



Faculty of Education, Language and Communication Studies

Undergraduates' Behavioural Intention to use Learning Management System (LMS) to learn English: An Extended Technology Acceptance Model

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Undergraduates' Behavioural Intention to use Learning Management System
(LMS) to learn English: An Extended Technology Acceptance Model

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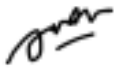
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DECLARATION

I declare that the work in this thesis was carried out in accordance with the regulations of Universiti Malaysia Sarawak. Except where due acknowledgements have been made, the work is that of the author alone. The thesis has not been accepted for any degree and is not concurrently submitted in candidature of any other degree.



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ABSTRACT

Using the Extended Technology Acceptance Model (ETAM), this research studies the Behavioural Intention (BI) among undergraduate students in acquiring the English language through the Learning Management System (LMS). ETAM is an extension of the original Technology Acceptance Model (TAM) to include the affective variables Perceived Enjoyment (PEN) and Satisfaction (SAT), recognising Self-Directed Learning (SDL) as an exogenous variable. An online survey was conducted at a Malaysian public university, and using the data collected from the 443 respondents, statistical analysis was performed with the Variance-based Partial Least Square Structural Equation Modelling (PLS-SEM) technique and modelled using Smart PLS 3. Based on the findings, all indicators of the measurement model were able to achieve convergent and discriminant validity. Three of the sixteen hypotheses were not supported. SDL was found to have a significant effect on cognitive variables Perceived Usefulness (PU) and Perceived Ease of Use (PEU), affective variables PEN and SAT and endogenous variables BI. PU and PEU had negative relationships with BI. PEN was shown to have an indirect effect between PU and BI while SAT did not mediate between PEU and BI. This study also looked into how higher education stakeholders could improve and sustain online learning systems in Malaysia. This research concludes with some recommendations and directions for future TAM-related research.

Keywords: Behavioural Intention (BI), Learning Management System (LMS), Technology Acceptance Model (TAM), Structural Equation Modelling (SEM).

Niat Tingkah Laku Prasiswazah untuk Menggunakan Sistem Pengurusan Pembelajaran (SPP) untuk Pembelajaran Bahasa Inggeris: Satul Model Lanjutan Penerimaan Teknologi

ABSTRAK

Menggunakan Model Penerimaan Teknologi Lanjutan (ETAM), penyelidikan ini mengkaji Niat Tingkah Laku (BI) dalam kalangan pelajar prasiswazah dalam memperoleh Bahasa Inggeris melalui Sistem Pengurusan Pembelajaran (LMS). ETAM ialah lanjutan daripada Model Penerimaan Teknologi (TAM) asal untuk melingkupi pembolehubah afektif *Kenikmatan* (PEN) dan *Kepuasan* (SAT), mengiktiraf Pembelajaran Arah Kendiri (SDL) sebagai pembolehubah eksogen. Satu tinjauan dalam talian telah dijalankan di universiti awam Malaysia dan menggunakan data yang dikumpul daripada 443 responden, analisis statistik telah dilakukan dengan teknik Pemodelan Persamaan Struktur Separa Terkecil Kuasa Dua (PLS-SEM) berasaskan Varians dan dimodelkan menggunakan Smart PLS 3. Berdasarkan dapatan, semua penunjuk model pengukuran dapat mencapai kesahan konvergen dan diskriminasi. Tiga daripada enam belas hipotesis tidak disokong. SDL didapati mempunyai kesan yang signifikan terhadap pembolehubah kognitif Persepsi Kebergunaan (PU) dan Persepsi Mudah Guna (PEU), pembolehubah afektif PEN dan SAT dan pembolehubah endogen BI. PU dan PEU mempunyai hubungan negatif dengan BI. PEN ditunjukkan mempunyai kesan tidak langsung di antara PU dan BI manakala SAT tidak menjadi pengantara PEU dan BI. Kajian ini juga melihat bagaimana pihak berkuasa pendidikan tinggi boleh menambah baik dan mengekalkan sistem pembelajaran dalam talian di Malaysia. Penyelidikan ini diakhiri dengan beberapa cadangan dan hala tuju masa depan untuk penyelidikan berkaitan TAM.

Kata kunci: *Niat Tingkah Laku (BI), Sistem Pengurusan Pembelajaran (LMS), Model Penerimaan Teknologi (TAM); Pemodelan Persamaan Struktur (SEM).*

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LIST OF ABBREVIATIONS

BI	Behavioural Intention
BL	Blended Learning
ESL	English as a Second Language
CGS	Centre for Graduate Studies
HEI	Higher Education Institution
ICT	Information Communication Technology
LMS	Learning Management System
L2	Second Language Learning
PEN	Perceived Enjoyment
PEU	Perceived Ease of Use
PLS	Partial Least Square
PU	Perceived Usefulness
SAT	Satisfaction
SCT	Socio-Cognitive Theory
SEM	Structural Equation Modelling
SDL	Self-Directed Learning
SLT	Socio Learning Theory
SLM	Self-Learning Management
TAM	Technology Acceptance Model
TPB	Theory of Planned Behaviour
TRA	Theory of Reasoned Action
x^2	Squared root
UNIMAS	Universiti Malaysia Sarawak
VLE	Virtual Learning Environment

CHAPTER 1

INTRODUCTION

1.1 Overview

This chapter starts with the background of the study. Following that, a problem statement is established in the next section. This chapter also covers this study's overarching aim, research objectives, research questions, and the research's sixteen hypotheses. A list of operational definitions for this study is also highlighted in this chapter. The subsequent section covers the literature overview, followed by the significance of this research. A brief outline of the organisation of the chapters is also found. A summary of the chapter is presented in the final section.

1.2 Study Background

The lives of consumers have been changed by information and communication technology (ICT) throughout the past few decades. Individuals now have better access to virtual worlds owing to the dynamism of technology, allowing them to stay connected. The World Wide Web (WWW) is a practical platform that enables the transfer of information across the Internet. According to the ICT Use and Access by Individuals and Households Survey Report Malaysia, the number of households with internet access is predicted to increase from 91.7 percent in 2020 to 95.5 percent in 2021 (Department of Statistics, 2020). In the same survey findings, individuals who attended a formal online course increased to 29.9 percent in 2021 from 18 percent in 2020. The findings showcased that online learning trends have grown exponentially due to their demand. As a result, technology use has been strongly encouraged at higher education institutions. One of the primary objectives of this transition is to provide a mechanism for diversifying the learning community based on 21st-

century learning requirements (Bervell & Arkoful, 2020). Taking into account the needs of the learners, technology guarantees both autonomy and independence in learning (Alamri et al., 2021). Barrett and Liu (2016) stressed that there is a need for teachers in Malaysia to incorporate technology into teaching the English language. It is achievable through the inclusion of e-learning in developing mastery of the language.

E-learning has played a prominent role in today's rapidly changing world. E-learning is an instructional approach conducted using electronic means via the Internet. Clark and Mayer (2016) labelled e-learning as information transmission using gadgets like computers and smartphones that allow learning. It is critical to understand that e-learning differs from online learning. Online learning is a general term that refers to the bulk of the coursework being taught on the internet, including discussion boards, shared documents, email, chat, and other online tools. Online instruction does not preclude face-to-face interaction between students and instructors. Exams and assignments can be completed remotely, and communication is done online. The term "e-learning" is usually referred to as "virtual learning," described as professional credential programs delivered online. Email, forums, chat, and video conferencing are used for communication. This kind of course is referred to as a totally online course by several institutions and organisations (Tsai & Machado, 2002).

Micro-learning (ML) is another sub-method of e-learning. Together with conventional e-learning, micro-learning entails learning through short-term lessons, projects, or courses intended to teach the student "bits" of information that are frequently included in micro-learning-based activities. Micro-learning is a technology-mediated learning strategy in which students are immediately exposed to brief formal or casual learning activities. The 3Ms (microcontent, micro media, and micro knowledge) encapsulate the distinctiveness of micro-learning (ML) and are used in these activities to build micro-

knowledge based on carefully prepared microcontent in real-time micro-media contexts (Salleh et al., 2022). A study conducted by Khong and Kabilan (2020) outlined through their findings that to create any future MLs with the predicted efficacy, second language (L2) instructors and researchers need to take into account both the cognitive and motivational domains of ML, which may be further divided into technical, instructional design, and learner motivational components. While it is clear that theories can be applied to support ML in L2 instruction, it is important to keep in mind that the proposed model does not cover the full spectrum of L2 learning phenomena and that the interaction of the ML variables has not yet been confirmed empirically, leaving it open to validation.

E-learning initiatives have vastly focused on relieving conventional classroom practices conducted via the internet and delivered through online learning platforms such as Blackboard, Moodle, and WebCT. This does not mean traditional face-to-face sessions are completely irrelevant; they will be based on hybrid modes. This teaching approach is recognised as Blended Learning (BL) (Rasmitadila et al., 2020). BL is a 21st-century teaching and learning approach that has become widespread in higher learning institutions globally. It incorporates all available technologies that blend with traditional classroom teaching, which is why higher education institutions have broadly applied BL through e-learning platforms (Singh, 2021). Undoubtedly, many future classes will be in blended form.

Malaysia's tertiary education environment has adopted BL (Anthony et al., 2021). The use of blended learning (BL) as a vehicle for changing current pedagogy is one of the primary efforts of the Malaysian Ministry of Education under the Malaysian Education Blueprint (MEB) (2015–2025). MEB suggested that “blended learning models will become a staple pedagogical approach in all higher learning institutions. "The initiatives include making online learning an integral component of higher education and lifelong learning and

including 70% of programs in blended learning mode” (Adams et al., 2018). The incorporation of blended learning in Malaysia also aims to provide opportunities for lifelong learning, as highlighted in the 4th Sustainable Goal Development (SDG) in gearing toward the year 2030 (Boeren, 2019). The SDG highlights various goals in different industries; education is equally important as other industries highlighted. Thus, the adoption of Blended Learning (BL) in the education sector is seen as essential due to its effectiveness.

The effectiveness of the BL approach is that it can increase students’ learning outcomes Bokolo Jr. et al. (2020) and improve quality education (Apandi & Rahman, 2020). This hybrid approach also supports the teaching and learning of the English language. Some advantages of BL application in English classes include developing practical language skills, enriching the language course compared to the traditional approach, and promoting students’ motivation and autonomy (Anthony et al., 2021; Asaad, 2020). In educational learning contexts, instructors can introduce blended learning via the Learning Management System (LMS) to take advantage of the best of both worlds.

The usage of a Learning Management System (LMS) by instructors and students is becoming more common. The rationale for its widespread usage can be outlined due to its reasonable price, simple utilisation, capability in delivering course content, and ability to manage the extensive amount of online information. Instructors use LMS for teaching and learning purposes, including assessment and communication with students (Hussein & Hilmi, 2021). In order to combine teaching and learning technologies, Learning Management Systems (LMS) like BlackBoard, Moodle, and WebCT are common virtual learning environments in higher education (Annamalai et al., 2021).

Higher education institutions are adapting to the needs of the Net-Generation by offering courses that meet their diverse learning needs in line with current education trends.

The Net-Generation relies heavily on technology and is encouraged to use online technologies. This can motivate Malaysian Net-Generations since this generation is very proficient in technology due to their regular use for communication purposes.

Educators, too, have adopted LMS usage to a significant degree. This can be seen when LMS was adopted in both public and private universities in Malaysia (Hwa et al., 2016). This widespread adoption has reached its highest percentage (Wahab & Azzman, 2019). The LMS usage began with a focus on distant learning (Cigdem & Ozturk, 2016). Its capabilities have expanded to include online hybrid learning methods such as flipped and blended learning (Tan et al., 2022). Not only have the methods been changed, but the type of LMS also saw a change. Since older LMS versions were primarily designed for desktop interaction and did not offer mobile access (Viberg & Grönlund, 2017), the evolution of smartphones has provided a more convenient way for students and teachers to access LMS via mobile devices.

1.3 Problem Statement

Globalisation effect on Malaysia's education system has resulted in a rapid transformation of the higher education industry. The higher education sector is rapidly enhancing teaching and learning delivery in order to achieve and preserve institutional sustainability and to generate quality graduates who are ready for the workforce. The curriculum and teaching techniques are being updated as a result of the development of information and communication technologies (ICT) in the education sector (Kamogawa, 2003).

Within the context of English Language Teaching (ELT), computer-assisted language learning tools, online courses, and mobile applications are used in the teaching and learning processes. This includes the use of multimodal approaches, multimedia resources,

and interactive elements to enhance learning experiences (Yang, 2022). These transformations reflect the dynamic nature of language education and its continuous adaptation to educational theories, technologies, and the changing needs of learners.

Although many developments have been made to ensure language learners are competent in the English language, many language English and a Second Language (ESL) learners find language learning challenging (Buragohain et al., 2023; Ramalingam et al., 2022). As evidenced in previous studies, ESL learners see reading, writing, speaking, and listening skills as challenging (Bangkom & Sukavatee, 2021; Rafiq et al., 2020). One example highlighted by Majid and Stapa (2017) was writing skills. According to them, language learners displayed poor writing skills among second-language learners, especially those who are low-proficiency. Another skill that was highlighted by Kaur (2022) was speaking. According to the author, ESL learners are generally afraid of making mistakes, lack confidence, shy, introverted, and anxious. As for reading skills, Muhamad et al. (2020) pointed out that many Malaysian English learners struggle to love reading, while findings in Affendi and Noah (2022) stated that low-level English learners did not always use reading strategies as they preferred not to use them. According to Kiew and Shah (2020), the reading texts' language also contributes to students' difficulties with text comprehension.

These aspects show that students are facing challenges in learning the various skills in the English language, indicating the need to incorporate technology in ESL classrooms, and one effective approach is the integration of Learning Management Systems (LMS).

LMS is widely accepted as a facilitator of learning, providing students with access to various online learning platforms and content to enhance their learning experience. Many ESL courses now supplement face-to-face classes with LMS, offering a platform for students to extend their learning beyond the classroom (Baitaneh et al., 2019; Perez & Triastuti,

2022). The use of LMS has been shown to increase students' motivation, improve their English language skills in listening, writing, reading, speaking, and vocabulary, and predict their self-directed learning (Lai, 2015).

However, despite the benefits, several challenges hinder the effective utilisation of LMS in ESL contexts. These challenges include poor internet connection, system instability, lack of support from educators and peers, an overwhelming workload, and inadequate materials (Jalleh et al., 2021). These drawbacks limit the potential benefits that students and educators can derive from the LMS. Moreover, educators face challenges transitioning from traditional face-to-face to online instruction (Hasnan & Mohin, 2021; Kite et al., 2019).

It is unknown if integrating English instruction through the LMS may pique Malaysian undergraduates' interest in the language. Despite the LMS's capability for video conferencing and interactive features like chat rooms, there may not be much contact between students and their instructors. The preference for face-to-face instruction has also been seen in literary works (Gill, 2022; Truong, 2021). According to Adams et al. (2018), more students need to be prepared for self-directed learning. Osman (2015) reiterated this and said that while first-year students are not yet capable of being self-directed, they do need direction.

Experts have recently focused on user behaviour and variables that favour and limit technology adoption. Pan (2020) discovered that students' technology acceptance and technological self-efficacy were linked to their attitude toward technology-based self-directed learning. Rafiee and Abbasian-Naghneh (2019) found Perceived Usefulness (PU), Perceived Ease of Use (PEU), e-learning motivation and online communication self-efficacy to be important variables for language learners' readiness to accept a particular technology. The majority of Self-Directed Learning (SDL) research has focused on conventional face-

to-face learning environments. With technological breakthroughs and the greater availability of technology, it is essential to comprehend SDL from a different perspective, specifically the rising context of online platforms.

Despite the growth of literature on technology adoption, acceptance, and intention (Taherdoost, 2018), there are gaps within these studies that must be addressed in the teaching and learning of English Language in Malaysia. Although studies have utilised the Technology Acceptance Model (TAM) for explaining the critical role of different factors that affect the adoption of students and teachers concerning the Learning Management System (LMS), there is limited evidence available on how the TAM model can be used to predict the factors affecting LMS adoption for learning in English as a second language. The literature suggests that the TAM can be effectively applied to investigate technology acceptance in ESL contexts. Studies have examined the relationships between Perceived Usefulness (PU), Perceived Ease of Use (PEU), attitudes towards technology, and actual technology usage among ESL learners. The findings indicate that when ESL learners perceive technology as useful and easy to use, they are more likely to have positive attitudes towards technology and engage in its use for language learning purposes (Pan, 2020).

Furthermore, the TAM can be extended to explore additional factors that may influence technology acceptance in ESL. For example, studies have proposed the inclusion of variables such as self-efficacy (Li et al., 2021) and learner characteristics (self-regulated learning) (Chen et al., 2022) to enhance the explanatory power of the model in the ESL context. These extensions acknowledge that technology acceptance is a complex process influenced by multiple factors beyond PU and PEOU.

Moreover, the TAM can guide the design and implementation of technology-enhanced English as a Second Language (ESL) interventions. Educators can select and

implement technologies that align with learners' needs and preferences by understanding learners' perceptions of usefulness and ease of use. Additionally, the TAM highlights the importance of providing adequate training and support to enhance learners' confidence and skills in using technology effectively for language learning.

Lastly, the literature emphasises the need for ongoing research and evaluation of technology acceptance in ESL to keep pace with the rapid advancements in educational technology. As new technologies emerge and existing ones evolve, it is crucial to investigate how these changes impact learners' attitudes, intentions, and actual usage.

In summary, the synthesis of the literature on the Technology Acceptance Model and ESL highlights its relevance and applicability in understanding technology acceptance in language learning contexts. The model offers a valuable framework for investigating learners' perceptions of usefulness and ease of use and their attitudes and intentions towards technology adoption. By considering the TAM and its extensions, educators and researchers can gain valuable insights to inform the design, implementation, and evaluation of technology-enhanced ESL interventions. However, ongoing research is needed to explore the complexities of technology acceptance in ESL and keep pace with the ever-evolving landscape of educational technology.

According to Lai (2015), the Technology Acceptance Model (TAM) was minimally found in ESL contexts. Gamble (2018) suggested more research to validate and predict behavioural intention and validate TAM in Asian regions.

Since 2016, there has been an increasing adoption of the Technology Acceptance Model (TAM) in English as a Second Language (ESL) studies due to several reasons. In recent years, there has been a significant emphasis on integrating technology into language learning environments. With the proliferation of digital tools, online platforms, and mobile

applications, educators and researchers are interested in understanding the factors influencing the acceptance and usage of technology in ESL contexts.

The shift towards user-centred approaches in education has led to a greater emphasis on understanding learners' perceptions, attitudes, and experiences with technology. TAM provides a framework to examine users' acceptance and usage behaviour, allowing researchers to investigate how learners perceive the usefulness and ease of use of technology in language learning.

By adopting TAM in ESL studies, researchers have gained insights into learners' acceptance and usage behaviour, identified barriers and facilitators in technology integration, and informed the design and implementation of technology-enhanced language learning environments. This helps educators and practitioners make informed decisions about technology integration and enhance the overall learning experience for ESL learners.

Studies also discovered that the original TAM by Davis et al. (1989) showed a limitation in the lack of explaining why a user perceives a system as useful or not, which led Ventakesh and Davis (2000) to extend the model. Turner et al. (2010) highlighted that “studies have now used modified versions of TAM rather than the original” (p. 468). Sanchez and Hueros' (2010) study proved that the TAM of their study had variables that could motivate learners to adopt e-learning platforms. Songca et al. (2021) concluded that TAM is modified by several researchers with a view to evaluating the different factors affecting the adoption of technology in different contexts. Tate et al. (2015) emphasised that the constructs available in present theories are inadequate to adequately describe students' behavioural intentions toward technology from students' viewpoints.

Studies on the acceptability and ongoing usage of e-learning systems by students have commonly used the utilitarian idea in TAM (Scherer & Teo, 2019). According to Lee

et al. (2017), studies on TAM placed a greater emphasis on cognitive aspects than affective influences when attempting to forecast technology acceptance. These authors mentioned that recent research also shown that the inclusion of affective constructs can amplify attitude and behaviour more extensively in their models. Many TAM-based studies in the learning context complemented the utilitarian aspects with hedonic or experiential constructs, as they are significant in explaining the acceptance of learning technologies (Dimitrijević & Devedžić, 2021). However, these authors also argued that these factors have not all been similarly examined or shown to have equal influence in different study circumstances; thus, TAM research should be considered.

