to use). However, thus far, the empirical evidence on this issue is still scarce. Therefore, the aim of the paper is to clarify the existence of the gender effect in VLE adoption among Malaysian teachers. This information can be used to develop targeted interventions aimed at establishing sustainable usage of VLE, which should also raise the standards of the Malaysian school education system.

1.1. VLE in Malaysian Schools' Education

VLE is known as a type of E-Learning platform that is widely used in higher education institutions and schools, with the ability to support both teaching and learning, as well as education management [12]. It is also universally identified as an Internet-based platform that underpins different educational undertakings, including online courses, quizzes, and tutorials [13]. Although VLE is occasionally referred to as Learning Management Systems (LMS), there is actually a slight difference between these E-Learning platforms. In light of this, [14] claims that VLE is an appropriate term to be used for E-Learning platforms that are used for educational purposes, while LMS should be referred to as an E-Learning platform specially developed for training. Despite the variety of features and abilities of VLE, it is best known for its capability to support both asynchronous and synchronous teaching and learning [15]. In addition, VLE also enhances the essence of conventional learning by promoting flexibility in six aspects, namely, time, place, space, technology, interaction, and control [16].

The history of VLE implementation in Malaysian school education began in 2012, with the introduction of Frog VLE, a platform that was adopted from the United Kingdom (UK). Frog VLE has an astonishing success record in its origin country and is currently implemented in many other countries around the world [17]. Therefore, with the embedment of Frog VLE into the school education system, the Ministry of Education Malaysia (MOE) aimed to take advantage of digital education to eliminate the proximity effects between rural and urban schools. Furthermore, it is hoped that this initiative would accelerate the quality of Malaysian education to the same level as educationally advanced countries such as the UK, Finland, and the United States (US). Viewed as an investment for the long haul, Frog VLE execution is predicted to be used for at least 13 years, and MOE believed that it would change the Malaysian education landscape by advancing the enduring utilization of ICT in aspects of both pedagogy and education management [18,19].

Unfortunately, despite this ambitious and costly investment to make Frog VLE available in Malaysian schools, it has nonetheless produced unexpected outcomes. During implementation, statistics have demonstrated very low usage of this platform, particularly among its main users—teachers [20,21]. From day one, this phenomenon continued to be an untreated issue until it reached its peak, when the MOE had to declare the termination of the Frog VLE service in mid-2019, and it was replaced by the Google Classroom (GC) platform [22]. Similar to Frog VLE, the GC platform offers almost the same basic VLE features, such as assignment, communication, collaboration, and information sharing. However, two main characteristics make GC dominant over Frog VLE. First, it is free of charge [23], and therefore, it is cost-effective for MOE, especially when implementing VLE on a nationwide scale. Second, GC is relatively easier to use, particularly for users of Google applications, for example, Gmail, YouTube, Google Drive, Google Form, and so on [24]. Undeniably, the Malaysian generation today is familiar with these Google applications. As GC has the ability to link the platform with other Google applications, this will provide advantages

by eliminating the reliance on training, attracting users, especially teachers, and further leading to sustainable utilization of the VLE platform.

During the Frog VLE implementation period, the resistance and low usage of the platform have caused panic among stakeholders, which can be seen in situations where teachers are forced to use the platform up to a certain target of usage [25]. The local educational authorities likely did this in order to justify MOE's mega-investment in the provision of Frog VLE. Perhaps this action could increase the usage statistics of VLE among teachers. This, however, in turn, has unethically shifted the nature of the VLE platform from voluntary to mandatory. Although the success of VLE implementation is indicated by its usage [26,27], this concept involved interdependent relationships between other success factors such as teacher satisfaction and net benefits [28]. By changing the usage nature of VLE from voluntary to mandatory, the platform was exposed to a dramatic decrement in teacher satisfaction and net benefits. Therefore, this practice should be banned to avoid (another) failure of VLE implementation. Over the past decades, a number of researchers have sought to determine the factors that contribute to this resistance phenomenon. As a result, several factors such as teachers' workload, quality dimensions, and teacher readiness have been recognized as influential factors in VLE adoption [25,29–31]. Nevertheless, much uncertainty still exists about this, especially in terms of gender roles in VLE implementation during the digital era.

1.2. Gender Differences in Technology Adoption

In IS adoption, gender is found to be influential, especially to determine the strength of usage [8,32]. To elaborate, men are task-oriented and usually require a better quality of information, especially in terms of perceived usefulness when performing certain tasks [10,32]. On the other hand, women are instead discovered to be more sensitive and detail-oriented, especially in making decisions [33]. They occasionally digest information in an organized way, the opposite of men, who usually discard pertinent details in order to process the information from a broader perspective [34]. Ref. [8] took note of this and put forth the theory that women would respond more quickly to variations in the environment, which would further influence their intentions. A few empirical IS studies that uncovered the greater impact of perceived ease of use (one of the measurements for system quality) among women have reinforced this suggestion [10,32]. This evidence indicates that women anticipate a good-quality system that is easy to use [32], and consequently, if they perceive that the specific system is convoluted in nature, they will most likely demand improved service quality. To summarize, the preceding discourse on gender roles has shown that the intention to use VLE among teachers tends to be affected by gender dissimilarities. Male teachers want improved information quality, while female teachers tend to consider the system and service quality. A probable consequence is that teachers' gender could affect their perception and dependency on the information, system, and service quality, and thus, could possibly influence their determination of VLE continuous usage. Therefore, considering the preceding discussion, it is noteworthy to take into account the male and female differences when investigating VLE acceptance or VLE success among teachers.

2. Research Methodology

This study applied a descriptive quantitative approach to investigate and compare the level of intention to use VLE among male and female Malaysian teachers. Based on the simple random sampling procedure, data collection was performed using a cross-sectional survey among primary and secondary teachers across the northern region of Peninsular Malaysia. To ensure the accuracy of the findings, the survey questionnaire was systematically developed by considering several aspects of reliability, content validity, and face validity. This procedure involves the participation of six experts in the field of languages, IS, E-Learning, and statistics. In addition, 16 and 150 respondents were involved in the pre-testing and pilot test of the instrument, respectively. As a result, four valid and reliable items were produced to examine teachers' intention to continue using

the VLE platform. The questionnaire also gathered information regarding respondents' gender in order to investigate the possibility of gender differences in the extent of intention to continue using the VLE platform. Later, 850 sets of questionnaires were randomly distributed. As a result (after four months), 643 were returned and usable, giving a valid response rate of approximately 75.6%.

Analysis and Findings

The analysis starts with the procedures of data cleaning and preparation, which freed the data from missing values and outliers. The normality test based on skewness and kurtosis values also indicated that the data were normally distributed [35], as shown in Table 1. This allows parametric analyses, such as an independent sample *t*-test, to be conducted on the usable cases (N = 643), comprising 380 female and 263 male teachers.

Table 1. Normality test based on skewness and kurtosis values.

Variable	Skewness	Kurtosis
Gender	0.37	−1.87
Intention to Use	−0.06	−0.01

Note. Cut-Off Value = ±2.

Next, the main analysis investigating the differences in the intention to continue using the VLE platform between male and female teachers was performed using an independent sample *t*-test. Based on the preceding discussion (in the previous section), the following null hypothesis was derived.

H₀. *There is no difference in teachers' intention to continue using the VLE platform between male and female teachers.*

There was homogeneity of variance as assessed by Levene's Test for Equality of Variances, and therefore, an independent sample *t*-test was run on the data with a 95% confidence interval (CI) for the mean difference. The analysis indicates that there was not a significant difference in the level of intention to use the VLE platform between female (M = 4.18, SD = 1.24) and male (M = 4.18, SD = 1.24) teachers, $t(641) = -0.70, p = 0.48$. Therefore, the null hypothesis is accepted. This result suggests that gender differences do not have any effect on teachers' attitudes towards VLE platform adoption. Specifically, it proves that teachers' perseverance in continuously using the VLE platform is not determined by their gender, either male or female.

3. Discussion and Conclusions

First, it is vital to be clear on the term 'intention to use' before the discussion on the study's findings can proceed. The controversy about the definition of 'intention to use' certain technology or IS has raged unabated for over a decade [28,36,37]. Since then, only a small number of studies have taken part in this debate [37–39], and still, the differences between the intention to use in pre-adoption (potential) and continuous users are still not clear. Moreover, an analysis of past literature demonstrated uncertainties and misuse of the term 'intention to use' in prior studies [40,41] that need to be clarified here. The 'intention to use' is usually related to the attitude of two types of IS users, namely, potential users (those who have never had an experience using the system but intend to use it in the future) and continuous users (those who already use the system and intend to reuse it the future). However, the term 'intention to use' is more appropriate for continuous users, while 'intention to adopt' is more appropriate for potential users [36]. Accordingly, this was made clear by the body of literature, which shows that the majority of researchers tend to measure the intention for continuous use, especially in investigating the relationship between attitude (intention to use) and behavior (actual usage) [42–44]. As in the context of VLE implementation in Malaysia, the 'intention to use' should be accredited to continuous users because the platform has been around since 2012, and the majority of teachers have

initial experience using it. Indeed, during the Frog VLE period, all teachers were required to create a VLE account, and they were provided with personal IDs by 1BestariNet through the VLE administrator in schools [45]. This evidenced that Malaysian teachers are continuous users of the VLE platform.

In this study, no difference in continuous intention to use the VLE platform was found between male and female teachers. VLE platforms, either Frog VLE or Google Classroom, are part of the technology bombardment that occurs in the education sector nowadays. Thus, it is almost certain that this unexpected result may be due to the current digital lifestyle of teachers. As ICT utilization has become routine in one's lifestyle, the same has occurred in the school education system. ICT gadgets such as phones and tablets have become a necessity for human beings, regardless of gender, and the Internet is widely used for various purposes. Therefore, it can be assumed that familiarity with ICT tools has eliminated the effects of teachers' gender in the context of continuous intention to use the VLE platform. The implication of this is that it has contradicted the opinions of prominent IS scholars [8,10] and several local E-Learning researchers [25,46] who advocated that personal attributes, including gender, have a meaningful influence on regulating teachers' extent of intention to continuously use the VLE platform. However, when investigating only the level of teachers' intention, caution must be applied, as the findings might not be accurate and/or incomplete. This is mainly because teachers' attitudes towards VLE, including the continuous intention to use it, are most likely attributed to certain antecedent factors such as information quality, system quality, and service quality offered by a particular VLE platform [28]. In light of this, it would be appealing if future research could elaborate more by examining the role of gender as a moderator in these relationships. By doing so, the relevancy of the gender effect in VLE adoption could be validated.

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