The contribution of the attitudes and beliefs of users is regarded as considerable in determining instrumental effectiveness in the education domain. The dimension of belief is associated with analysing learners' characteristics, such as their self-directed learning, a variable that is useful to measure students' learning strategy and self-regulation in e-learning contexts. Bhattacharjee (2001) pointed out that Perceived Enjoyment (PEN) would also increase the satisfaction of using the e-learning system. This author also contends that satisfaction can be a significant determinant of intention. Research has found that PEN can explain technology acceptance and its correlation to Perceived Usefulness (PU) and Perceived Ease of Use (PEU) (Findik-Coşkunçay et al., 2018). Using the extended Unified Theory of Acceptance and Use of Technology (UTAUT) model, Chao (2019) discovered that Perceived Enjoyment (PEN), performance expectancy, and effort expectancy were positively related to behavioural intention. Based on the findings, it could be seen that cognitive variables such as PU and PEU can impact user's behavioural intentions, at the same time, affective variables can also have a significant contribution in influencing behavioural intention. In an English as a Second Language (ESL) environment like

Malaysia, students may not accept the e-learning approach or even participate in e-learning platforms (Zalat et al., 2021), and physical classes are more preferred than engaging in e-learning platforms for teaching and learning purposes (Abbasi et al., 2020). Thus, it is important to investigate how they perceive that emotive elements like enjoyment and satisfaction can contribute to students' behavioural intentions.

Some studies failed to examine the underlying mechanism by which a given variable influences one's behavioural intention. Nevertheless, prior studies provide empirical support for the direct positive relationship between Perceived Usefulness (PU) and Behavioural Intention (BI) and Continuance Intention (CI) (Al-Adwan, 2020; Alraimi et al., 2015; Balog & Pribeanu, 2010; Chidambaram et al., 2023; Mouakket & Bettayeb, 2015; Teo et al., 2019) and intention to use (Falah et al., 2020) in technology adoption contexts. However, past literature has also revealed an insignificant relationship between PU and BI (Al-Bashayreh et al. 2022; Lew et al., 2019; Mailizar et al., 2021).

The direct relationship of Perceived Ease of Use (PEU) and intention to use mobile learning (m-learning) was also confirmed in past literature (Falah et al., 2020), but an insignificant relationship between PEU and BI was also found (Alassafi, 2022; Al-Bashayreh et al., 2022; Findik-Coşkunçay et al., 2018; Han & Sa, 2021;).

There was also confirmation of a direct relationship between Perceived Enjoyment (PEN) and Behavioural Intention (BI) (Alraimi et al., 2015; Chao, 2019; El Shamy & Hassanein, 2017; Findik-Coşkunçay et al., 2018). Despite the positive relationship found, there was also an insignificant relationship between Perceived Enjoyment (PEN) and Behavioural Intention (BI), as discovered by Iqbal & Qureshi (2012) and Al-Bashayreh et al. (2022). Satisfaction (SAT) was also shown to have a direct positive relationship with Behavioural Intention (Alraimi et al., 2015; Chao, 2019; Kim & Lee, 2020).

Findings from the past literature highlighted in the previous paragraphs showed that there are still inconsistent findings in terms of direct relationships. To address this, researchers have turned their attention to exploring the role of mediating factors. Disentangling the different pathways could clarify a research model, particularly the effect of a variable on the endogenous variable via a mediator (Leong et al., 2020).

Based on prior research findings, Perceived Enjoyment (PEN) (Hung, 2022; Maheswari, 2020) and Satisfaction (SAT) (Dash, 2023) (have emerged as a vital mediator between Perceived Usefulness (PU) and Behavioural Intention (BI), as users' perception of a technology's enjoyable and entertaining nature influences their intentions to adopt it, even when the perceived usefulness and perceived ease of use alone might not strongly impact Behavioural Intention (BI). Analysing the relationships between PU-BI and PEU-BI through these mediators provides a comprehensive understanding of the factors influencing users' adoption decisions and informs technology designers and marketers to devise effective strategies for enhancing technology adoption rates and user satisfaction.

Joo et al. (2018) used external variables (self-determination, perceived ease of use, and perceived usefulness) and satisfaction as a mediator to look at why students kept using Korean Massive Open Online Courses (KMOOCs). It was found that Perceived Ease of Use (PEU) and Perceived Usefulness (PU) were mediated by satisfaction, thus affecting students' K-MOOC usage intentions. In line with Joo et al. (2018), Peña-Ayala et al. (2014) and Udo et al. (2010) also discovered satisfaction as a mediator between perceived e-learning quality and behavioural intention, while Ngah et al. (2022) study saw that SAT mediates online system quality and willingness to continue online learning system. Nugroho et al. (2019) found that SAT mediates PEU and e-learning continuance intention.

Looking at how these mediators improve the connections between the independent variables and BI can teach us a lot about the mental processes that users go through when they start using an LMS (Abu-Bader & Jones, 2021). This knowledge can then inform interventions and improvements in the design and implementation of LMS platforms, enhancing user experience, enjoyment, and satisfaction, thereby increasing users' intentions to use the system and improving their overall learning outcomes. By studying the functions of Perceived Enjoyment (PEN) and Satisfaction (SAT) as mediators, valuable insights can be gained into the underlying mechanisms that influence users' attitudes and intentions towards using a Learning Management System (LMS) for learning English. The inclusion of PEN and SAT as mediators can help explain how they influence users' attitudes and intentions, ultimately impacting their behavioural intention to use the LMS and improving their learning outcomes.

The impacts of the Technology Acceptance Model (TAM) variables can significantly measure students' learning behaviour in the Learning Management System (LMS). This will generate new types of interaction and usage dynamics that need to be understood but have currently received limited attention in research (Granić & Marangunić, 2019). With such rapid growth and advancement of technology use in education, it is necessary to uncover new factors to explain better students' behavioural intentions, particularly in learning English as a Second Language (ESL). As highlighted by Thah and Latif (2020), understanding the elements that drive students' Learning Management System (LMS) usage is crucial since such insights into their behaviour could be used to enhance the online learning experience for students and facilitate future LMS growth.

The research from earlier studies was primarily found in western contexts and developed nations; therefore, it cannot be applied to all situations. Additionally, little

research has been done on several variables related to learner traits and affective domains. TAM can be further expanded to increase its practicality in non-western contexts, namely in English as a second language context like Malaysia.

The English language is recognised as the second language of Malaysia. Students are exposed to the language from the primary level; it is used to empower them to communicate in everyday situations and assist them during their tertiary level. With the rapid growth of information and computer technology (ICT), students must be exposed to the English used in the ICT realm to allow effective communication in the language both locally and internationally.

Numerous studies have supported the advantages of using an LMS to supplement conventional courses. Malaysian educators must understand how to deal with the challenges of learning behaviour and self-direction readiness in an online setting. These obstacles might be considered obstacles to the success and use of technology used primarily in developing nations like Malaysia. It is crucial to understand how the socio-cognitivist theory is implemented in this study's setting, where LMS is fully utilised. Additionally, analysing earlier research from learners' viewpoints enables improved comprehension and addresses problems that could impair English language teaching (ELT) methodology.

1.4 Overarching Aim

This study intends to explore undergraduates' behavioural intention to use LMS in learning English through an enhanced technology acceptance model (TAM).

1.5 Research Objectives

The aim of this research can be achieved through the following set of objectives:

- i. To investigate the impact of the external variable (SDL) on cognitive variables Perceived Usefulness and Perceived Ease of Use (PU and PEU) and Behavioural Intention (BI) to use LMS in learning English.
- ii. To investigate the impact of the external variable Self-Directed Learning (SDL) on the affective variables Perceived Enjoyment and Satisfaction (PEN and SAT) to use LMS in learning English.
- iii. To investigate the impact of cognitive variables Perceived Usefulness and Perceived Ease of Use (PU and PEU) on affective variables Perceived Enjoyment and Satisfaction (PEN and SAT) and Behavioural Intention (BI).
- iv. To examine the mediation effect of Perceived Enjoyment (PEN) in between Perceived Usefulness (PU) and Behavioural Intention (BI) to use LMS in learning English.
- v. To examine the mediation effect of Satisfaction (SAT) in between Perceived Ease of Use (PEU) and Behavioural Intention (BI) to use LMS in learning English.

1.6 Research Questions

Research questions were centred on the TAM model to examine students' behavioural intention to use LMS to learn English. They are as follows:

- i. What is the impact of external variables (Self-Directed Learning) on cognitive variables (Perceived Usefulness and Perceived Ease of Use) on Behavioural Intention (BI) to use LMS in learning English?

- ii. What is the impact of external variable (Self-Directed Learning) on affective variables (Perceived Enjoyment and Satisfaction) when using LMS in learning English?
- iii. What is the impact of external variables (Self-Directed Learning) on affective variables (Perceived Enjoyment and Satisfaction) when using LMS in learning English?
- iv. What is the impact of cognitive variables (Perceived Usefulness and Perceived Ease of Use) on affective variables (Perceived Enjoyment and Satisfaction) to use LMS in learning English?
- v. Does Perceived Enjoyment (PEN) mediate the association in between Perceived Usefulness (PU) and Behavioural Intention (BI) to use LMS in learning English?
- vi. Does Satisfaction (SAT) mediate the association in between Perceived Ease of Use (PEU) and Behavioural Intention (BI) to use LMS in learning English?

1.6.1 Research Hypotheses

- H1 Self-Directed Learning (SDL) has a significant impact on Perceived Usefulness (PU).
- H2 Self-Directed Learning (SDL) has a significant impact on Perceived Ease of Use (PEU).
- H3 Self-Directed Learning (SDL) has a significant impact on Behavioural Intention (BI).
- H4 Self-Directed Learning (SDL) has a significant impact on Perceived Enjoyment (PEN).
- H5 Self-Directed Learning (SDL) has a significant impact on Satisfaction (SAT).

- H6 Perceived Usefulness (PU) has a significant impact on Perceived Enjoyment (PEN).
- H7 Perceived Usefulness (PU) has a significant impact on Satisfaction (SAT).
- H8 Perceived Usefulness (PU) has a significant impact on Behavioural Intention (BI).
- H9 Perceived Ease of Use (PU) has a significant impact on Perceived Usefulness (PU).
- H10 Perceived Ease of Use (PEU) on has a significant impact on Perceived Enjoyment (PEN).
- H11 Perceived Ease of Use (PEU) has a significant impact on Satisfaction (SAT).
- H12 Perceived Ease of Use (PEU) has a significant impact on Behavioural Intention (BI).
- H13 Perceived Enjoyment (PEN) has a significant impact on Behavioural Intention (BI).
- H14 Satisfaction has a significant impact on Behavioural Intention (BI).
- H15 Perceived Enjoyment (PEN) will mediate the impact of Perceived Usefulness (PU) on Behavioural Intention (BI).
- H16 Satisfaction (SAT) will mediate the impact of Perceived Ease of Use (PEU) on Behavioural Intention (BI).

1.7 Operational Definition

This section provides terms used in this study. It covers the operational definitions of the terms used.

1.7.1 Behavioural Intention (BI)

In the current study, BI is students' determination and strengths to be engaged in the language learning processes, and their experiences of using an online learning platform such as the Learning Management System (LMS) will enable them to form decisions to exert their intention to use it. BI is measured using questionnaires adapted by Davis et al. (1989).

1.7.2 Perceived Ease of Use (PEU)

In the context of this study, PEU makes it possible for language students to use the LMS without encountering any difficulties. With just the click of a mouse, navigating the system, doing online exercises, participating in class discussions, and reading online articles can all be effortless. Learners can improve their productivity by expanding their language abilities and developing the confidence to participate in discussions and communicate with others while expending less mental effort. Their ability to select learning activities at their own pace can also influence how easily they perceive the system to be used. PEU is measured using the questionnaire adapted by Davis (1989).

1.7.3 Perceived Enjoyment (PEN)

Language proficiency can be improved through interactive elements, quizzes, and other e-learning exercises. Students who are skilled at using the Learning Management System (LMS) for language learning will have a greater sense of enjoyment from the experience. Besides acquiring the English language, interactive elements and language-enhancing tasks allow them to collaborate with their friends, making language learning more fun and engaging. Students can develop positive views about the LMS environment if they share their thoughts, exchange information, and participate in conversations. Perceived Enjoyment (PEN) is measured using a questionnaire adapted by Mun and Hwang (2003), Teo and Noyes (2011), and Kam (2011).

1.7.4 Perceived Usefulness (PU)

Language learners in this study will consider the LMS to be beneficial if it provides a variety of opportunities for enhancing language skills such as reading, writing, speaking, and listening. The timely feedback from the lecturers and their transparency to students in meeting their learning objectives has the potential to change the students' perception of the usefulness of the online learning system. More possibilities for language practice, such as student-to-student interaction and students and lecturers' communication, create opportunities for students to engage in dialogue and help develop an online discourse community.

The materials that supplement face-to-face learning are provided in a way that is clear and easy to understand. An impression of the LMS that is helpful to students can be gained if there are choices of materials available for them to self-access. These materials can also be regularly updated and relevant to the students' level of proficiency. When language learners find the LMS useful, they recognise and improve their learning persistence and translate more time using the LMS. PU is assessed using the Davis et al. (1989) questionnaire.

1.7.5 Satisfaction (SAT)

Language learners in this study will be satisfied with the LMS when the teaching and learning resources cater to their needs and align with their learning objectives and outcomes. Their level of satisfaction makes the learners more motivated to take charge of their language learning at a higher level to acquire knowledge and brush up their English skills. Students will be satisfied with using the Learning Management System (LMS) when they obtain something from it, such as better grades. SAT is assessed using Bhattachajee's (2001) questionnaire.

1.7.6 Self-Directed Learning (SDL)

This study claims that self-disciplined, motivated learners can self-direct their English learning. Self-directed learners can use technology for language learning outside the classroom, thus helping them comprehend the relevance of technological resources and how to access and use them effectively. The Learning Management System (LMS) may also encourage students' agency by increasing their responsibilities for language acquisition. SDL is tested using an adapted Kam (2011) questionnaire.

1.8 Overview of Literature

The current study aims at analysing the extended TAM model to predict the factors affecting the adoption of LMS for ESL language. For this purpose, the study has been divided into two chapters: Chapter 2: Literature Review and Chapter 3: Theoretical Framework. Chapter Two will help understand existing literature on e-learning concepts and trends in Malaysian universities, the Blended Learning approach, Learning Management System (LMS), using technology in teaching to teach English, the learning theories and gaps in the literature. Chapter Three of this study will be directed toward unveiling the TAM developments, model extensions, and the extended technology acceptance model. This will allow the current study to develop its conceptual framework.

1.9 Significance of the Study

The field of education has contributed to the understanding of behavioural intention. Studies of technology acceptance and adoption also look at how users' perceptions and experiences shape their intention to use technology. Although prior studies provide valuable insights into the area, many questions remain unanswered. Some of the findings can also be inconsistent, while other constructs were also under-researched or missing (Scherer et al., 2019). Future studies should aim for a holistic perspective, even if it is impossible to

integrate all significant constructs in one research model due to the multidisciplinary character of technology acceptance and behavioural intention. A more inclusive, adaptable theoretical framework is developed for this study's objectives. Such a framework must be flexible to incorporate new variables without jeopardising its reliability and validity. The conceptual model used in this study is one example of how researchers tried to achieve this goal.

This study provides two major contributions. In terms of empirical contribution, this study applied the Technology Acceptance Model (TAM) to understand undergraduates' behavioural intention to use LMS to learn English. In this regard, the study is highly contributing on several fronts. Primarily, it can be highlighted that the findings of the current study will help in providing valuable insights into the empirical evidence gathered mainly in a non-western setting in Malaysia. This study conceptualised the teaching and learning of English through blended learning (BL) mode using the Learning Management System (LMS) within higher education institutions (HEIs). The findings from this study can also provide insights and directions to intensify language learning through the BL approach using LMS, which is recognised as a robust learning platform. Prior studies also revealed better student achievement when LMS tools were used in their learning. Examining the relationships between variables will enhance LMS utilisation and increase students' intentions.

Theoretically, the enhanced TAM model recognised by the author as the Extended Technology Acceptance Model (ETAM) was proposed to predict language learners' behavioural intention. Although many universities adopt BL through the LMS, little research has been done to apply TAM in the ESL context (Gamble 2018; Lai, 2016). Employing an extension of TAM, the researcher has postulated a structural model to research

the relationship among six variables of the newly extended TAM and reaffirm what was found in the past literature. Looking at the interaction of the patterns using the instruments used in prior studies allows the researcher to check the adapted instruments tested in Malaysia's educational context. The adapted items (Table 4.1) had been tested in other organisational settings (except Kam, 2011) and using other technologies.

According to Pedrotti and Nisto (2016), these authors suggested that future researchers further investigate the connections between users' motivation and acceptance of technology and their influence on use intentions and behaviour. Users' intentions may change over time as they gather new information about system use (Szajna, 1996). Ajzen and Fishbein (1975) stated that 'to predict the intention from the initial measure of intention, it may be necessary to consider other variables in addition to intention' (p. 370).

TAM has been used in many empirical studies as a theoretical base for users' technology acceptance and its predictive powers on users' behavioural intentions (Findik-Coşkunçay & Ozkan, 2013; Hwang et al., 2016). For example, in educational contexts, Tselios et al. (2011) pointed out that TAM failed to reach 40% of students' BI variance.

The researcher for the current study has also expanded the TAM model by adding Self-Directed Learning (SDL) as an exogenous variable. SDL can improve other classroom practises by filling theoretical gaps in second language theories, particularly in students' language learning in LMS contexts. The studies of Ya-Chu and Kuo-Hung (2011) and Lai (2015) discovered the significant direct effect of SDL and the variables Perceived Ease of Use (PEU) and Perceived Usefulness (PU). The findings call for more research to extend SDL as an essential variable in the technology acceptance model.

As mentioned in Section 1.2, prior research, such as Lee et al. (2017), has highlighted the limited focus on affective factors in the current technology acceptance model but more

on cognitive factors. Thus, this research has extended Perceived Enjoyment (PEN) and Satisfaction (SAT). The influence of these affective factors can affirm both hedonic and utilitarian aspects of the Learning Management System (LMS). Combining cognitive and affective variables with Self-Directed Learning (SDL) and empirically testing their causal relationships as proposed in the research model can provide valuable insights into what variables drive students' intentions, how they function, and the implications for language learners in Malaysia.

Findings from previous studies also discovered direct effects of cognitive variables on Perceived Usefulness (PU) and Perceived Ease of use (PEU) on Behavioural Intention (BI). As highlighted in Section 1.3, the literature also found insignificance between cognitive variables and BI. There could be other intervening variables that may better explain the relationships between both cognitive and affective variables.

Studies also used affective variables such as Perceived Enjoyment (PEN) as a predictor and mediator (El Shamy & Hassanein, 2017; Humida et al., 2021). Satisfaction is also seen as an affective variable in some studies. It was also shown to be used as a mediator (Joo et al., 2018; Ngah et al., 2022; Nugroho et al., 2019). The findings of the indirect effect of the affective variables (PEN and SAT) on behavioural intention can provide new findings from the TAM literature, which was empirically tested in Malaysia, and contribute to the literature on Malaysia's English language teaching.

The findings from this study can clarify the inconsistent conclusions from prior studies in the field of technology acceptance and further confirm some earlier research findings. This research broadens the understanding of language learners' LMS usage from a behavioral perspective.

Practically, the results from this study can significantly provide insights to intensify the blended learning approach and use the Learning Management System (LMS) to supplement face-to-face teaching. The findings can help English language educators gain more knowledge of students' online learning behaviour. The findings allow educators to be steadfast in being creative and innovative in developing diversified pedagogy that caters to 21st century learners.

Educators who have such competency will reciprocate what is useful in learning English (reading, writing, speaking, listening, grammar, and vocabulary), but at the same time shape students' character, making them more self-directed and autonomous. Practically, it also provides implications as to what factors can tap into students' affective aspects within the teaching of English. This ensures that they enjoy language learning and are more motivated. The findings of this study also provide some clues to institutional managers as to what can materialise students' continuous intention to use the platform for learning purposes, namely, the Learning Management System (LMS) or other online learning platforms that best suit the students. The system's features are important since they can influence how easy and helpful students think it is. When a system has these qualities, it can encourage students' behaviour and drive them to utilise it over time.

1.10 The Organisation of the Chapters

This thesis consists of six chapters. The following summarises the chapters for this thesis.

Chapter 1 Introduction: This chapter is the first part of this thesis. It functions as a roadmap for the whole thesis. Specifically, this chapter introduces this study's background, explaining the problem statement and the study's significance. It also depicts the overarching aim, aims and objectives, research questions, together with the sixteen hypotheses and

operational definitions; the final parts would provide an overview of the literature, research methodology, and research findings. The chapter concludes with a summary.

Chapter 2 Review of Literature: This chapter consists of an in-depth related literature review of three areas underpinning this study: e-learning concepts and trends in Malaysian universities, the Blended Learning (BL) approach, LMS benefits and disadvantages, and the use of technology to teach English. It also covers the learning theory sections that support this research and ends with the research gaps.

Chapter 3 Framework of the Study: This chapter primarily highlights the theoretical framework of the Technology Acceptance Model (TAM). Also, the development of TAM, the proposed conceptual framework, and the extended technology acceptance model (ETAM) used in this study are explained. Some comparisons were made among TAM-like theories, and justifications were made to identify the appropriate model for this study.

Chapter 4 Research Methodology: This chapter highlights the research methodology, particularly the justification of methodological approaches to collect data and analytical procedures used to examine the proposed Extended Technology Acceptance Model (ETAM) previously discussed in Chapter 3. This section covers ten Section 4.1 to Section 4.10. It also includes information on the background of the research's respondents, the data analysis procedures of the pilot study, and the analyses' results for the pilot test of this study.

Chapter 5 Data Analyses discussed the research methodology, the data analysis process of the actual study, the data collection method for the actual study, and the outcome of the actual study's data analysis. This chapter also covers the results of the SEM technique using SEM-PLS software. The results were generated from the assessment of the measurement model, structural model, and mediating effect assessment.

Chapter 6: Discussion, a summary of findings, recommendations for future research, and conclusion: This chapter presents a detailed discussion of this study's findings in Chapter 5. The results were linked to the aims and objectives of this study. It also includes a summary of the research's findings, implications, limitations, delimitations, and directions for future research.

1.11 Summary of the Chapter

To conclude, this chapter began by introducing the background of the study, a statement of the problem, research aims and objectives, research questions, research hypotheses, the definition of terms, an overview of the literature, an overview of the research method, an overview of the research findings and the significance of the study. The following chapter will review related literature on Blended Learning (BL), Learning Management System benefits and advantages, the use of technology to teach English, the learning theories that shaped this research and the research gaps.

CHAPTER 2

REVIEW OF RELATED LITERATURE

2.1 Overview

The chapter starts with the existing literature about e-learning concepts and trends in Malaysian universities. Following this section, a review of the benefits and disadvantages of the blended learning approach is highlighted. This chapter also reviews the technology used to teach English. The subsequent section highlights the various learning theories and thereafter identifies gaps in the literature. This chapter concludes with a summary.

2.2 E-learning Concepts and Trends in Malaysian Universities

Education is the key to advancing an individual's overall skills and abilities. It helps them attain higher personal well-being and contribute to a nation's economic development. In accordance with this, it becomes critical to identify the appropriate methods and practises of learning that can enhance their outcomes. In recent times, technological advancement has changed the way people learn (Kumar et al., 2018).

Online learning and e-learning are terminologies that can have overlapping definitions. While e-learning and online learning are often used interchangeably, it is important to understand subtle differences between the two concepts. A more precise definition and description can provide clarity on their distinctions.

E-learning is defined by Abbas et al. (2005) as “the wide set of applications and processes that use available electronic media and tools to deliver vocational education and training” (p. 11). Recently, Naveed et al. (2017) defined e-learning as “the use of various technological tools that are web-based, web-distributed, or web-capable for education.” Alqahtani and Rajkhan (2020) highlight that the major benefits, like flexibility of time, cost-

effectiveness, and mobility, are critical determinants of the growth in the adoption of e-learning. E-learning, short for electronic learning, is a broad term encompassing the use of electronic technologies to facilitate learning and education (Marunevich et al., 2021). It refers to delivering educational content and instruction through digital platforms like computers, laptops, tablets, or mobile devices. E-learning can take various forms, including online courses, multimedia presentations, interactive modules, virtual classrooms, and educational software.

On the other hand, online learning, as defined by Dozhnikov (2020), refers explicitly to the mode of learning that occurs entirely online, typically through the internet. It is a subset of e-learning, focusing specifically on delivering educational materials and interactions via online platforms. Online learning involves accessing course content, participating in virtual discussions, completing assignments and taking assessments through web-based or learning management systems (LMS).

In essence, e-learning encompasses a broader scope, encompassing any form of learning that utilises electronic technologies, including online learning. Online learning, however, is a specific type of e-learning that exclusively takes place in a virtual environment, with all educational activities and interactions occurring online.

One key distinction between e-learning and online learning lies in the mode of instructional delivery. E-learning can incorporate various content delivery methods, including offline materials, CDs or DVDs, and online resources (Yuhanna et al., 2020). It recognises the use of electronic tools to enhance the learning experience, regardless of whether the instruction is delivered exclusively online.

Online learning, on the other hand, relies solely on internet-based platforms and tools for instructional delivery. It leverages web-based technologies to create an entirely virtual

learning environment where students can access course materials, interact with instructors and peers and complete learning activities entirely through online channels.

Another differentiating factor is the level of interactivity and engagement each approach offers. E-learning can encompass various interactive elements, including multimedia content, simulations, gamification, and social collaboration tools (Bennani et al., 2022; Fransisca et al., 2019). It provides opportunities for learners to engage with the material in various ways, promoting active participation and deeper understanding.

As a subset of e-learning, online learning focuses specifically on delivering instruction through online platforms. While it can also offer interactive features, its primary mode of engagement revolves around online interactions, such as discussion forums, chat sessions, video conferencing, and online assessments (Jacques et al. 2020; Mpungose 2020).

In Malaysia, three institutions, namely Universiti Teknologi Malaysia (UTM), Universiti Tun Abdul Razak (UNITAR), and Open University Malaysia (OUM), used e-learning to boost students' participation in 1972, marking the beginning of the field in Malaysia (Azhari & Ming, 2015). It was found that universities are also utilising e-learning via websites. These websites provide resources to learners beyond the traditional classroom forms, such as slideshows, notes, documents, PDFs, and videos.

Moreover, such an e-learning website is conducive for academicians and students due to increased time management (Aning & Baharum, 2020). The Malaysian Education Blueprint emphasises enhancing English proficiency for teaching English as a Second Language and upskilling teacher training for e-learning use (Ministry of Education, 2013). At Universiti Teknologi Malaysia (UTM), the “Centre of Teaching and Learning” (CTL) is established to deliver the majority of the information within the university. By utilising the

support of the website, CTL offers a variety of e-learning courses for different domains (Al-Rahmi et al., 2018).

Another study by Embi et al. (2011) on e-learning highlighted that 11 higher education institutions (HEIs) in Malaysia provide more than 50% online courses. The study also showed that 44.6% of students preferred to read materials provided by their lecturers and that 13.8% of lecturers contributed more than 80% of the online learning resources. The results also exhibited students' preference for online classes. The researchers concurred that adding e-learning to their classes had helped the students. Although this research uncovered encouraging initiatives from lecturers and students, relatively few lecturers were using the system. Many other academics were still not making full use of the technology. Therefore, it can be highlighted that the Malaysian education system at the higher educational level has adopted e-learning in several ways. Nonetheless, there are still many challenges that both learners and teachers encounter to adequately benefit from it.

In Malaysia, the integration of Learning Management Systems (LMS) into education has significantly impacted the teaching and learning of English (Al-Khresheh, 2021; Kee, 2020). The introduction of LMS in Malaysia can be traced back to the government's emphasis on leveraging technology to enhance educational practices and improve student outcomes. This concerted effort to integrate technology into the education system has paved the way for the widespread adoption of LMS platforms, revolutionising the teaching of English in Malaysia. In the field of education, particularly in English Language Teaching (ELT), technology has brought about significant transformations, as highlighted by researchers such as Kabilan (2016). These scholars emphasise the pivotal role of technology in reshaping the educational landscape. In this study on the impact of technology on English language learning, the author draws inspiration from the research conducted by Kabilan

(2010) and Edwin (2020), who have explored the influence of technology on language learning and teaching, particularly focusing on Learning Management Systems (LMS). Their work serves as a valuable foundation for the investigation into the implications of LMS implementation on English language learning outcomes. The advent of the Internet has opened up new avenues for learning, communication and access to information. In Malaysia, the integration of technology and the Internet in ELT, as per Ahmad et al. (2019), has had a profound impact on language learners and educators. With the Internet, learners have access to a vast array of online resources, authentic materials and language learning platforms. This accessibility has expanded their learning opportunities and provided avenues for self-directed and independent learning.

Online platforms and tools, such as Learning Management Systems (LMS), virtual classrooms, and language learning apps, have facilitated interactive and collaborative learning experiences, as validated by Bradley (2021). These technologies have transformed traditional classroom settings, enabling learners to engage in virtual interactions, participate in online discussions, and receive immediate feedback. Through online platforms, learners can also practice language skills, engage in language exchanges with peers from different countries, and access multimedia resources to enhance their language proficiency.

The introduction of LMS in Malaysia has brought about numerous benefits for English language instruction, according to Kassim (2021). LMS platforms serve as comprehensive digital learning environments where educators can create, manage, and deliver engaging and interactive English language lessons. These platforms provide teachers with a range of tools and resources to design curriculum, develop multimedia content, and facilitate online communication and collaboration among students.

By incorporating LMS into English language teaching, as argued by Cépeda et al. (2023), educators are able to create dynamic and learner-centered instructional experiences. LMS platforms enable teachers to design and deliver content that caters to the diverse learning needs and preferences of students. Through interactive modules, multimedia presentations, and gamified activities, LMS engages students in active learning and promotes their language skills development. Moreover, LMS platforms offer opportunities for personalised learning, allowing students to progress at their own pace and access resources and materials that match their individual language proficiency levels.

One of the key advantages of LMS, according to Prasetya (2021), in English language teaching is the facilitation of online communication and collaboration. LMS platforms provide discussion forums, chat features, and collaborative tools that enable students to engage in meaningful language interactions with their peers and teachers. These virtual spaces foster the development of communication skills, encourage critical thinking, and promote the use of English in authentic contexts. Students can engage in group projects, peer assessments and online discussions, creating a collaborative and interactive learning environment that enhances their language proficiency.

Furthermore, LMS platforms offer a wealth of digital resources, which have been analysed by Navarro et al. (2021) to support English language learning. Online libraries, e-books, multimedia content, and language learning applications are readily accessible through LMS, providing students with a vast array of materials to supplement their language learning journey. These resources expose students to authentic language use, cultural aspects, and real-world contexts, expanding their linguistic and cultural knowledge. LMS also enables teachers to curate and organise resources based on specific language skills or topics, making it easier for students to access relevant materials and engage in self-directed learning.

2.3 Blended Learning Approach

Vershitskaya et al. (2020) highlight that although e-learning is increasing substantially, its adoption is still faced with significant global challenges. Some of these challenges include inadequate ICT, infrastructure, financial constraints, a lack of technical skills, interest, and commitment. As a result of these challenges, the blended-learning approach is attractive to many practitioners and academicians (Rasheed et al., 2020). Integrating conventional face-to-face learning methods with e-learning is recognised as blended learning (Vallée et al., 2020). According to Dziuban et al. (2018), blended learning helps mitigate the challenges encountered when only e-learning is used. The authors argued that when e-learning is solely used, there is a lack of interaction between the learners and the teacher. Such a lack of interaction leaves unsolved doubts, and it is critical to understand that not all educators and learners have appropriate resources for e-learning. The student and teacher should be physically present in the same location for blended learning to take place. Blended learning has been shown to be an effective option that may satisfy the demands of a variety of students who may choose traditional learning or online learning since it combines both methods into one (Anthony, 2019).

With respect to English language learning, a number of studies have empirically found that the blended learning approach is highly effective. A study conducted by Albiladi and Alshareef (2019) revealed that blended learning is conducive to developing the language skills of the students and encouraging them to learn a new language like English in a more viable manner. Similarly, an experimental study was conducted by Moradimokhles and Hwang (2020) to analyse the effects of both blended learning and online learning on the English language skills of the students. It was revealed that the blended learning approach was more effective than the online learning mode in enhancing the students' English

language skills. One of the primary reasons behind the effectiveness of blended learning that emerged from the feedback was the challenge faced in online learning. Based on the study, the online learning framework failed to provide personal attention and feedback to every student on their mistakes, which is one of the critical factors that made it ineffective in enhancing language skills as required.

Furthermore, the study conducted by Hockly (2018) outlines the following characteristics that must be included while adopting blended learning to make it highly effective:

- **Interaction:** It is critical to interact with learners regularly to evaluate whether they are finding any difficulty or if the teachers can move forward.
- **Task:** It is essential to ensure that any course is being taught along with a task that matches it. Such tasks must be appropriately designed and tools should be adapted accordingly.
- **Materials:** Along with tasks and teaching, technology-based tasks and materials should also be provided, as they help the process and provide content or input.
- **Integration:** Each component of the course that uses technology must have a clear connection to and integration with the other, each supporting and developing the other.
- **Evaluation:** Technology-based tasks, such as speaking and writing assignments, must be incorporated into the overall evaluation of the learner.
- **Context:** The needs, abilities, expectations and beliefs of students and teachers must all be considered in the blended learning design.

- **Teacher training:** To guarantee that instructors comprehend the guiding concepts and are able to execute the blend successfully, training is essential for the successful implementation of a blended approach.
- **Learner training:** It could be necessary to provide initial learner training if students find working alone difficult.

While numerous studies have highlighted several benefits of blended learning, others have also outlined the challenges encountered in utilising this approach in English as a Foreign Language (EFL). Dahmash (2020) delineated through a survey conducted in their study that EFL students majorly encountered technical issues, flaws in teachers' performance, challenges in taking up online tests and limited resources. Aji et al. (2020) showcased that both learners and educators faced numerous challenges in blended learning. Networking, lack of resources and prior experience were common challenges faced by both in blended learning. On the other hand, teachers explicitly delineated that blended learning is highly time-consuming, as they have to prepare for lectures, the resources they will use for e-learning and the materials they have to provide to students. They stated that synchronising between online and face-to-face learning is complex and may lead to miscommunication. Thus, it can be concluded that there are mixed opinions among scholars concerning the strategic advantage of blended learning.

2.4 Learning Management System (LMS)

Learning Management Systems (LMS) are found to engage teachers and students in the learning process by utilising an online framework. A standard LMS is instrumental in providing an inclusive learning environment for ensuring academic excellence by incorporating attributes instrumental in promoting online learning, such as collaborative

groupings, training at the professional level and discussion and communication among the users of the LMS (Jung & Huh, 2019).

An LMS caters to multiple operations and acts as an online framework that can capture several layers of progressive learning. Thus, in simpler terms, LMS can be considered a platform that can disseminate pedagogical materials to the learners and help oversee the materials they have gone through (Kuosa et al., 2016). Unlike other online learning frameworks, LMS is instrumental in helping students monitor their progress when they utilise it. Studies conducted by several scholars have strategically highlighted that LMS is instrumental in developing a learning environment for students that ensures greater concentration, thereby generating better outcomes (Al-Fraihat et al., 2020; Bradley, 2021; Zhang et al., 2020).

2.4.1 Benefits of adopting the Learning Management System (LMS)

LMS generally assists educational institutions in carrying out an efficient learning process and helping teachers tailor their instruction to varied students with different learning preferences and demands. Studies conducted by several scholars have emphasised that LMS provides students with a choice of learning aids that make the outcomes of their courses more effective. Researchers have delineated that LMS is an excellent learning tool for students since it enables them to simplify their studies by utilising the advantages of the Internet without ignoring the significance of teaching personnel (Nordin et al., 2017; Rahman et al., 2019). Learning Management System (LMS) tools also help lecturers manage the classes they provide each semester and the students enrolled. They also let lecturers evaluate students' learning at various levels using various assessment techniques (Mat et al., 2017).

It can be highlighted that the positive views held by the students pertaining to the use of LMS might be due to the benefits offered, which facilitate students to engage in learning at any point in time and from anywhere. This kind of involvement may encourage students to act and think independently in their quest for information, enhancing their learning. LMS may also centralise teaching and learning techniques to better organise and provide instruction to students wherever they are at any time (Zhang et al., 2020). Multazam et al. (2022) argued that LMS is highly instrumental in reducing the number of platforms as all information on different courses and training programmes can be strategically integrated into a single system. It enables learners to engage and communicate virtually with their friends and lecturers. Hence, it builds a virtual classroom environment. Nonetheless, scholars have also emphasised that in supporting independent and active learning, the LMS must be designed so that it can store extensive data and is highly user-friendly, taking into account the capabilities of its distinct users (Hutchison, 2019; Kasim & Khalid, 2016).

2.4.2 Disadvantages of adopting the LMS

While there are numerous benefits to utilising an LMS, it is not error-free. Many teachers and students are found to encounter several challenges that further affect their willingness to utilise LMS. Trisiana (2020) highlighted that, compared to conventional classroom learning practices, LMS demands teachers invest more efforts in the development of pedagogical materials that are shared through the platform and those that can be referred to by students offline. Hasnan and Mohin (2021) highlighted that the utilisation of LMS generally encountered some challenges for students and instructors. These include instructors' factors like lack of skills and digital literacy; technology-related factors like the reliability of the software, design and complexity of the system; and organisational factors like inadequate time, work management issues, insufficient training and support from the

academic institution. These challenges are found to negatively impact both learners' and instructors' willingness to utilise LMS.

Other issues governing the use of LMS in higher educational institutions specifically exist. These issues concern the availability of appropriate skills and technological knowledge among instructors and learners for utilising LMS (Annamalai et al., 2021). It also demands stakeholders' positive attitude and willingness to adapt to the new technology and appreciate its advantages rather than restraining and clinging to the conventional classroom learning methodology (Xhaferi et al., 2015). Mohammadi et al. (2021) research aims to understand the challenges and the factors that played an influential role in adopting LMS among students and teachers during the pandemic. The study's findings affirmed that no standard measure was defined for developing quality e-content by the instructors. There was a lack of appropriate mechanisms, policy measures and students' reluctance to participate in or adapt to the new learning process.

2.5 Using technology to teach English

The emergence of contemporary technical innovations has had a profound impact on the lives of individuals, as society progresses towards a period defined by progressively sophisticated technology. The incorporation of Information and Communications Technology (ICT) within the realm of education at a worldwide level has attracted considerable interest. In the Malaysian setting, the domain of Information and Communication Technology (ICT) has gained prominence in the field of education, particularly in the context of pedagogy and knowledge acquisition.

It is a realistic expectation that educators and students in Malaysian educational institutions would effectively utilise the possibilities of information and communication technology (ICT) by incorporating instructional approaches that integrate the existing ICT

facilities into the classrooms. The teaching and study of English as a second language (ESL) in Malaysia also demonstrates such significant potential. The integration of Information and Communication Technology (ICT) as a pedagogical tool in English Language Teaching (ELT) is a viable approach to augmenting the efficacy of students' English language acquisition in contrast to conventional instructional methods (Adzhari & Din, 2021). According to Gunuç and Babacan (2018), technology integration in English language teaching and learning is helpful and crucial in developing basic English language skills such as speaking, listening, reading and writing. The authors cautioned that “in order to significantly impact the use of technology, the process of technology integration needs to be carried out carefully and in a planned manner and that technology must be properly integrated into English language teaching and learning; otherwise, it may really have a detrimental influence on students' ability to learn.

In recent years, there has been a growing body of literature pertaining to the use of technology in English language learning and teaching. Alharbi (2015) investigated the effects of online course tools, specifically discussion boards, blogs, and wikis, on improving integrated reading and writing and on 60 male EFL college students' attitudes toward literacy skills in e-learning environments. The study used quantitative and qualitative data to assess reading and writing performance and students' attitudes. The integrated reading and writing performance tests (IRT) were done to determine pre-test baseline scores and post-test gain scores to calculate performance differences. T-tests were employed to compare the experimental and control groups' test performance. The IRT has two sections. Participants read two passages and answered comprehension, analysis, and synthesis questions in Part 1. Part 2 asks students to write an argumentative essay about Part 1's passages. Part 1 measures reading skills, whereas Part 2 assesses writing skills.

The scores for integrated reading and writing showed improvement in their performance of their literacy skills. The data also demonstrated that learning a language through technology boosted students' reading and writing skills and expanded their online discourse group. According to their comments, participants in the experimental group were satisfied with the interactive e-course tools for literacy development. Participants agreed that online course tools helped them understand sentence and paragraph structures and equally rewrite, edit and proofread their blogs and wikis. They agreed that these capabilities promoted peer interaction, helped them adapt their work to their audience, and used more formal English in their blogs and wikis. These techniques enabled them to adjust their academic style, register and lexicon to the purpose, medium and intended audience. In this study, online course tools lacked spelling and grammar checks. The participants' submissions had few spelling or grammar issues, although some differences exist among each participant. As they collaborated on their posts or wikis to improve their quality, participants rectified each other's mistakes, as shown in the Blackboard's history tool. This observation supported the students' self-reported grammar and spelling.

In another study, Daneil et al. (2019) explored ways to improve pre-diploma students' listening abilities with Smash-Hits! a Massive Open Online Course (MOOC)-based instructional material. The study used two-cycle classroom-based action research. Success requires a listening score above 70%. Students did not meet the 70% requirement in the first cycle, but in the second cycle, they did. Positive module feedback was found. The authors also mentioned that English language learners found listening challenging as they failed to grasp the speaker's pace in the listening audio, had limited vocabulary and had an inability to recognise speech cues such as offering examples and repeating essential points. The study allows participants to access authentic listening resources, improving teaching and learning.

Participants enjoyed the activities and were inspired to improve their listening skills and vocabulary from the lessons. The authors suggested that future studies can examine learners' behaviour patterns and employ MOOCs to teach listening skills.

Baitaneh and Mayyas (2017) studied Moodle-based classes and students' reading comprehension. 32 individuals were randomly assigned to the experimental and control groups. The experimental group (physical class with Moodle) comprised 17 participants and the control group had 15 participants (using only physical classes). It was discovered that the experimental group outperformed the control group with the additional practises on Moodle. Due to readily available materials such as PowerPoint on Moodle and self-assessment involvement during the treatment, the experimental group showed statistically significant improvements in scanning, skimming and overall reading comprehension. With the help of the Moodle platform, immediate feedback was made available to students, boosting their self-assurance and sense of accomplishment in the learning process. Students could self-access the slides and decide what and when to study, exercising learner autonomy. The experimental group had active peer engagement and higher grammar scores. The researcher advocated increased English-teaching training for students. According to the authors, English communication is challenging for students because of their lack of proficiency in the target language, anxiety and lack of language proficiency.

Rusli et al. (2019) conducted a study in Malaysia to assess Massive Open Online Course (MOOC) usability, student interaction and the influence of MOOCs on students' communication skills. According to the study, participants highlighted that MOOCs helped them complete tasks and think critically. The tasks strengthen their research and reading skills and encourage critical thinking. This boosted students' confidence in communicating using language more effectively. Using interactive materials like videos and pictures piqued

students' interest and motivated them to learn. Since this study focuses on communication, the students shared their opinions and understood each other's opinions. The speaking tasks help students stay active and improve their English. The students commented that they enjoyed the flexibility of blended learning using MOOCs. The authors found that MOOC platforms can improve students' speaking and language learning autonomy.

Rahmawati (2022) study focuses on first-year students' attitudes toward Moodle to learn listening and speaking skills. An in-depth interview revealed that participants had a favourable attitude towards blended learning. It was discovered that the speaking practices on Moodle have helped them overcome their anxiety and improve their speaking skills, particularly pronunciation.

Truong (2021) investigated Moodle-based speaking skills. This study surveyed 24 Vietnamese students majoring in English. The students' recordings help language teachers develop spoken performance assessment rubrics. The author said blended learning could improve students' English as a Foreign Language (EFL) speaking skills. Based on the findings, the participants commented that they liked the speaking practice through Moodle. Additional Moodle-based activities enhanced students' grammar, vocabulary and pronunciation. The activities allowed the students to use vocabulary and language in meaningful ways and helped them retain what they had learned. Long-term practice leads to the automatic use of new knowledge, according to Ortega (2011). The challenge of speaking practice through Moodle encouraged participants to learn new terms and use them meaningfully when conversing with their speaking partners. The recordings of students' pronunciation helped them improve their language-speaking skills. This study's only flaw is the low sample size used.

Alamer (2021) investigated the impact of Blackboard on students' attitudes at a university in Saudi Arabia. The author gathered 34 students to fill out a 14-item questionnaire. The survey found that students had trouble learning English vocabulary and thus developed a negative attitude towards learning English vocabulary. The study indicated that Blackboard did not impact students' attitudes or vocabulary learning. Students described that the online discussions did not provide more opportunities for them to speak freely, listen to their peers, or develop new vocabulary. Alamer (2021) also mentioned some challenges when implementing blended learning in the research context and suggested additional research be conducted to examine the use of learning platforms to determine the advantages and educational possibilities associated with using the platforms to learn the language.

Based on the above literature on English language teaching, it is essential to note that no pertinent study has evaluated the specific implication of perceived role in influencing the behavioural intention to adopt LMS specifically for the purpose of English learning. Therefore, more studies should be put forth to bridge the gap in technology use in the learning of English with the Technology Acceptance Model (TAM) as a theoretical framework.

2.6 The Learning Theories

The emphasis on each learner's qualities that enable them to succeed in every situation, rather than merely specialised information, is part of the modern concept of learning. Therefore, it's important to consider learning in a broad sense. Thus, traditional learning theories must be revised. There was a shift in how people learn in many sectors, where it was one of its primary focuses in the late 1990s. One of the most significant results of globalisation is an increase in interest in lifelong learning. While this is happening, certain topics remain "subjective." These questions include: What aids in learning? How can

educators promote learning? or "What factors influence students' acceptance of new learning strategies?" To understand this further, the researcher suggests looking at other learning theories. A few learning theories include behaviourism, cognitivism and socio-cognitive theory (SCT) (Ertmer & Newby, 2013). These learning theories inspire the design of online learning environments like the Learning Management System (LMS).

Learning theories concentrate on understanding how learners assimilate, behave and gain knowledge. These theories and models are helpful in the forecasting learning process. These ideas are divided into categories such as behaviourism and cognitivism, depending on the setting of the learning process (David et al., 2018). The primary goal of behaviourism theories is to explain how observable behavioural changes might be formed in response to a change in the environment or the presence of a recurrent stimulus. Cognitivist theory is mainly driven by the desire to explain the psychological thought process that transpires the underlying exhibited behaviour rather than the behaviour itself.

2.6.1 Behaviourist Theory

The origin of instruction and learning includes teachers' conceptions of the best practices for instruction and learning (Aypay, 2011). A learning theory is a scientific explanation of how learning progresses, especially in terms of obtaining, holding onto and recalling information (Inthindi, 2019). Behaviourist presumptively believe that "observable behaviour that results from experience constitutes learning" (Eggen & Kauchak, 2001, p. 214).

The instructor is seen as a transmitter of information in the behavioristic learning paradigm, whereas learning activities are seen as the outcomes in a classroom context. Students, on the other hand, are viewed as passive knowledge consumers. As a result, it is the instructor's duty to provide the class with correct and comprehensive information.

Learners will not immediately assume what a second language (L2) involves and how to acquire it when the behaviourist method is applied in that context (Richards & Rodgers, 2014). Rifai et al. (2016) cite the incorporation of behavioristic teaching strategies into online learning as having the potential to "create an integrated learning strategy" (p. 1). Levy (2009) asserts that as technology progresses, second language (L2) instructors may now focus on the psychological and social aspects of their teaching. In order to enable language learners to study the language both inside and outside of classrooms, the behaviourist approach to L2 learning has advocated for self-directed learning initiatives. This encourages the students to be more independent in their learning (Giveh et al., 2018).

Despite the fact that behaviourism is today regarded as the "mother" of all pertinent learning theories, the participants in this study are adult second language (L2) learners with the appropriate background and L2 experience, so it may not be applicable to them. The core of behaviourism is the study of measurable, observable behaviours. Even though Bandura's Socio-Cognitive Theory (SCT), which builds on Skinner's research, is not used as the basis theory, it has a connection to it.

2.6.2 Socio Cognitive Theory

Albert Bandura introduced the Social Cognitive Theory (SCT) in 1986, which was updated in 2001. It is one of the ideas in psychology that has been examined the most. It is broadly applied in various industries, including business, law, education and healthcare (Beauchamp et al., 2019). It is offered as an integrated theory of human behaviour with several applications (Luszczynska & Schwarzer, 2005). Bandura's Social Cognitive Theory strongly emphasises the crucial role that an individual's self-beliefs or views about their cognition, motivation and behaviour play. The idea that people have a self-system that

enables them to have some degree of control over their thoughts, feelings and behaviour is found to be given substantial significance by SCT (Ryan et al., 2019).

Triadic reciprocal causation is a theory of "reciprocal determinism" developed by Bandura. This suggests that environmental circumstances and personality qualities, including cognition and behavior, all have an effect on and are influenced by one another.

SCT is also widely applied in the body of literature to comprehend individual behaviour relevant to technology use (Geng et al., 2019; Samaradiwakara & Gunawardena, 2014). Chang and Hajiyevev (2017) pointed out that the SCT principle's prevalence means that individuals can influence their actions. SCT, thus, can be seen as a robust theoretical framework to comprehend human behaviour and, in this context, students' behavioural intention to use the Learning Management System.

2.7 Gaps in Literature

Technological advancement has strategically transformed the educational system as a whole (Kumar et al., 2018). E-learning has become the need of the hour. It has been adopted by several countries worldwide and Malaysia is no exception. The adoption of e-learning approaches is primarily driven by the motive to enhance the effectiveness of the learning outcomes for students, as well as lifelong learning goals (Alqahtani & Rajkhan, 2020; Al-Rahmi et al., 2018; Aning & Baharum, 2020; Azhari & Ming, 2015; Ministry of Education, 2013; Nordin et al., 2011; Naveed et al., 2017). While e-learning cannot on its own enhance the effectiveness of the education imparted, blended learning is found to be instrumental in overcoming the several challenges posed by online learning (Anthony, 2019; Dziuban et al., 2018; Geng et al., 2019; Rasheed et al., 2020; Vallée et al., 2020; Vershitskaya et al., 2020). The literature affirmed that blended learning is highly effective in English learning owing to a variety of benefits (Albiladi & Alshareef, 2019; Hockly, 2018;

Moradimokhles & Hwang, 2020). Nonetheless, there are also challenges encountered in adopting blended learning outlined by scholars through empirical research (Aji et al., 2020; Dahmash, 2020).

Learning Management Systems are found to assist learners in integrating the benefits of online learning and conventional learning to enhance the effectiveness of learning outcomes for students (Al-Fraihat et al., 2020; Bradley, 2021; Jung & Huh, 2019; Kuosa et al., 2016; Zhang et al., 2020). Over the years, scholars have highlighted a number of benefits of adopting LMS (Hutchison, 2019; Kasim & Khalid, 2016; Mat et al., 2017; Multazam et al., 2022; Nordin et al., 2017; Rahman et al., 2019; Zhang et al., 2020) and challenges (Hasnan & Mohin, 2021; Mohammadi et al., 2021; Trisiana, 2020; Xhaferi et al., 2015). Moreover, since LMS aims at integrating technology with education, it is critical to understand the factors that impact the adoption of LMS by students. The technological Acceptance Model (TAM) is one of the most prominent models that researchers use to predict the extent to which users are willing to adopt new technological changes in different industries (Alenazy et al., 2019; Lala, 2014; Nadlifatin et al., 2020; Sohn & Kwon, 2020).

The model indicates that “perceived usefulness” and “perceived ease of use” are the two critical factors that affect the “satisfaction” and “behaviour intentions” of the users towards the adoption of any technology in any given field (Al-Nuaimi & Al-Emran, 2021). However, the previous studies have highlighted evidence concerning the factors affecting the attributes of “perceived usefulness,” “perceived ease of use” and “self-directed learning” (Atmojo & Nugroho, 2020; Elzainy et al., 2020; Lee et al., 2019; Maphalala et al., 2021; Wei & Chou, 2020; Zainuddin et al., 2019).

Perceived enjoyment (Adel-Ali & Arshad, 2016; Aliaño et al., 2019; Chao, 2019; Chen & Hwang, 2019; Hussain et al., 2016; Lee et al., 2017) and satisfaction (Al-Samarraie

et al., 2018; Findik-Coşkunçay et al., 2018; Hammouri & Abu-Shanab, 2018; Mohd Nasir et al., 2021; Welch, 2017) are found to be another eminent factors that further predict behavioural intention to adopt technology in the field of education.

Therefore, this study aims to analyse the factors affecting behavioural intention in Malaysia's English as a Second Language (ESL) in higher education institutions.

2.8 Chapter Summary

This chapter outlined and discussed relevant literature on the study's subject areas. An overview of blended learning (BL) concepts and how they might be used in LMS environments opens this chapter. The researcher also highlighted the benefits and challenges of blending in LMS settings, especially in English language instruction. Reviews indicate that LMS is frequently used to improve teaching and learning, raise student achievement and influence students' attitudes. It also highlighted the several factors that actually impacted or predicted the behavioural intention to utilise the LMS. The researcher also discussed the roots of learning theories—behaviourism—and how Socio-Cognitive Theory (SCT) is related to the usage of Learning Management Systems. This chapter also examines gaps in the research that might prevent a fuller understanding of the applicability of LMS use in Malaysia. The use of TAM as the theoretical framework for this study is explained in the next chapter, which also defends the suggested theoretical model and looks at its implications for undergraduates' usage of LMS.

CHAPTER 3

FRAMEWORK OF THE STUDY

3.1 Overview

This chapter is divided into four sections. The first section narrates the theoretical framework of this study. It also covers competing models of TAM extensions. The following section provides the conceptual framework of this study. A summary concludes this chapter.

3.2 Theoretical Framework

Computer acceptance by individuals appeared to be limited due to specific reasons. Individuals' acceptance of computers seemed to be restricted. Many people have struggled to adopt computer usage due to computer anxiety, lack of confidence and resistance to technology (Durodulu, 2016). TAM says people will use technology if they think it will help them (Igbaria & Iivari, 1995). Several hypotheses have been proposed to explain how people accept new technology. This section discusses some of the standard theories and models used to assess technology acceptance.

3.2.1 Theory of Reasoned Action (TRA)

Several highly suggested theoretical models have been employed to forecast an individual's attitudes and acceptance of various technologies. The researcher examines several examples of technology adoption theories and models to match the investigation. TRA (Ajzen & Fishbein, 1980; Fishbein & Ajzen, 1975), TPB (Ajzen, 1985, 1991), Innovation Diffusion Theory (IDT) (Rogers, 1995), the Unified Theory of Acceptance and Use Technology (UTAUT) (Venkatesh et al., 2003), the Expectation Confirmation Model of IT usage (ECM-IT) (Bhattacharjee, 2001) and the Technology Acceptance Model (TAM)

by Davis et al. (1989). TAM was also extended into two versions: TAM2 and TAM3. These theories and models spawned research on individual adoption and an enormous body of literature on Information System (IS) acceptance.

The Theory of Reasoned Action (TRA) was formulated by a social psychologist as a result of the Expectancy Value Model (Otieno et al., 2015) and has been adapted in various fields, including education, to explain and predict user behaviour (Davis et al., 1989; Magee, 2002) and has demonstrated validity in the Information System (IS) discourse (Han, 2003).

The theory of Reasoned Action (TRA), as depicted in Figure 3.1, was first discovered by Fishbein in 1967 and was further enhanced by Fishbein and Ajzen (1975).

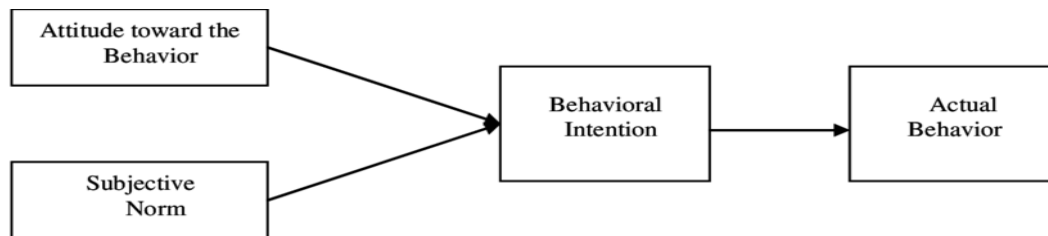


Figure 3.1: Theory of Reasoned Action (Fishbein & Ajzen, 1975) as cited in Ramayah & Aafaqi (2005) p. 2

Ajzen and Fishbein (1980) used TRA to allow understanding of an individual's behaviour by linking Subjective Norm (SN), Attitude (ATT) toward behaviour and Behavioural Intention (BI). TRA is also recognised as an essential theory to describe human volitional behaviour where an individual takes account of available information and the implications of their actions. It also postulates that a person acts according to their intentions. The critical determinant of an individual's actual behaviour is his or her BI (Fishbein & Ajzen, 1975). TRA is commonly used with other technology acceptance models such as the Technology Acceptance Model (TAM) and the Unified Theory of Acceptance and Use

Technology (UTAUT), which led to this theory being underutilised although it can explain technology adoption.

TRA has some limitations. Ajzen (1985) states that TRA suffers from a factor correspondence problem, while Wright (1998) claims that attitude and intention should be linked to action, context and time. This pertains to conscious acts, attitudes and norms exclusively. When someone decides to act, they are free to do so. Constraints on ability, time, environment, or organisational limits will lessen the freedom to act (Al-Busaidi, 2013). Thus, illogical decisions and complex skills hindered the applicability of TRA (Wright, 1998). TRA also requires extra explanatory factors, which were not present (Thompson et al., 1991; Webster & Martocchio, 1992). Aspects of TRA require researchers to identify the relevant beliefs. The TPB was designed to overcome TRA's shortcomings.

As Fishbein (1967) established, TRA provides cues for the expansion of the Theory of Planned Behaviour (TPB). Figure 3.2 is illustrated as TPB. TPB was added with a new construct, namely Perceived Behavioural Control (PBC), accounting for individuals' behaviour, which is non-volitional (Ajzen, 1985). PBC refers to whether an individual perceives performing a behaviour as either easy or difficult (Ajzen, 1991).

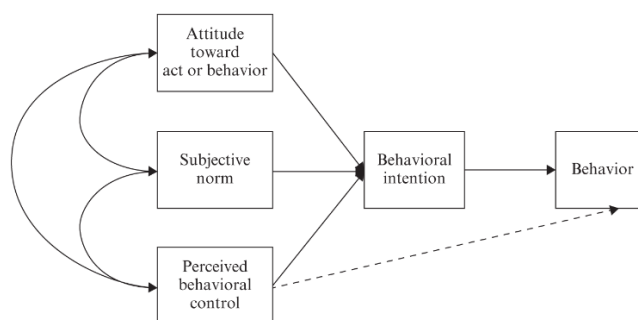


Figure 3.2: Theory of Planned Behaviour (Ajzen, 1991, p. 188)

3.2.2 Theory of Planned Behaviour (TPB)

The application of TPB to technological innovations has been validated in much quantitative research. For instance, Morris and Venkatesh (2000) used the TPB to study workers' decisions about technology usage and their attitudes toward adopting it.

One of the significant strengths of the TPB is that it is widely applicable in fields such as business and education. In another scenario, the model has been compared to other competing theories and in a 'decomposed' version for further research. Chau and Hu (2001) utilised the TPB, the Technology Acceptance Model (TAM) and a decomposed TPB to look into technology acceptance. Their study used Perceived Usefulness (PU) and Perceived Ease of Use (PEU) as mediators. The results showed that their decomposed model did not provide any increment in explanatory power or in predicting behavioural intention. Despite this, TPB continues to receive tremendous support in research through empirical evidence.

The Theory of Planned Behaviour (TPB) showed the significance of intention and Perceived Behavioural Control (PBC) in predicting an individual's behaviour. This theory also posits that if an individual wishes to ascertain a successful behaviour, it depends on their determination to devote to the level of control, e.g., knowledge and skill (Carr & Sequiera, 2007). Similar to the Theory of Reasoned Action (TRA), TPB also suffered from limitations. The first limitation was external barriers that might prevent the individual from performing the behaviour (Taylor & Todd, 1995). Other studies also proved that the TPB had some deficiencies when different research methodologies were used. This is especially apparent when the self-reporting format is used and is believed to be unreliable when respondents with positive attitudes often inflate "positive behaviours and intentions." (Knabe, 2012, p. 39).

Empirical studies concluded that determinants of intention were not only subjected to the three identified variables, such as Attitude (ATT), Subjective Norm (SN) and PBC (Ajzen & Fishbein, 2005). Like TRA, TPB also failed to explain an individual's behaviour above 50% variance (Al-Aulamie, 2013). Taylor and Todd (1995) critiqued that TPB confined all non-controllable variables affecting an individual's behaviour into one, while Ajzen (1991) argued that additional determinants should be added to predict the variance in the intention or behaviour.

The existing works of literature have discovered different results in assessing TPB. The theory's parsimony, simplicity and frequent citations were indicators of its increasing usage in the future.

3.2.3 Technology Acceptance Model (TAM)

Fred Davis introduced the initial Technology Acceptance Model (TAM), which is depicted in Figure 3.3, in 1986 for his doctoral dissertation and was taken from the Theory of Reasoned Action (TRA). It is crucial to ensure that any new idea or technology is approved before being used. Assessing how well a particular technology will be received by the relevant parties is essential to its success (Scherer et al., 2019). Among the many theories and models that aim at outlining the extent to which users will adopt and accept a given technology (Sohn & Kwon, 2020; Nadlifatin et al., 2020), one of the most accepted and utilised models to predict technological acceptance is the Technology Acceptance Model (TAM) (Alenazy et al., 2019).

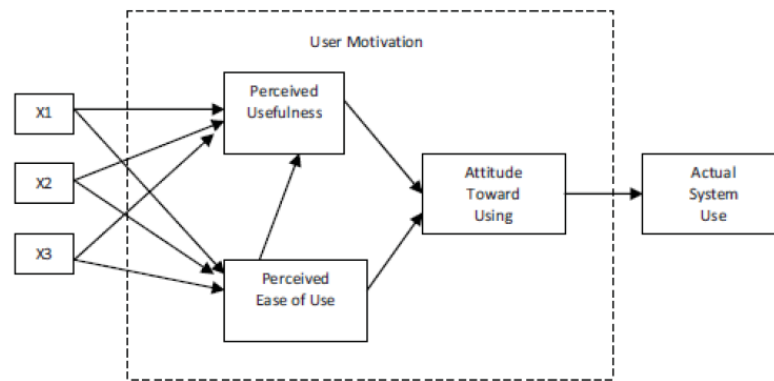


Figure 3.3: The original Technology Acceptance Model (Davis, 1986, p. 24)

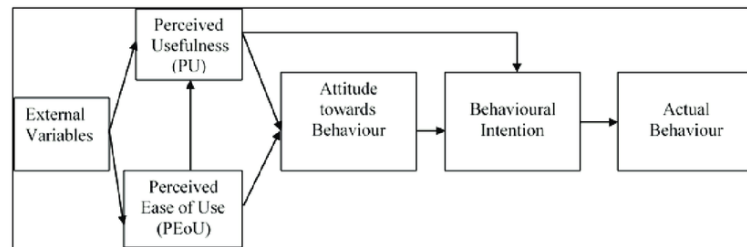


Figure 3.4: The first modified Technology Acceptance Model (TAM) (Davis et al., 1989, p. 985)

Davis first presented this model in 1989 and it may be used in various fields to assess the aspects that users take into account or those that influence users' intentions to adopt new technology or innovation (Lala, 2014). The TAM model is based on the understanding that Perceived Usefulness (PU) and Perceived Ease of Use (PEOU) are external characteristics that heavily impact the intention to accept or utilise any given technology. Attitude is found to mediate the impact of these two factors on behavioural intentions either partially or fully (Al-Nuaimi & Al-Emran, 2021). Nonetheless, the simple TAM model has been expanded over the years by both Davis and other scholars who have conducted empirical studies in different disciplines to suit their needs. The current study adopts the extended version of the TAM model for analysing the key factors that motivate students' behavioural intention to adopt LMS for English learning.

3.2.4 Technology Acceptance Model 2 (TAM 2)

Venkatesh and Davis (2000) extended the original TAM to TAM 2, shown in Figure 3.5. Both scholars proposed the general determinants of Perceived Usefulness (PU). These determinants include Subjective Norm (SN), Image (IMG), Job Relevance (JR), Output Quality (OQ), Result Demonstrability (RD) and PEU. They also added two moderators: Experience (E) and Voluntariness (V).

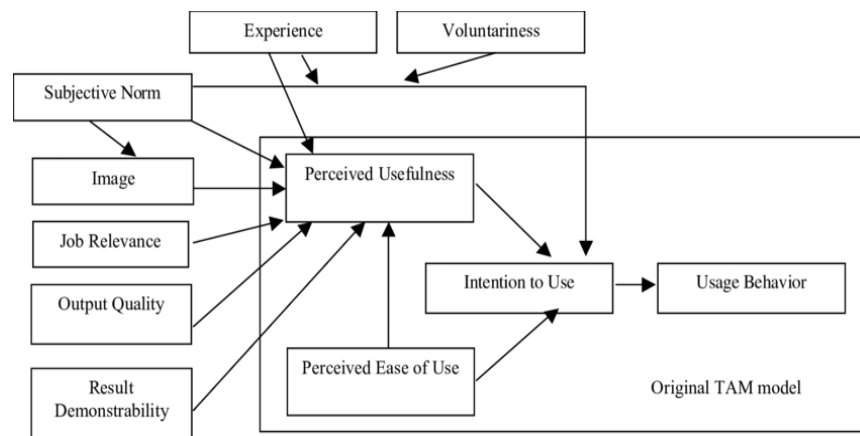


Figure 3.5: Technology Acceptance Model 2 (TAM 2) (Venkatesh & Davis 2000, p. 188)

TAM 2 presented two theoretical processes: social influence and influential cognitive processes. These two processes further clarify the effects of various determinants of Perceived Usefulness (PU) and Behavioural Intention (BI). Subjective Norm (SN) and Image (IMG) were identified as two determinants of PU; therefore, both exert social influence processes. The social influence processes of TAM comprise three social influence mechanisms: compliance, internalisation and identification. Compliance takes place when a person acts a certain way to get rewards or stay out of trouble (Venkatesh & Bala, 2008). In other words, instrumental incentives and compliance are comparable. Instead, identification refers to a person's conviction that engaging in a behaviour will determine how influential a group they are in since their significant other(s) also hold that specific behaviour should be

engaged in (Venkatesh & Davis, 2000). Internalisation, according to Warshaw (1980), is the process of incorporating a significant other's belief into one's own belief system.

The four variables of TAM2, namely, Job Relevance (JR), Output Quality (OQ), Result Demonstrability (RD) and Perceived Ease of Use (PEU), were theorised to exert influence on cognitive instrumental processes, or Perceived Usefulness (PU). The core role of the cognitive instrumental process is that an individual creates a perception of usefulness by comparing what a system can do with what they have to accomplish (Venkatesh & Davis, 2000).

In TAM 2, individuals tend to form a mental judgement and later match that with their fundamental work goals and the consequences of performing job tasks using a system, which serves as a basis for determining their perceptions regarding whether a system is deemed useful or not (Venkatesh & Davis, 2000).

The final theory of TAM 2 is that PEU and Result Demonstrability (RD) will have a direct positive influence on PU. Alternatively, JR and OQ will then have a moderating effect on PU; in other words, the higher the OQ, the stronger the impact of JR on PU. TAM 2 was found to hold strong support in longitudinal studies focusing on organisations and may not be accountable to educational contexts. Venkatesh and Davis (2000) conducted a longitudinal study examining TAM 2 for four companies using four systems. These systems were categorised under mandatory use and voluntary use. The results depicted an excellent intervention by TAM 2 in both categories. Also reported in the findings was that Subjective Norm (SN)'s influence on both PU and BI decreased when the users' experience increased. TAM2 explained 40–60% of the PU variance and 30%–50% of Behavioural Intention (BI) variance.

Technology Acceptance Model 2 (TAM 2) was later revised to Technology Acceptance Model (TAM 3) by Venkatesh and Bala (2008). The scholars suggested that Perceived Usefulness (PU) will not influence Perceived Ease of Use (PEU) or vice versa. Later, it was further acknowledged that TAM 3 would not posit any crossover effects. The two theoretical processes explained the relationship between PU and its determinants in social influence and cognitive instrumental processes. The impact of various factors: Subjective Norm (SN), Image (IMG), Job Relevance (JR), Output Quality (OQ) and Result Demonstrability (RD). PU is tied to social influence and cognitive instrumental processes. Figure 3.6 depicts the Technology Acceptance Model 3 (TAM 3) developed by Venkatesh and Bala (2008).

3.2.5 Technology Acceptance Model 3 (TAM 3)

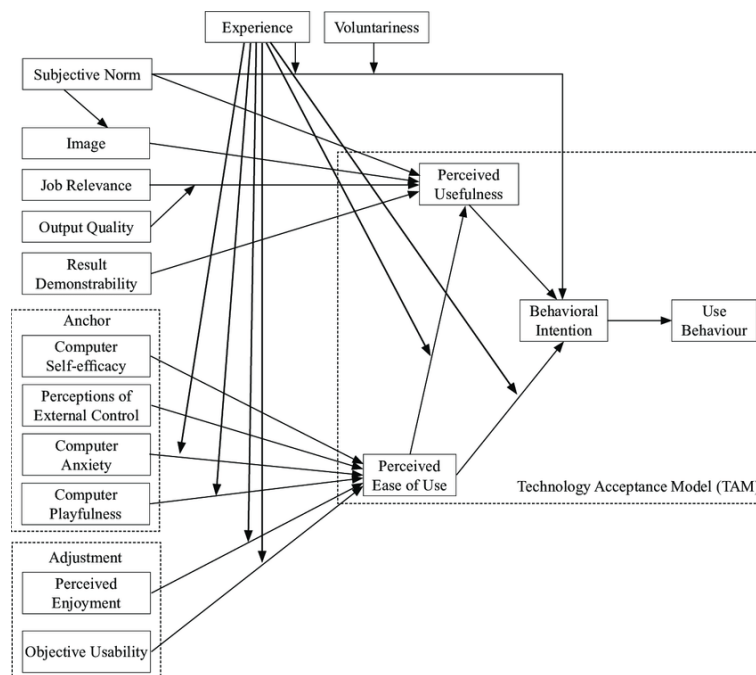


Figure 3.6: Technology Acceptance Model 3 (TAM 3) (Venkatesh & Bala, 2008, p.280)

Perceived Ease of Use (PEU) has been theorised to be strictly linked with the individual's Self-Efficacy (SE) beliefs and procedural knowledge that occurs through hands-on experience and the execution of skills (Davis & Venkatesh, 2004). As Venkatesh (2000)

argued, an individual will perceive the system's ease of use with their general computer beliefs, which will later be adjusted when they have hands-on experience with the system.

Social influence processes for information technology (IT) adoption and usage, such as compliance, identification and internalisation, emphasise the significance of the significant other's conviction in the practical advantages of utilising the system (usefulness) (Venkatesh & Davis, 2000). However, it is likely that a person will have consistent impressions of ease of use based on the significant others' beliefs over their own beliefs, even while they get knowledge regarding a system's ease of use from their significant others.

Venkatesh and Bala (2008) hypothesised that anchors and adjustments influence PEU. Anchors have been connected to computers and their uses are individuals' prior perceptions of the system's ease of use. These four anchors include Computer Self-Efficacy (CSE), External Control (EC), Computer Anxiety (CA) and Computer Playfulness (CP).

The original TAM was discovered to outperform TAM 2 and TAM 3. This is due to its explained variance in Behavioural Intention (BI) (Tang & Chen, 2011). Venkatesh et al. (2003) looked at eight models and out of the eight, six models had better predictive validity with moderating variables. This was also similarly found by Chin et al. (2003), where a significant effect of moderating variables was identified, including age, gender and computer experience. Contrary to related literature findings, mediating variables' importance should not be overlooked. They may reveal exciting results of TAM, which were highlighted as the objectives of this study.

3.2.6 Unified Theory of Acceptance and Use of Technology (UTAUT)

TAM has sparked interest among researchers due to its robustness; simultaneously, its limitations have also provided more opportunities for extensions. The limitations of TAM led to the evolution of Venkatesh et al.'s (2003) Unified Theory of Acceptance and Use of

Technology (UTAUT), which has been widely acknowledged for its instruments used to measure technology acceptance. According to Ahmed et al. (2022), the UTAUT offers a framework that discusses technology utilisation and information systems (IS) acceptance. Both the Technology Acceptance Model (TAM) and UTAUT “proficiency allows for substantial technology acceptance and use research” (Ahmed et al., 2022, p. 84).

Venkatesh and colleagues developed the UTAUT, as depicted in Figure 3.7, to predict a newly developed technology used in the workplace.

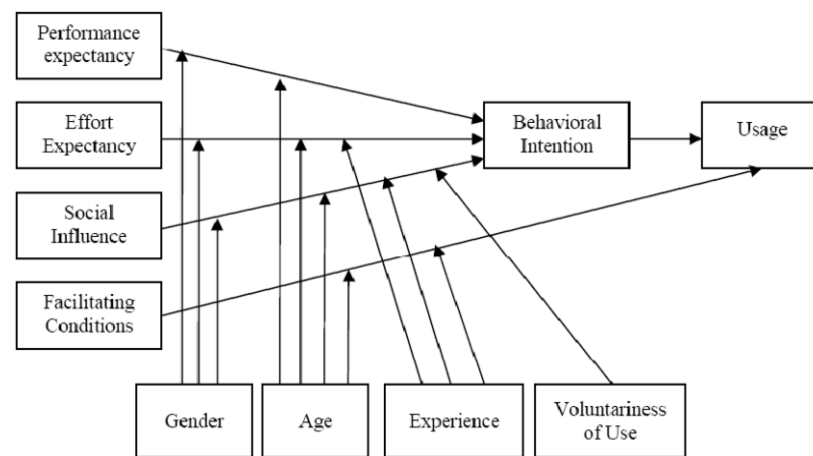


Figure 3.7: Unified Theory of Acceptance and Use of Technology (UTAUT)

(Ventakesh et al., 2003, p.447)

Their six-month longitudinal study aimed at understanding the usage of voluntary and mandatory technology. Venkatesh and colleagues thus designed a model that synthesised eight other research models, namely: Theory of Reasoned Action (TRA), Theory of Planned Behaviour (TPB), Technology Acceptance Model (TAM), Model of PC Utilization (MPCU), Innovation Diffusion Theory (DOI), Socio-Motivation Model (MM), Cognitive Theory (SCT) and Combined Theory of Technology Acceptance Model and Theory of Planned Behaviour (C-TAM-TPB) (Thongsri et al., 2018).

The four primary exogenous variables used for this model include Performance Expectancy (PE), Effort Expectancy (EE), Facilitating Conditions (FC) and Social Influence

(SI). Social influence is classified as how far a user believes that people important to him or her impact their use of the technology (Venkatesh et al., 2003). Performance Expectancy (PE) refers to “PE is defined as how users perceive that using the system can achieve better skills in their work performance” (Venkatesh et al., 2003, p. 447–453). Effort Expectancy (EE) refers to “the degree of ease associated with the use of the system” (Venkatesh et al., 2003, p. 447–453). EE is the users’ view that the ease of using the system is compatible with TAM’s PEU (Alshehri et al., 2019; Venkatesh et al., 2003). According to Venkatesh et al. (2003), PE and EE in UTAUT are similar to Perceived Usefulness (PU) and Perceived Ease of Use (PEU) in TAM (Adel-Ali & Arshad, 2018; Samaila et al., 2017). EE was also shown to have a significant relationship with Behavioural Intention (BI) to use the Learning Management System (LMS) (Alrawashdeh et al., 2012). The UTAUT was popularly chosen based on the added construct FC, recognised for its applicability in educational contexts (Buchanan et al., 2013). FC depicts how a user believes that the organisation and the current technical facilities support technology use (Venkatesh et al., 2003). The model also includes moderators such as gender, age, experience and voluntary usage. Venkatesh et al. (2003) argue that the moderators may lessen the impact of the four primary variables, PE, EE, SI and FC, on behavioural intention (BI).

The UTAUT was promising in predicting an individual’s technology acceptance by explaining 77% of the variance in Behavioural Intention (BI) and 52% in technological use (Venkatesh et al., 2013). However, studies have reported the inconsistency of results using this model. To illustrate this, Wang and Shih (2009) discovered that the variance in BI was 64.5%. Im et al. (2011) and Nassoura (2012) found a correlation between performance expectancy and BI, while Jairak et al. (2009) discovered no effect. The usage of Moodle indicated the connection between performance expectancy, effort expectancy, social

influence, conducive conditions and BI, which in turn led to the behaviour of the faculty members, according to research by Saleem et al. (2016). This was also influenced by four moderators: gender, age, experience and voluntariness of usage. The adoption of Moodle was likewise shown to be gender-unrelated. Despite having low expectations for Moodle, some users who are not Moodle users demonstrated positive performance predictions for overall technology use. The acceptance of Moodle is unaffected by the other UTAUT factors. Al Shehri (2017) assessed the effectiveness and acceptance of students on the Desire2Learn (D2L) e-learning system in Saudi Arabia. It was discovered that Performance Expectancy (PE), Effort Expectancy (EE) and Facilitating Conditions (FC) had positive relationships with Behavioural Intention (BI). Abbad (2021) attempted to survey students' intentions to use and actual use of Moodle in Jordan. The findings showed PE had the most influential impact on BI of Moodle use, followed by EE. Social Influence (SI) did not have any influence on BI. Both BI and FC had direct relationships with the actual use of Moodle. Dwivedi et al. (2019) used a subset of the UTAUT model without the moderators. Based on their findings, there may not be any difference in moderator for adoption and usage context. Venkatesh et al. (2016) asserted that there are few studies that include all moderators, which results in low generalisability of the findings, despite their widespread usage in many studies.

The limitations of the UTAUT were explicitly highlighted by Venkatesh et al. (2012). These include the model's lack of merit in generating higher parsimony values, whereby the complexity of the model and interactions among the attributes could be significant factors. Dwivedi et al. (2019) pointed out that the UTAUT model omitted some significant relationships and hypothesised relationships that may be inappropriate in some situations in explaining information system acceptance. Raza et al. (2020) mentioned that UTAUT did not consider attitude, anxiety and self-efficacy, the elements of intention.

Based on the findings of prior literature, Performance Expectancy (PE), Effort Expectancy (EE) and Facilitating conditions (FC) played a crucial role in impacting students' behavioural intentions in using e-learning systems. A number of factors can influence students' behavioural intentions and e-learning system utilisation and it is crucial that universities have a greater grasp of these elements so that they can employ the appropriate technology and encourage students to utilise the system.

Overall, the findings of these past studies provide merit and reflect the disadvantages of UTAUT. However, Ventakesh et al. (2003) cautioned that findings based on proven evidence should not be generalised and inferred wholly. What is most important is how the model fits the research context and how it changes its limitations as the model progresses in future research.

3.2.7 Comparison of the technology acceptance theories

An examination of different technology acceptance theories or models is essential to develop the most relevant theoretical model, which provides an overall picture of supporting concepts of theories or models that have been utilised in technology acceptance settings.

Having reviewed the commonly used technology acceptance theories in information systems (IS), it is undeniably right that it is complicated to choose the best model for this current study. This section highlights the arguments on both the positive and negative qualities of each model and how the author concludes by settling on the most appropriate model. The Theory of Reasoned Action (TRA), Theory of Planned Behaviour (TPB), Technology Acceptance Model (TAM), Technology Acceptance Model 2 (TAM 2), Technology Acceptance Model 3 (TAM 3) and Unified Theory of Acceptance and Use of Technology (UTAUT) are popular technology acceptance theories that are commonly used in various fields, including the Information System (IS).

The Theory of Reasoned Action (TRA) was discovered to possess a significant risk of confounding attitudes and norms since attitudes can be equivalent to norms. The prediction of user behaviour in situations such as when an individual intends to do something will be free to act without limitation. Some critics questioned its generality and the operation of some variables in the equation. This model “did not explain the findings that the best predictor of future behaviour is past behaviour” (Knabe, 2012, p. 24).

The Theory of Planned Behaviour (TPB) is recognised as the TRA's successor, which expanded the determinant of intention, Perceived Behavioural Control (PBC). Davis et al. (1989) argued that the social norm scales have shallow psychometric properties and may not necessarily impact Behavioural Intention (BI), especially when the Information System (IS) applications are voluntary. However, Samaradiwakara and Gunawardena (2014) stated that by changing predictors such as Attitude (ATT), Subjective Norm (SN) and Perceived Behavioural Control (PBC), the likelihood of an individual performing a specific action could be heightened, thus, increasing the opportunity to do it.

Both Theory of Reasoned Action (TRA) and Theory of Planned Behaviour (TPB) failed to consider environmental, economic and personal factors that can impact users' intentions. TRA and TPB are both theories of social psychology (Ajzen & Fishbein, 2005), while TAM was explicitly designed to fit into the context of technology, such as the LMS (Davis et al., 1989).

As discussed earlier, the Technology Acceptance Model (TAM) was primarily cited due to its simplicity and robustness. The Technology Acceptance Model 2 (TAM 2), which was later developed, included moderators and other variables such as experience and voluntariness, which can predict Subjective Norm (SN) and BI. TAM was noted to identify exogenous variables that influenced Perceived Usefulness (PU) but failed to note which

exogenous variables could predict PEU. TAM contributed 40% of the variance in user intentions (Davis et al., 1989) and 52% of TAM2, while TAM 3 explained 53% of the variance in user intentions (Venkatesh & Davis, 2000).

TAM 2 emerged as a theoretical assumption of TAM, which added the critical determinants of PU and usage intentions that function to understand how the effects of the determinants change after post-usage. The Unified Theory of Acceptance and Use of Technology (UTAUT) comprises four core determinants of intentions and usage and four moderators. Based on Venkatesh's (2003) theoretical perspective, the UTAUT model provides comprehensive knowledge on how the determinants of intention and behaviour change over time and that most of the critical relationships in the model are moderated.

The model comparisons discussed earlier reflected that each model has its pros and cons. The UTAUT was one of the most complex models compared to the TAM, while other pre-TAM models, namely TRA and TPB, were not considered ideal due to their limitations. As the model UTAUT is considered complex and may not be suitable for the current objectives of this research, adopting it would require plenty of resources and effort. Moreover, the variables used may not align with the nature of motivation and language learning purposes.

Therefore, TAM is considered the most reliable model for this study, as it has been validated in many fields and contexts. The popularity of TAM was also noted in many kinds of literature, including in Malaysia, although many findings have suggested extending it further. It was also proven to have shown inconsistencies in non-western contexts with lesser explanatory power. Thus, this study can fill this gap by examining a proposed extended TAM model with the mediating variables Perceived Enjoyment (PEN) and Satisfaction (SAT).

3.3 Model Extensions

Theory extensions come in various forms. Empirical studies incorporated part of or some comprehensive TAM extensions into its baseline model in various countries, both educational and non-educational settings. Some extensions can be seen in their exogenous, endogenous, moderating and new outcome mechanisms. The Technology Acceptance Model (TAM) underwent a series of extensions from its initial structure over the past few years. According to Al-Qeisi (2009), TAM was extended into three forms. The first was that TAM evolved based on other close-knit models, such as the Theory of Reasoned Action (TRA) and the Theory of Planned Behaviour (TPB). The second form involved new alternative beliefs in the model (diffusion innovation theory, e.g., compatibility, result demonstrability). The final form pertains to the applicability of external variables that affect the two cognitive variables, Perceived Usefulness (PU) and Perceived Ease of Use (PEU) (Al-Qeisi, 2009).

Scholars have carried out some efforts to extend TAM. These extensions were modified to suit the context of the study with a similar or comparative e-learning tool. TAM was extended to comprehend users' behavioural intention to use an online learning system. However, the models depicted in prior studies do not wholly explain the behavioural intention. Scholars often use one or a few variables within their TAM that denote behavioural intention, which may not explain users' intentions exclusively. Similar to the current study, these prior studies also recognised Structural Equation Modelling (SEM) as an analytical process for measuring technology-based models. The SEM analyses also proved that TAM is a valid model, although its generalisability may not be universal to all research environments.

Alharbi and Drew (2014) modified TAM to describe Saudi Arabian public university educators' intention to use the Learning Management System (LMS). Their model consists of seven variables, namely, Perceived Usefulness (PU), Perceived Ease of Use (PEU), Attitude Towards Usage (ATU), lack of LMS availability, LMS usage experience, job relevance and Behavioural Intention (BI) to use LMS. The model showed that there was an emergence of the direct and indirect effects of BI. PU, PEU and ATU significantly affected BI's use of LMS. The authors also used gender and academic rank moderators, which failed to correlate with other variables. LMS usage experience failed to establish any relationships with PU, PEU and BI. The authors established that future studies should be conducted with factor analysis, multiple regression and SEM.

Sanchez and Hueros (2010) aimed to determine the motivational factors behind 226 business students' satisfaction with Moodle. The study extended TAM with variables such as technical support, Perceived Self-Efficacy (PSE), PU, PEU, Attitude (ATT) and System Usage (SU). The results showed that technical support had a direct effect on PU and PEU. System usage did not influence PU, as the authors argued that students were forced to use Moodle. PSE was later removed after it was discovered to load onto the same variable as PEU. The authors suggested that future research should explore more variables affecting Moodle.

Yi and Hwang (2003) extended TAM by including three motivational variables, such as Application-Specific Self-Efficacy (ASE), Enjoyment (ENJ), Learning Goal Orientation (LGO), to predict the web-based information system Blackboard. Also included in this extended TAM were Perceived Ease of Use (PEU), Perceived Usefulness (PU), Behavioural Intention (BI) and Actual Use (AU). A survey took place after two weeks' trials of the system. The actual use of Blackboard was also done for eight weeks. The findings revealed

that three motivational variables were able to predict system use and also have the ability to explain their fundamental relationships to the original TAM variables. The ASE variable displayed more robustness in its effect on AU than BI. The authors summarised variables like Self-Efficacy (SE) and BI to be considered in future TAM-related studies. Yi and Hwang (2003) also proposed the opportunity to pinpoint the circumstances in which TAM partially mediates the impact of SE on system usage and in which SE outperforms BI in explaining AU (p. 443).

Fathema et al. (2015) extended the Technology Acceptance Model (TAM) to investigate how lecturers' beliefs and attitudes influence their intention and actual use of the LMS under conditions of non-mandatory usage. The findings revealed a valid extended TAM for determining acceptance behaviour. Their findings also implied that System Quality (SQ) strongly affects the participants' LMS use. The authors suggested duplicating similar studies in different settings to understand the implications of extended TAM.

John and Duangekanong (2018) extended Liaw's (2008) Three-Tier Technology Use Model (3-TUM). Liaw's 3-TUM comprised several models, such as TAM, Theory of Planned Behaviour (TPB) and Socio-Cognitive Theory (SCT). The 3-TUM also holds the concepts of motivation and SCT. They surveyed 270 respondents on their Moodle usage. The authors extended variables such as perceived self-efficacy (PSE), e-learning System Quality (ELSQ), Multimedia Instructions (MMI), Interactive Learning activities (ILA), Perceived Satisfaction (PS), Perceived Usefulness (PU), e-learning Effectiveness (EEF) and Behavioural Intention to use e-learning (BI). The model was analysed using Structural Equation Modelling (SEM). The findings exhibited that SQ and PSE were essential factors in predicting users' BI to use Moodle in Thai universities. The SEM analysis showed excellent model fit after one modification was made. The path models between MMI and

PU and between PU and BI were rejected. PSE, ELSQ, MMI, and ILA impacted respondents' PS of Moodle use. ELSQ remained the most prominent variable influencing PU. PSE and MMI had a direct and indirect effect on BI. The authors concluded that the extended model is valid for measuring students' Moodle use in Thailand. They also argued that SEM is suitable for measuring e-learning tools and is used in various contexts.

It can be implied that attempts have been made to incorporate motivational elements as variables to understand technological acceptance. The extended models were mostly adapted from pre-TAM models such as the Theory of Reasoned Action (TRA), the Theory of Planned Behaviour (TPB) and the Socio-Cognitive Theory (SCT), for instance, the 3-TUM model by Liaw (2008). For this study, the researcher extends TAM based on behavioural means to explicate language learners' use of the LMS in Malaysia. The following section highlights the Extended Technology Acceptance Model (ETAM) used in this study.

3.4 The conceptual framework of the Extended Technology Acceptance Model (ETAM)

The Technology Acceptance Model (TAM) can explain students' acceptance and adoption of an online learning system. Although TAM was initially developed for the organisational Information System (IS) context, both variables of Perceived Usefulness (PU) and Perceived Ease of Use (PEU) can reasonably be applied in various contexts.

This may be a disadvantage, as the model missed many important details that were not obvious. Many TAMs place much emphasis on the variables influencing technology adoption. Domain-specific elements, including language learning beliefs and motivation, were discovered in the literature on students' use of technology for language learning (Lai, 2013). The conceptualization of many components and how they interact with one another

is still lacking. The purpose of this study is to provide a framework for analysing Malaysian undergraduates' behavioural intentions to utilise LMS for English language instruction.

Prior literature portrayed a rich background for the current study's conceptual model to investigate learners' behavioural intentions to drive students to use LMS. In this section, the relevant variables TAM were applied to form the conceptual model of the extended technology acceptance model (ETAM) of this study, as shown in Figure 3.8.

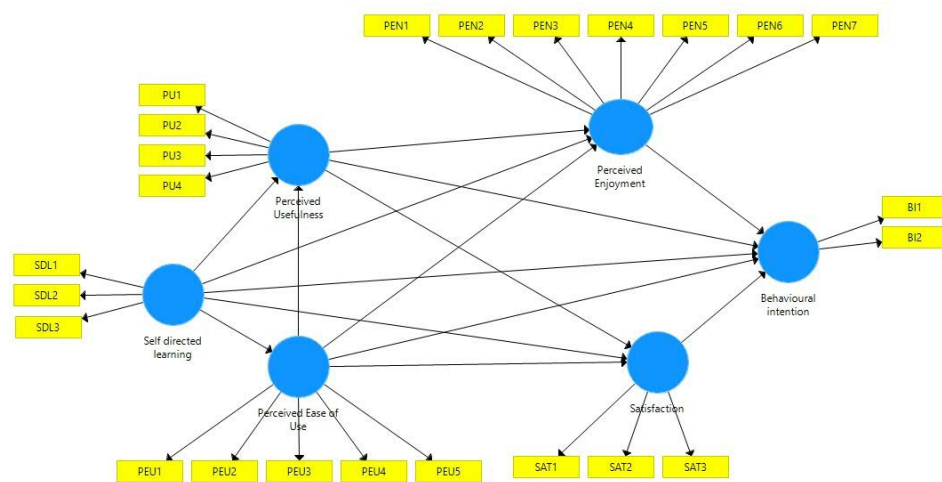


Figure 3.8: Conceptual Framework Extended Technology Acceptance Model (ETAM)

The framework of this current study is adapted from Liaw's (2008) 3-Tier Use Model (3-TUM), as depicted in Figure 3.9. Liaw argued that 3-TUM is a model that integrates multidisciplinary angles such as motivation, Socio-Cognitive Theory (SCT), the Theory of Planned Behaviour (TPB) and the Technology Acceptance Model (TAM). The 3-TUM framework highlights the importance of including individual characteristics and cognitive and affective beliefs to understand behavioural intention.

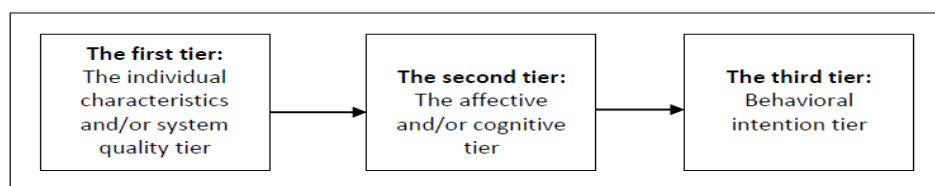


Figure 3.9: 3-TUM model (Liaw ,2007, p. 403)

Learners' characteristics have also been positively linked to students' acceptance of e-learning systems (Pituch & Lee, 2006). Passerini and Gragner (2000) exemplified three learner characteristics, namely, Self-Efficacy (SE), Learner Autonomy (LA) and Self-Directed Learning (SDL). Other studies used user characteristics and personal factors to replace learners' characteristics. Heinich (1996) pointed out that the user's features can enhance students' instructional technology use. Liaw (2008) 3-TUM asserts that learners' characteristics and system quality will positively affect learners' affective and cognitive components.

TAM will be compared for the investigation's benefit to understand how learners' ideas and views relate to one another. In this study, self-directed learning (SDL), often referred to as independent or exogenous variables, is employed as an external variable. Davis et al. (1989) and Hong et al. (2006) say that user intention will be affected by many outside factors that aren't included in the model. These include system features, training and other kinds of help. Determining the line of impact from these variables to the Behavioural Intention (BI) to utilise technology is one goal in studying external variables (Teo & Noyes, 2011). Self-Efficacy (SE), Subjective Norm (SN) and Facilitating Condition (FC) were significant external factors impacting attitudes toward and intentions toward using technology (Teo, 2009).

The extension of the Technology Acceptance Model (TAM) to suit the specific context of Learning Management Systems (LMS) in learning English is justified by the need

for a more comprehensive understanding of undergraduates' behavioural intentions towards LMS. While the TAM framework traditionally focused on Perceived Usefulness (PU) and Perceived Ease of Use (PEU) as key determinants of technology acceptance, it may not fully capture the intricacies of LMS adoption and usage in the language learning domain.

To provide a more holistic understanding of undergraduates' behavioural intentions, the Extended Technology Acceptance Model (ETAM) incorporates additional constructs that are particularly relevant to the context of LMS in learning English. Perceived Enjoyment (PEN) is an essential construct in the ETAM framework as it examines the extent to which individuals find using LMS enjoyable and satisfying. In learning English, incorporating elements that enhance enjoyment, such as interactive activities, gamification features and multimedia resources, can increase student engagement and motivation. PEN significantly influences students' behavioural intentions towards LMS, as a positive and enjoyable experience encourages continued usage.

The usefulness of a Learning Management System (LMS) in learning English is influenced by several key factors that help students perceive the value and benefits of the platform. First, the quality and relevance of the content available in the LMS play an essential role. Students expect their LMS to provide high-quality materials that meet their learning goals, including interactive multimedia resources, professional reading material and language exercises. Students' awareness of the usefulness of her LMS in supporting their language learning needs increases when the content is well-designed and tailored for different proficiency levels.

Another influencing factor is the effectiveness of the online communication and collaboration tools provided by the LMS. Features such as discussion forums, chat capabilities and collaborative workspaces encourage interaction and collaboration between

students and teachers. These tools provide opportunities for meaningful discussion, clarification and feedback, thereby fostering a sense of community and social learning. Implementing effective communication and collaboration tools increases student awareness of the usefulness of an LMS by providing opportunities for interaction and support. The usefulness of a Learning Management System (LMS) in learning English is influenced by several key factors that help students perceive the value and benefits of the platform. First, the quality and relevance of the content available in the LMS play an important role. Students expect their LMS to provide high-quality materials that meet their learning goals, including interactive multimedia resources, professional reading material and language exercises. Students' awareness of the usefulness of her LMS in supporting their language learning needs increases when the content is well designed and tailored for different proficiency levels.

In e-learning environments, students have the independence and freedom to learn anytime and anywhere; thus, this freedom could intensify behavioural intentions. This also justifies that students have a specific application of learner control and exercise their autonomous behaviour to regulate their intensity of use of the online learning platform. Learners are expected to exercise self-direction. Self-directed learning, as the term suggests, refers to the primary tendencies and competencies held by an individual, ensuring that they can themselves engage in the learning process (Taylor, 2019). Karaoğlu Yılmaz (2016) emphasised that self-directed learners are more actively engaged in the learning process than their counterparts. Hence, their overall involvement in learning activities like acquiring information, planning and evaluating the learning outcomes. Understanding that active learning strategies often increase students' participation and improve their learning process and performance outcomes is critical. Self-direction is the ability of the learners to govern themselves, in particular by making decisions and taking responsibility for their learning

process. Studies have extended self-directed learning, self-regulated learning and learner autonomy to explain technology acceptance (Abuhassna et al., 2020; Adel-Ali & Arshad, 2018; Al-Adwan, 2020).

A study by Zainuddin et al. (2019) highlighted that learners' self-directed learning skills were enhanced due to using LMS. The study conducted by Maphalala et al. (2021) revealed that self-directed learning is instrumental in promoting independent learning. Teachers and students in their study encountered several challenges in promoting self-directed learning during online learning as they were neither formally introduced to it nor had prior experiences. Wei and Chou (2020) emphasised that five critical attributes strategically determine the student's readiness to adapt to online learning practices. These attributes concern self-directed learning practices, high motivation, computer- or internet-driven self-efficacy and the ability to communicate effectively in online contexts. A study by Lee et al. (2019) delineated that self-directed learning plays a vital role in forecasting the degree to which students will engage in sustainable e-learning. Elzainy et al. (2020) highlight that for students to engage in self-directed learning, appropriate resources must be provided, adequate language must be used and the students' basics must be clear. Therefore, any challenges encountered on these grounds may negatively hamper the overall engagement of students in learning. Atmojo and Nugroho (2020) directed that to accept an online learning system; the students must be motivated and engaged in self-directed learning. Without these practices, students will refrain from adopting online learning. Thus, it can be stated that there is a lack of pertinent evidence available on how the self-directed learning practices of students can predict their behavioural intention to adopt LMS.

Lai et al. (2014) analysed the efficacy of an online training platform designed to increase learners' willingness and the knowledge and abilities required to engage in self-

directed (SD) technology use for language acquisition. The study comprised 80 undergraduates who were specifically to undergo 12 weeks of training. It adopts Hubbard's three-part training framework (Hubbard & Romeo, 2012), which targets pedagogical and general pedagogical training. The constructs were divided into two categories: factors related to learners' willingness to use technology (frequency of technology use, perceived usefulness, attitude, educational compatibility, enjoyment of learning, situated interpretation and social influence) and factors related to knowledge and skill base for technology use (technology self-efficacy, self-regulation and facilitating conditions).

The survey responses showed both pre- and post-training results through paired t-tests, indicating the effectiveness of the training in eliciting a greater self-directed use of technology for language learning and promoting students' willingness and stronger knowledge and skills to support such learning behaviour. The training also helped to create positive attitudes towards technology for language learning and increased students' perceptions of technology based on their learning needs and preferences. It taps into the students' confidence in selecting and using technology appropriately and effectively for language learning purposes. The study also failed to induce voluntary involvement among the students. The authors reasoned this with the interface design and the lack of institutional incentives offered to the students to support this training.

A study by Lai (2015) observed teachers' influence on learners' self-directed use of technology for language learning outside the classroom. A conceptual model of three types of teacher support, such as affection support, capacity support and behaviour support, was reported to encourage students' self-directed use of technology for learning beyond the classroom. An interview was conducted with 15 English as a Foreign Language (EFL) undergraduates. A total of 160 EFL learners were surveyed to test the hypothesised model.

The path analysis suggested that affection support influenced learner self-directed technology use and strengthened Perceived Usefulness (PU), while capacity support and behaviour support influenced learner self-directed technology use through enhanced Facilitating Conditions (FC) and Computer Self-Efficacy (CSE). The research findings show the significance of increasing teachers' understanding of the various roles they can play and strengthening their abilities to execute various roles to support self-directed learners' usage of technology for learning beyond the classroom.

In a different study, Lai et al. (2016) examined Chinese undergraduate students' engagement in online activities for 12 weeks. The curriculum successfully promoted a higher regularity of self-directed use of technology for language learning, sparking a stronger preparedness and more solid knowledge to support such learning behaviours, according to assessments of the students' survey responses before and after the training. In the post-test compared to the pre-test, learners reported significantly more positive attitudes toward technology use, positive perceptions of the compatibility of technology use with their learning needs and preferences and more positive perceptions of other people's expectations of technology use for English learning. These factors were associated with the learners' willingness to participate in the self-directed use of technology. Without a control group, it was challenging to make a definite claim, although comparing the participants' post-test and pre-test replies indicated an overall improvement in the self-directed use of technology for English learning and its related characteristics. Later, these researchers contrasted regular users of the training programme with less frequent users to look at the growth of self-directed technology usage and related characteristics. The metrics about the self-directed use of technology for language acquisition showed a rise in these two categories. At the beginning of the programme, there were no appreciable differences between the two clusters for any of

the metrics in the pre-test responses. Nevertheless, the results corroborated those obtained by comparing participants' pre- and post-surveys in general and suggest that the training did make a positive difference in the participants' self-directed use of technology for language learning for those who actively used the training program.

Besides, 58% of the participants described changing their English learning behaviours. A quick examination of the data exhibited that most frequent users (78%) reported changing their English learning behaviours after the training. This finding confirms that the training positively affected the participants' English learning behaviours, especially among the participants who frequented the training website and the recommended resources. An examination of the open-ended responses concerning the specific changes in English learning after the training revealed that the participants reported behavioural changes that reflected changes in their beliefs about language learning and technology use. More than 50% of the participants perceived the introduction of technological tools and the tips on effectively using them as quite useful or extremely useful to their English learning.

Although the study tried to enhance participants' involvement by making the training interactive, such as through instructor intervention (distributing the material as weekly tasks that are not being evaluated and conducting in-class debriefing sessions to ensure the compatibility of the educational endeavours with the subjects covered in the English curriculum), the study failed to encourage students' voluntary intensive involvement with the training content. As argued by the author, the finding might be due to the particular training's interface design, the voluntary nature of the training without institutional incentives and the program's external connection with in-class learning.

Resnik and Dewaele (2021) explored the impact of 510 European tertiary English as a foreign language (EFL) learners' emotions and analysed possible links to their trait

emotional intelligence (TEI) and learner autonomy (LA) during the COVID-19 outbreak. Findings from the data analyses showed that students' in-person classes were rated highly as significantly more enjoyable. It was found that foreign language enjoyment (FLE) and foreign language classroom anxiety (FLCA) were correlated positively in both contexts. TEI and LA were significantly correlated and positively linked to FLE and FLCA in both contexts. The authors summarised that autonomous and emotionally intelligent students tend to enjoy foreign language classes more. A Pearson correlation analysis was run to investigate the connections between the scales of two contexts.

Al-Adwan (2020) examined factors influencing 403 Jordan university students' Behavioural Intention (BI) to use Massive Open Online Courses (MOOCs) using a modified Technology Acceptance Model (TAM). The survey was online-based. The results revealed that students' BI was affected by PU and PEU. Computer self-efficacy and perceived convenience positively affect BI through PU and PEU. Learning tradition has a negative indirect effect on BI through self-regulated learning (SRL). A critical finding of this study is that SRL has a negative effect on BI. It indicates that students with low autonomous learning skills will be more likely to resist MOOCs than those with higher self-management learning competencies. Students need to be more autonomous and self-directed in online environments such as MOOCs. As the interaction between students and instructors can be less than in face-to-face learning, the students should prioritise responsibility and learner control. This finding provides practical implications for instructors to tap into learners' behaviour to employ strategies to increase their self-directed learning.

Some findings in prior literature revealed the effects of integrating LMS into tertiary English language courses and research has been conducted on learner autonomy and technology usage (Nguyen & Le, 2021). Learner autonomy and self-directed learning are

occasionally interwoven and have gained prominence in language instruction. These two concepts were also applied to technology for language learning.

A study by Abuhassna et al. (2020) explores potential factors influencing students' academic achievement and satisfaction with online learning platforms. The type of platform was not highlighted in their study. The study is based on Transactional Distance Theory (TDT) and Bloom's Taxonomy Theory (BTT). 243 university students participated in the online survey. The findings showed that students' backgrounds, experiences, collaborations, interactions and autonomy positively affect students' satisfaction.

In a recent study by Zhu et al. (2023), a qualitative study looked at students' Self-Directed Learning (SDL) strategies and online course satisfaction. The researchers used thematic analysis to analyse semi-structured interviews with 15 American graduate students attending online courses. The findings offer numerous key insights. First, students' SDL was affected by their entering motivation (interest in knowledge acquisition, course value) and task-motivating strategies (teaching presence, course engagement). Second, students monitored their learning using cognitive strategies (critical reading, information seeking) and metacognitive strategies (reflection, assignments). Thirdly, students used time- and resource-management strategies (scheduling). Fourth, students' satisfaction depended on course design (e.g., well-structured organisation) and instructional approaches (e.g., teaching presence). The interviews were performed online using Zoom and lasted approximately 30 minutes. The Zoom interviews were transcribed verbatim. This study indicated that students used various SDL methods. Graduate students showed great enthusiasm and eagerness to learn. In addition to initial motivation, task motivation was crucial for maintaining student engagement throughout the course. Instructors' teaching presence significantly impacts students' task motivation. According to students' responses,

instructors' teaching styles and course structure significantly impact student satisfaction with online learning. Participants indicated higher satisfaction with instructors who were flexible, accommodating, sympathetic, engaged, available and tech-savvy. Due to the flexibility of online learning, learners must take charge of their own learning, managing learning resources and time. Overall, students mentioned that well-structured online courses can also satisfy them.

While learners were generally satisfied with online learning, their satisfaction was heavily influenced by course structure and delivery.

Ya-Chu and Kuo Hung (2011) researched a cohort of Taiwan's telecommunication company staff to investigate their acceptance of e-learning in their training. They adopted TAM and diffusion innovation theory to evaluate Perceived Usefulness (PU), Perceived Ease of Use (PEU) and self-directed learning motivation, attitude towards computers and organisational influence on e-learning. A total of 571 employees took part in the survey. The results showed that the staff's age, job position, marital status, education level and job unit scale significantly impacted their behavioural intention to use e-learning. Employees' self-directed learning, attitude towards computers and organisational influence positively impacted PU and PEU. Both PU and PEU were found to affect the use of e-learning systems positively. The authors concluded that the staff's attitude towards e-learning might influence their training results, thus enhancing their self-directed learning ability. They also informed that learning could be more active and efficient through e-learning. The support from all staff before the training may function as a resource to make the staff learn to use the system quickly and the transparency of the training, such as its goals and learning content, should be made known to staff to increase the capacity of the e-learning.

Thus, this study extended Self-Directed Learning (SDL) into the model, as learners should be trained to be more self-directed when using the LMS. As of now, SDL skills have already started to become essential and are seen as a form of learning strategy. With the adoption of technology in the curriculum, Kirk (2012) asserts that the integration of technology enhances the level of SDL, which is seen as a predictor of technological use, while Holt (2011) emphasises that there is a relationship between SDL and technological use. SDL is essential to ensure students' accessibility to information for their own learning needs and technological developments increase students' capacity to self-direct. Learners are forced to remain active and more self-directed when accessing technological tools. Studies have shown the effects of technology in support of SDL. Therefore, it is critical to maximise the potential of technology for learning to enhance SDL's use of technology for language learning purposes. Understanding the nature of language learners' SDL use of technology outside the language classroom is the initial effort to support self-directed use of technology for language learning (Lai, 2013).

The two central cognitive beliefs, Perceived Usefulness (PU) and Perceived Ease of Use (PEU) were adopted from Technology Acceptance Model (TAM) and will also be included in the Extended Technology Acceptance Model (ETAM). Both Perceived Usefulness (PU) and Perceived Ease of Use (PEU) are factors that intrinsically motivate users to accept, adopt and use technologies (Igbaria & Iivari, 1995; Sanchez & Hueros, 2010). If users do not have enough motivation and purpose for using e-learning systems, they will not use them and systems will eventually be useless (Pituch & Lee, 2006).

The acceptance or rejection of technology is found to depend upon the attribute of perceived usefulness. Perceived Usefulness (PU) is a simple term that refers to the belief

held by the user that a given technology or innovation will help them enhance their performance outcomes (Tarhini et al., 2015).

Students with higher PU with LMS were also more satisfied with its use than others. Several scholars highlighted that PU played a critical role in influencing the student's intention to adopt LMS or their satisfaction with LMS (Ajjola et al., 2019; Panergayo & Aliazas, 2021; Tambunan, 2020). Another eminent factor that shapes the behavioural intention of an individual towards acceptance of any new technology or innovation is Perceived Ease of Use (PEU) (Iriani & Andjarwati, 2020). PEU can be outlined as the extent to which an individual or user believes that a given technology can be utilised efficiently, i.e., through minimum efforts (Tarhini et al., 2015). When users perceive that a given technology is challenging to use and demands more effort, they are found to restrain from using it. One of the primary reasons for such reluctance is that they assume that conventional methods are less time-consuming and can provide better results (Abdel-Maksoud, 2018). Thus, it can be stated that when students perceive that the LMS is easy to use, they will tend to adopt it more than when it is not easy to use.

Affective beliefs such as Perceived Enjoyment (PEN) and Satisfaction (SAT) were also included in the model. As suggested and pointed out by Lee et al. (2017), affective factors were minimally explored in the Technology Acceptance Model (TAM). Affective beliefs are able to drive users to use LMS (Davis et al., 1992; Venkatesh & Bala, 2008). Davis et al. (1992) defined PEN as an intrinsic reward gained while using a particular technology, while Venkatesh and Speier (2000) identified PEN as intrinsic motivation. PEN also refers to the pleasure of doing a task. Davis and his colleagues extended PEN in TAM 3 and discovered its significance as the variable influencing word-processing adoption

intention. As mentioned by Moon and Kim (2001), a system that is easy to use will be less threatening to its user, enhancing the enjoyment and effect of PEU.

Perceived Enjoyment (PEN) is defined as “the extent to which the activity of using a specific system is perceived to be pleasurable in its right, aside from any performance consequences resulting from system use” (Venkatesh, 2000, p. 351). PEN was also defined as the extent to which the activities or services offered by the LMS are perceived to be enjoyable in their own right, apart from any performance consequences that may be anticipated (Khalid, 2014; Van der Heijden, 2004). Igbaria et al. (1994) and Davis et al. (1992) used enjoyment and fun separately as a belief variable; however, this study will maintain perceived enjoyment as a sole variable.

Perceived Enjoyment (PEN) is derived from the flow theory, wherein a given activity that is perceived to be enjoyable is performed multiple times. It differs from conventional users’ Perceived Usefulness (PU) or Perceived Ease of Use (PEU) of a given thing for enhancing further performance outcomes (Navarro et al., 2021). Wu and Gao (2011) highlight PEN in the case of LMS as the degree to which users consider it enjoyable, entertaining, fun and a framework that makes academic learning interesting and exciting. Davis also found that PEU and PEN were significant determinants of BI. Intrinsic motivation refers to the pleasure and satisfaction of performing a behaviour (Doll & Ajzen, 1992). If individuals are intrinsically motivated, they experience fun or challenge rather than other drives such as pressures or rewards (Ryan & Deci, 2000). Intrinsic motivators represent a student’s subjective feelings of joy, happiness, pleasure and positive experience. Studies have also found PEN to be a robust construct connected to the TAM constructed by PU and PEU in explaining the intention to use technology (Teo & Noyes, 2011).

Teo and Noyes (2011) examined the influence of perceived enjoyment on 153 pre-service teachers' attitudes and intentions to use technology, utilising TAM as a theoretical model. Structural Equation Modelling (SEM) was performed. The results showed that PEN was a significant predictor of PU, PEU and INT to use technology and that attitude (ATT) towards use moderately contributed to TAM.

Khalid's (2014) study aimed to understand the factors that hinder users' use of online learning after their initial use. Her research examined undergraduates' responses to e-learning, which utilised the Liaw (2008) Three-Tier Technology Use Model (3-TUM) survey. The variables used in this study were system quality, PEN, PU and BI. Her findings contributed to two results. First, system quality should be used to understand users' attitudes or usage towards LMS and PU and PEN also plays a fundamental role in employing an individual's intention to use LMS and not PU. Overall, the extended 3-TUM was suitable for measuring students' continuous intention to use LMS. Based on the findings, some implications were highlighted: system quality (SQ) should be considered when assessing users' attitudes toward using LMS. Second, PU and PEN are critical in determining an individual's intention to use them. Third, the findings indicate that system quality significantly impacts the intention to use LMS. Therefore, a successful LMS should always take SQ into account. The author also suggested looking into other online learning systems and assessing instructors' intentions to use LMS and other established models.

Findik-Coşkunçay et al. (2018) uncovered characteristics influencing higher education students' behavioural intention to use the LMS (Net-ClassR). The technology acceptance model, namely LMS-TAM, with Perceived Usefulness (PU), Perceived Ease of Use (PEU) and external factors like Self-efficacy (SE), Enjoyment (ENJ), Subjective Norm (SN), Satisfaction (SAT), Interactivity and Control (IC), was extended. The online survey

was distributed to 470 university students. It was evaluated and validated using structural equation modelling, namely the partial least squares (PLS) method. Factors such as PU, PEU and ENJ had significant positive relationships with BI, while SN and SE did not have any relationships.

Alraimi et al. (2015) used the continuance expectation confirmation model to study factors that increase an individual's intention to continue using MOOCs. A total of 316 respondents who utilised three MOOC platforms (Coursera, edX and Udacity) took part in the online survey. This study explored perceived openness, reputation and confirmation of user motivation (perceived usefulness and enjoyment). It appears to explain a significant portion of the variance in continuation intention, which is impacted by perceptions of openness and two motivational factors (perceived usefulness and enjoyment). The data were analysed using SmartPLS-SEM. Their findings also discovered that Perceived Enjoyment (PEN) and Usefulness (PU) also affected user Satisfaction (SAT) and intent to continue using MOOCs (MCI). This study experimentally extended the IS continuous model by integrating perceived openness and perceived reputation, which are fundamental MOOC traits whose significance has been indicated or missed. Perceived openness and reputation explained much of the research model variance. The authors suggested extending other variables, such as user or technological characteristics, for future studies to explain intention.

A study by Chen and Hwang (2019) examined the effect of self-regulation along with the UTAUT factors on the intention to learn using the Learning Management System (LMS). Results of the study showed that PEN favourably improved students' perceptions of usefulness (PU) and usability (PU) and had a substantially more significant effect on their behavioural intention (PEU).

In their study, Chandra and Napitupulu (2021) sought to identify the variables that impacted university students' behaviour intentions and levels of satisfaction with LMS. The study's findings demonstrated that PEU was among the best predictors of LMS usage intention and satisfaction. Prior studies have highlighted that perceived ease of use (PEU) is one of the major influential factors that impact the adoption and satisfaction level of the users of LMS (Bove & Conklin, 2019; Eraslan & Kutlu, 2019; Fearnley & Amora, 2020; Saroia & Gao, 2019). However, these studies failed to find any prior evidence concerning the role of perceived ease of use in predicting whether students learning English will adopt LMS to enhance the effectiveness of their language outcomes.

Research has been conducted to investigate the factors influencing the continued usage intention of Blackboard by university instructors by Mouakket and Bettayeb (2015). The survey included 158 professors from the United Arab Emirates (UAE). In this study, the expectation-confirmation paradigm (ECM) was used. The criteria under investigation were pertinent to organisational, technical and personal traits. The results showed that Perceived Usefulness (PU) had an impact on Blackboard satisfaction and that both SAT and PU played a role in instructors' desire to continue using the platform. PU and satisfaction were impacted by the user interface design. Technical assistance affected the PU. PU was impacted by training, but not SAT. The self-efficacy of computers had little effect on PU. User interface design is crucial while using Blackboard, as the authors emphasise. It should be more user-friendly so users will perceive its benefits, be satisfied and continue using it. As PU was found to affect SAT and BI, the authors suggested that continuous instructors' training sessions should be provided by universities for personal development and customised based on their needs. The authors also emphasised technical support to cater to the instructors when they face the challenges of using an online system. The author concluded that future studies

should extend to other research contexts, using other online platforms and variables, in particular learner and technological and organisational characteristics, to understand students' intentions.

Al-Azawei and Lundqvist (2015) extended the factors of TAM to examine the perceived SAT of Arab respondents in an online learning environment. The factors they used were learning styles, gender and self-efficacy. Learning style was proposed to be the chief factor in the study. Seventy participants volunteered to complete the survey. The scholars used Felder and Silverman Learning Styles (FSLSM) to gauge the pedagogical implications of learning styles on learners' SAT. Partial Least Square Structural Equation Modeling (PLS-SEM) analysis was used for the hypothesised relationships. Their model achieved an acceptable fit and explained 44.8% of the variance. PU was shown to be the best predictor, whereas Online Self-Efficacy (OSE) and Perceived Ease of Use (PEU) failed to show a direct impact on perceived Satisfaction (SAT). Learning styles and gender diversity directly influenced the dependent factors. Hence, the researcher recommended that other variables may have to be combined to improve the predictive power of the model.

Cigdem and Ozturk (2016) examined factors affecting students' Behavioural Intention (BI) to use LMS at a Turkish post-secondary vocational school using a three-tier model. A total of 155 students took part in their study. The data were collected via an online survey using the Pearson correlation coefficient and linear regression analysis. The results of their research showed that multimedia instruction had a direct influence on Perceived Usefulness (PU) and Perceived Ease of Use (PEU). Interactivity, on the other hand, directly impacted satisfaction (SAT). Therefore, SAT exerts its significance on Perceived Usefulness (PU) and Perceived Ease of Use (PEU). PU was also discovered to have a direct relationship with BI to use LMS. The authors suggested the importance of better and more multimedia

features and the LMS's interactivity to boost students' PU and PEU. Both factors were able to help increase students' engagement.

In the context of the Middle East, Abdel-Maksoud (2017) examined the relationship between students' satisfaction with a new Learning Management System called "Acadox" and their opinions of its PU and PEU. This research used a descriptive correlational design to survey the relationships among variables. A web-based survey was designed to measure students' satisfaction with Acadox, its usefulness and ease of use. Data were collected from 75 participants who enrolled in Arcadox-based courses as a learning management system in Egypt. Her study revealed that students' perceptions of PEU and PU were significant predictors of SAT when using Acadox. In addition, the findings of this study revealed that participants' opinions of ease of use and usefulness were significant predictors of satisfaction with Acadox.

Teo et al. (2019) want to identify the factors influencing students' intention to adopt Moodle in Macau. 564 students completed the survey using the adapted Diffusion Innovation Theory and Technology Acceptance Model (TAM) questionnaire. The research model was validated and showed a good fit. Both PU and PEU were found to predict Behavioural Intentions (BI). PEU, output quality, triability and subjective norm were correlated with PU. Technological complexity and triability affected PEU. The authors found that students' attitudes, PU, and perceived behavioural control played significant roles in explaining BI. Their model explained 66% of Moodle BI.

Kim and Lee (2020) used the information systems continuance expectation-confirmation model to look at the structural links between people's plans to keep using Korean Massive Open Online Courses (K-MOOC) and the factors that affected those plans. 156 Korean university students took an online survey. Structural Equation Modelling

partially supports college students' intent to use K-MOOC. Perceived usefulness and confirmation are significant predictors of satisfaction and continuance intention to use K-MOOC, whereas confirmation was the only significant predictor of satisfaction in K-MOOC. Findings show that confirmation affects perceived usefulness, satisfaction and continuance intention, but perceived usefulness does not. Participants also provided some factors that caused them to be satisfied and dissatisfied with using the online system through their written responses. The authors pointed out the importance of understanding the cross-cultural learner characteristics of MOOCs.

Falah et al. (2020) study aimed to investigate students' intentions to use mobile technology and their willingness to adopt mobile application learning management systems. The authors hypothesised the Technology Acceptance Model (TAM) with m-learning self-efficacy (MSE), subjective norm (SN), system accessibility (SA), perceived usefulness (PU), perceived ease of use (PEU), attitude towards usage (ATT) and behavioural intention (BI) to use m-learning. The findings revealed that MSE, SN, and SA (external variables) have a significant influence on PU, PEU, and ATT. SE, SA, PU, PEU, and ATT were able to affect intention to use m-learning significantly. The authors pointed out that the extended TAM variables had a positive effect on students' intentions to use the mobile learning management system (m-LMS) in Jordan. As argued by the authors, universities are encouraged to develop a user-friendly mobile-LMS that can increase students' satisfaction and fully utilise the m-LMS.

Mailizar et al.'s (2021) study investigates factors that impact university students' behavioural intentions toward e-learning use during the COVID-19 pandemic. A total of 109 university students took part in the online survey. The authors utilised an extended TAM framework that includes System Quality (SQ) and e-learning experience (external construct),

PEU, PU, attitude towards use (ATT), and Behavioural Intention (BI). PLS-SEM was used for data analysis.

Han and Sa (2021) examine students' acceptance of and satisfaction with online educational classes using the technology acceptance model (TAM) during the COVID-19 outbreak in Korea. A total of 313 university students took part in this study. The data was analysed using structural equation modelling. It was found that Perceived Ease of Use (PEU) had a positive influence on Perceived Usefulness (PU). Both PEU and PU had a significant relationship on Satisfaction (SAT). PU and SAT had a significant relationship on Acceptance Intention (AI). PEU was found to have a negative relationship with AI.

Existing literature has showcased evidence about the role of PEN in using LMS to be statistically associated with Behavioural Intention (BI) to adopt LMS technology and determine its satisfaction level (Ahmed et al., 2022; Navarro et al., 2021). On the other hand, studies conducted by other scholars delineated that PEN is not a significant predictor of behavioural intention to use a given technology (Almisad & Alsalam, 2020; El-Masri Tarhini, 2017 & Lai, 2020).

Satisfaction is an "individual feeling of pleasure or depression toward something as a result of comparison between his expectations and the perceived outcomes" (Kotler & Keller, 2012). Particularly in the case of technology, satisfaction is defined as "the individual's perceptions of the extent to which the system meets their needs and expectations" (Ives et al., 1983). It is a significant measure for predicting the degree to which users will be willing to adopt or use a given technology or system. It is critical to understand that the satisfaction of both learners and instructors plays a pivotal role in accepting LMS. The user's satisfaction can be defined as the "total perceived value of a student's educational experiences in an educational institution" (Almarashdeh, 2016). Thus, in simple terms,

students' satisfaction with the Learning Management System (LMS) largely depends on how much their informational needs are fulfilled. According to Ghazal et al. (2018), many factors affect the satisfaction level of the users in concern with LMS in developing countries. These factors include self-competencies, instructional efforts, the availability and accessibility of resources and the ICT infrastructure.

Hammouri and Abu-Shanab (2018) outlined that the users majorly judge the extent to which they want to use or are willing to continue using LMS based on the extent to which they are satisfied with the system. It was also found that their satisfaction level has potential implications for their absenteeism level, performance, productivity and commitment levels, respectively. Based on this evidence, it can be emphasised that an increase in satisfaction level will tend to increase the tendency toward LMS adoption. Similarly, through his study, Welch (2017) reflected that if students encounter several challenges in accessing and utilising LMS, it can cause frustration in the learning process. These challenges may also be faced due to their computer proficiency, biased perceptions towards the new system and lack of motivation, which may hamper the satisfaction level of the students and further showcase a negative impact on their behavioural intention to adopt LMS. Another study by Mohd Nasir et al. (2021) reflected that Perceived Usefulness (PU) is found to have a significant role in predicting the satisfaction level of users. According to them, if the students do not perceive LMS to be useful, their satisfaction level will decrease, while it will increase if they perceive LMS to be useful. Findik-Coşkunçay et al. (2018) highlighted that the lack of “face-to-face” interaction in the LMS courses is also one of the critical attributes contributing to dissatisfaction with utilising LMS. A similar finding was also found by Al-Samarraie et al. (2018), who aimed to delineate the factors that determine the continued satisfaction of students with e-learning. It can be stated that a wide range of studies have

revealed the factors that may impact the satisfaction level of the students in using LMS, its eminence and its further implications. Nonetheless, there is a lack of evidence on factors that impact the satisfaction of the students in using LMS for English learning and its impact on their behavioural intention to use it.

The final variable used in this study is Behavioural Intention (BI). Behavioural Intention (BI) is referred to as a “cognitive process of an individual’s readiness to perform a specific behaviour” (Mailizar et al., 2021). The theories supporting this research include Socio-Cognitive Theory (SCT) by Bandura (1986) and TAM to examine their relationships. Bandura (1986) argued that a person’s behaviour strongly impacts what they think, feel and believe. On the other hand, the TPB theory asserts that BI is a motivational factor that influences a given behaviour, where if the individual holds a firm intention to perform a behaviour, the more likely they will perform the behaviour.

In light of the findings in prior literature, there is a need to identify factors that drive students’ behavioural intention to use LMS. Overall, if LMS users have high self-direction in using the LMS, the higher the users’ Perceived Ease of Use (PEU) and Perceived Usefulness (PU) of the e-learning system will be. The researcher also believes that learners who use the LMS frequently and with its informative contents and quality teaching materials are more likely to perceive it as easy to use and useful, feel enjoyable and satisfied and intend to use the LMS in their English language learning.

3.4.1 The effects of Self-Directed Learning (SDL) and Perceived Usefulness (PU)

Ya-Chu and Kuo Hung (2011) tested the hypothesis of H1, “SDL had a significant positive effect on the PU of e-learning,” which gained the result of ($\beta = 0.61, p < 0.01$) and the hypothesis also revealed that the staff’s PU of e-learning positively affected their behavioural intention (BI) to use the e-learning system.

The findings of Lai (2015) showed that the respondents held positive perceptions of technological resources for language learning ($M = 4.47$, $SD = 0.57$) and were quite confident about their abilities to use technology for language learning ($M = 4.49$, $SD = 0.73$) and language learning purposes outside their language classroom. Their conceptual model was analysed using Analysis of Moment Structure (AMOS) and the model showed excellent fit ($\chi^2/df=1.04$, $RMSEA=0.02$, $CFI=1.00$, $TLI=1.00$). Affection support indirectly influenced Self-Directed Learning (SDL) through Perceived Usefulness (PU) ($\beta=0.08$, $p<0.01$) and PU ($\beta=0.27$, $p<0.001$). Capacity support and behaviour support were found to have a significant positive effect on SDL use of technology ($\beta=0.03$, $p<0.01$) and their indirect effect, which was mediated by facilitating conditions (FC), CSE and PU ($\beta=0.05$, $p<0.01$). In the study by Al-Adwan (2020), Self-Regulated Learning (SRL) and PU were found to have a significant relationship ($\beta = -0.204$, $t = 3.27$, $p<0.001$).

With this support from literature, this study thus hypothesises that:

H1 Self-Directed Learning (SDL) has a significant effect on Perceived Usefulness (PU).

3.4.2 The effects of Self-Directed Learning (SDL) and Perceived Ease of Use (PEU)

In a similar study, Ya-Chu and Kuo-Hung (2011) confirmed the relationship between Self-Directed Learning (SDL) and Perceived Ease of Use (PEU). The external variable influenced Perceived Usefulness (PU) and PEU of TAM. SDL had a significant positive effect on PEU of e-learning,” which resulted in ($\beta=0.61$, $p<0.01$) and confirmed the hypothesis.

The above literature would provide support for the following hypothesis:

H2 Self-Directed Learning (SDL) has a significant effect on Perceived Ease of Use (PEU)

3.4.3 The effects of Self-Directed Learning (SDL) and Behavioural Intention (BI)

One of the aims of this study is to extend Self-Directed Learning (SDL) as a primary construct in the extended TAM of this study. So far, there is still no evidence to support the SDL (Behavioural Intention (BI) relationship. However, the study by Adel-Ali and Arshad (2018) used the construct of learner autonomy (LA), which is a part of SDL. Therefore, the authors tested this research's direct relationship between LA and BI. The result showed ($\beta=0.568, t=9.431, p<0.001$). Thus, their hypothesis of LA and BI's direct relationship was strongly supported. Also discovered in their study was that LA held the most substantial effect size, with $F^2 = 0.467$. On the other hand, SRL was found to have a positive relationship with BI ($\beta = -0.16, t = 2.79, p<0.05$). Al-Adwan (2020) discovered that there was a positive correlation between Self-Regulated Learning (SRL) and Behavioural Intention (BI) ($\beta = -0.16, t = 2.792, p<0.005$).

Thus, in this study, the researcher hypothesised that:

H3 Self-Directed Learning (SDL) has a significant effect on Behavioural Intention (BI)

3.4.4 The effects of Self-Directed Learning (SDL) and Perceived Enjoyment (PEN)

The findings of Resnik and Dewaele (2021) revealed that learner autonomy positively correlated with Foreign Language Enjoyment (FLE). Learner autonomy (LA) ($M=.146, SD=p<0.08$) for in-person and ($M=.146, SD=p<0.08$) for online. Another study by Lai et al. (2014) showed that 58% of their participants reported changing their English learning behaviours. The chi-square test between self-reported change in English language behaviours was significant ($\chi^2=71.12, p=0.000$).

Thus, in this study, the researcher hypothesised that:

H4 Self-Directed Learning (SDL) has a significant effect on Perceived Enjoyment (PEN)

3.4.5 The effects of Self-Directed Learning (SDL) and Satisfaction (SAT)

According to Abuhassna et al. (2020), students' autonomy is positively correlated with their satisfaction with utilising online learning platforms. The path coefficient was ($\beta=.4.70$, $S.E.=.061$, $C.R.=7.7$, $p<0.01$).

Therefore, in this study, the researcher hypothesised that:

H4 Self-Directed Learning (SDL) has a significant effect on Satisfaction (SAT)

3.4.6 The effects of Perceived Usefulness (PU) and Perceived Enjoyment (PEN)

Teo and Noyes (2011) found that the path analysis revealed a direct relationship between PEN and PU. The path coefficient was ($\beta=.624$, $t=6.957$, $p<0.01$) and supported their hypothesis. A regression analysis was performed to check the influence of PEN on PU in Khalid's (2014) study. The result shows that the PEN accounted for 30% of the variance in PU ($F = 49.06$, $p = 0.00$, $R^2 = 0.30$). The hypothesised relationship between ENJ and PU was found to be supported ($\beta = 0.30$, $t = 5.38$, $p<.01$) in Findik-Coşkunçay et al. (2018).

Based on the literature above, the following hypothesis has been suggested:

H6 Perceived Usefulness (PU) has a significant effect on Perceived Enjoyment (PEN)

3.4.7 The effects of Perceived Usefulness (PU) and Satisfaction (SAT)

The findings of their hypothesis between PU and SAT in the study by Alraimi et al. (2015) were rejected ($\beta = 0.06$, $t = 0.84$). The hypothesised relationship between PU and SAT was found to be ($\beta = 0.418$, $p<0.001$) in the study by Mouakket and Bettayeb (2015). The hypothesised relationship between PU and SAT ($\beta = .03$, $t = .17$, $p = .87$) was rejected for the study by Kim and Lee (2020). Han and Sa (2021) hypothesised that PU has a significant effect on SAT and their hypothesis was supported ($\beta = 0.703$, $t = 11.701$, $p<0.001$).

Therefore, in this study, the researcher hypothesised that:

H7 Perceived Usefulness (PU) has a significant effect on Satisfaction (SAT)

3.4.8 The effects of Perceived Usefulness (PU) and Behavioural Intention (BI)

The hypothesised relationship between PU and BI was found to be significant ($\beta = 0.207, t = p < 0.05$) in the Mouakket and Bettayeb (2015) study. Alraimi et al. (2015) found that PU and Continuance Intention (MCI) were shown to be positive ($\beta = 0.177, t = 3.28, p < 0.001$). Teo et al. (2019) hypothesised that the relationship between PU and BI was significant ($\beta = 0.14, t = 7.381, p < 0.05$). Al-Adwan (2020) hypothesised PU and BI and found a positive direct relationship between these two constructs ($\beta = 0.39, t = 5.39, p < 0.001$). Han and Sa (2021) hypothesised that PU has a significant effect on Acceptance Intention and their hypothesis was supported ($\beta = 0.189, t = 3.54, p < 0.001$).

Kim and Lee (2020) study discovered otherwise for the hypothesis of PU and Continuance Intention (CI) ($\beta = -.09, t = -1.05, p = .09$). The hypothesis was thus rejected. The hypothesised relationship between PU and BI was insignificant in the study by Mailizar et al. (2021) ($\beta = 0.11, t = 1.033, p = 0.151$).

Based on the literature above, it is hypothesised that:

H8 Perceived Usefulness (PU) has a significant effect on Behavioural Intention (BI)

3.4.9 The effects of Perceived Ease of Use (PEU) and Perceived Usefulness (PU)

In a similar study by Teo et al. (2019), the hypothesised relationship between PEU and PU was supported ($\beta = 0.25, t = 7.38, p < 0.001$). This hypothesised relationship was also discovered by Al Adwan (2020) ($\beta = 0.323, t = 7.378, p < 0.001$). Han and Sa (2021) hypothesised that PEU has a significant effect on PU and their hypothesis was supported ($\beta = 0.526, t = 11.701, p < 0.001$).

Thus, it is hypothesised that:

H9 Perceived Ease of Use (PEU) has a significant effect on Perceived Usefulness (PU)

3.4.10 The effects of Perceived Ease of Use (PEU) and Perceived Enjoyment (PEN)

In a similar study by Findik-Coşkunçay et al. (2018), ENJ was also hypothesised to have a direct relationship with PEU. This relationship was positive ($\beta = 0.24, t = 4.05, p < .01$). Therefore, it is hypothesised that:

H10 Perceived Ease of Use (PEU) has a significant effect on Perceived Enjoyment (PEN)

3.4.11 The effects of Perceived Ease of Use (PEU) and Satisfaction (SAT)

User satisfaction is extensively acknowledged as a desirable outcome of any product or service experience because it is one of the most important criteria for measuring IS success. In most studies on Information Technology (IT) success, Satisfaction (SAT) was used to monitor product or service quality in addition to predicting behavioural consequences. User SAT has often considered an individual's feelings of pleasure or disappointment resulting from comparing a product's performance (or outcome) to their expectations (Chiu et al., 2005). SAT is defined as the individual's perception of the extent to which their needs, goals and desires have been fully met (Sánchez & Hueros, 2010). Wang and Wang (2009) defined the SAT as the 'overall view of the information system (IS). Users are more likely to continue using a system if their level of SAT with the system and Perceived Usefulness (PU) of the system is high (Bhattacharjee, 2001). Findings from past and recent studies also parallel the significant positive direct effects of Perceived Ease of Use (PEU) and SAT.

Al-Azawei and Lunqvist (2015) results displayed a direct effect of ($\beta = 0.069, t = 4.35, p < 0.001$) and an indirect effect of ($\beta = 0.171, t = 1.836$ and total effect = 0.240). Cigdem and Ozturk (2016) regression analysis revealed a significant result of ($R^2 = .466, F(5,149) = 25.975, p < .001$). Also observed in the findings were that interactivity, PEU and

PU tended to exert significantly positive influences on the SAT. Pearson correlation was performed. The result showed ($r = 0.608^{**}$, 0.000), which indicates a positive relationship between participants' satisfaction with Acadox and their perceptions of its ease of use. The correlation between Perceived Usefulness (PU) and Satisfaction (SAT) was revealed ($r = 0.564$, $p < 0.001$). It meant a positive relationship between participants' SAT in Acadox and their perceptions of its usefulness. A multi-regression analysis was also performed. The result showed ($F = 93.826$, $p < .001$). Both PU and PEU were proven to be significant predictors of students' satisfaction with Acadox. The study's findings were consistent with what was discovered in TAM: that both beliefs PU and Perceived Ease of Use (PEU) were useful variables in users' acceptance. Similarly, Han and Sa (2021) hypothesised that PEU has a significant effect on SAT and their hypothesis was supported ($\beta = 0.120$, $t = 2.239$, $p < .05$).

Users of online learning platforms will continue to use the system if they are satisfied. Studies also suggest that users' PEU would increase with more exploratory behaviour, for example, their many trials of using the system. Overall, users would improve their LMS usage abilities in various situations when it is required, boosting their PEU and later forming happy sentiments. The researcher thus expected that these language learners would become more motivated to utilise the LMS as a result of their excellent SAT scores. Given the strong theoretical support for the association between the user's PEU and SAT, the researcher proposed the following hypothesis:

H11 PEU has a significant effect on the SAT.

3.4.12 The effects of Perceived Ease of Use (PEU) and Behavioural Intention (BI)

In a similar study by Falah et al. (2020), PEU was also hypothesised to have a direct relationship with continuance intention. This relationship was positive ($\beta = 0.554$, $p < .05$).

Al-Adwan (2020) hypothesised a relationship between PEU and BI and found a significant direct relationship ($\beta = 0.32, t = 4.51, p < 0.001$). Han and Sa (2021) found a significant effect of PEU and Acceptance Intention ($\beta = 0.19, SE = .053, t = .553$).

Thus, it is hypothesised that:

H12 Perceived Ease of Use (PEU) has a significant effect on Behavioural Intention (BI)

3.4.13 The effects of Perceived Enjoyment (PEN) and Behavioural Intention (BI)

Khalid (2014) regression analysis discovered that PEN was the most significant predictor for BI ($F = 132.89, p = 0.00, R^2 = 0.53$). PEN accounted for 53% of the variance in BI to use LMS. In a similar study by Alraimi et al. (2015), PEN was found to affect MOOCs' continuance intention (MCI) significantly ($\beta = 0.76, t = 2.79, p < 0.001$). A study by Findik-Coşkunçay et al. (2018) found that Perceived Enjoyment (PEN) had a direct relationship with BI. Their findings revealed that $PEN \rightarrow BI$ showed ($\beta = 0.10, t = 2.62, p < .05$).

Therefore, it is hypothesised that:

H13 Perceived Enjoyment (PEN) has a significant effect on Behavioural Intention (BI)

3.4.14 The effects of Satisfaction (SAT) and Behavioural Intention (BI)

The findings of Alraimi et al. (2015) also revealed that SAT influenced MOOCs' Continuance Intention (MCI) positively ($\beta = 0.179, t = 2.32, p < 0.05$). Mouakket and Bettayeb (2015) discovered that SAT has a significant relationship with Continuance Intention ($\beta = 0.776, p < 0.001$). The authors concluded that satisfaction was found to play a more robust role in determining university instructors' continuance intention of using Blackboard. Han and Sa (2021) hypothesised that SAT has a significant effect on Acceptance Intention and their hypothesis was supported ($\beta = 0.768, t = 14.11, p < 0.001$).

Thus, it is hypothesised that:

H14 Satisfaction (SAT) has a significant effect on Behavioural Intention (BI)

3.4.15 The effects of Perceived Usefulness (PU), Perceived Enjoyment (PEN) and Behavioural Intention (BI)

As mentioned in Section 3.4.6, studies conducted by Mouakket and Bettayeb (2015), Teo et al. (2019) and Al-Adwan (2020) have shown positive relationships between PU and BI. It was also found that PEN has a direct effect on BI, as discovered in the studies of Khalid (2014), Alraimi et al. (2015) and Findik-Coşkunçay et al. (2018), as described in Section 3.4.11.

A recent study by Maheshwari (2020) was performed to identify factors that impact students' intentions to study online in Vietnam. A total of 145 respondents participated in this study. The author hypothesised that Perceived Enjoyment (PEN) will have an indirect effect on extrinsic factors (Internet Communication Technology Infrastructure Support and Internet Resources) and Online Learning Intentions. This hypothesis was supported.

Hung (2022) aims to examine the mediating effects of foreign language enjoyment, anxiety and self-efficacy on the relationship between Chinese college students' perceptions of teacher emotional caring and intrinsic motivation in EFL classrooms. A total of 1464 undergraduates from China took part in this study. It was found that foreign language enjoyment and anxiety mediated the relationship between a teacher's emotional support and intrinsic motivation to learn English ($\beta = 0.563$, $SE = 0.016$, $p < 0.001$).

Based on the confirmed literature, the mediator (perceived enjoyment) is most likely in a causal relationship with behavioural intention. Thus, for this study, it is hypothesised that:

H15 Perceived Enjoyment (PEN) will mediate the effect of Perceived Ease of Use (PEU) on Behavioural Intention (BI).

3.4.16 The effects of Perceived Ease of Use (PEU), Satisfaction (SAT) and Behavioural Intention (BI)

As mentioned in Section 3.4.9, PEU was found to have a direct relationship with SAT, as confirmed by Al-Azawei and Lunqvist (2015), Cigdem and Ozturk (2016) and Abdel-Maksoud (2017). Based on what was discussed in Section 3.4.12, the variable SAT was also shown to portray a direct relationship with BI, as confirmed by Alraimi et al. (2015) and Mouakket and Bettayeb (2015). Other studies by Kim and Lee (2020), Chao (2019) and Pozón-López et al. (2021) also found a similar relationship between satisfaction and intention.

In other studies, SAT was also used as a mediator. This was evident in the studies by Nugroho et al. (2019), Joo et al. (2018) and Ngah et al. (2022). Based on these past studies, the mediator (satisfaction) is most likely in a causal relationship with behavioural intention. As such, the following hypothesis is established:

H16 Satisfaction (Sat) will mediate the effect of Perceived Usefulness (PU) on Behavioural Intention (BI).

3.5 Chapter Summary

This chapter was divided into three sections. The first section outlined an overview of the chapter. The second section discussed the developments of three models, namely the Theory of Reasoned Action (TRA), the Theory of Planned Behaviour (TPB), the Technology Acceptance Model (TAM), the Technology Acceptance Model 2 (TAM 2), the Technology Acceptance Model 3 (TAM 3) and the Unified Theory Acceptance of the Use and Use of Technology (UTAUT), as well as the comparison of the models and the justifications for using TAM as the best model for this study. This research focuses on the TAM that Davis et al. (1989) developed to explain students' behavioural intention to use the Learning

Management System (LMS) in learning English. It also explained the literature review concerning TAM in e-learning studies.

The final section revealed the development of the theoretical framework used in this study and its linkage to its hypothesised relationships and the literature that supported it. The research model comprised six variables. Out of these six variables, sixteen hypotheses were formulated. The development of the current model is strategically different from the existing model, taking into account the fact that prevailing models have not been directed towards outlining the factors affecting the adoption of LMS in the ESL context, particularly other mediating factors.

Moreover, the theoretical framework was adopted from the notion of Socio-Cognitive Theory (SCT) by Albert Bandura. The following chapter will describe the demographics of the respondents and the analysis of the reliability and validity of the pilot study.

CHAPTER 4

RESEARCH METHODOLOGY

4.1 Overview

This chapter is divided into nine distinct sections. The initial section describes the research paradigm; the second section discusses the research design of this study. The following sections narrate the sampling design, the target population of this study and the sampling technique. The following section clarifies the research instruments implemented and the data analyses used to analyse this study. The chapter ends with a summary.

4.2 Research Paradigm

This study applied a causal research design using quantitative data collection techniques. This technique is used because the researcher aims to develop a valid and reliable instrument to obtain information and test, validate and prove the hypotheses. This method was employed due to its ability to obtain information and examine the generalisability of specific factors (Wright, 1996). The quantitative approach also aims to minimise biases and escalate the confidence level of the goodness of the data collected (Sekaran, 2000).

Additionally, positivistic philosophy, a school of thought developed in the 19th century by Auguste Comte, served as the foundation for this study. Due to its crucial functions and objective methodology based on quantitative observation with generalised outcomes, positivism is used in numerous study sectors, including business, the natural sciences and education, according to Walliman (2005). This approach is used by positivists to gather information from the questionnaire and conduct statistical analysis to provide an objective conclusion (Creswell, 2008). Due to a number of reasons, including its capacity to

look for causes and facts of diverse social phenomena while offering a logical explanation, the researcher chose to employ the positivist method (Hale & Napier, 2013). The percentage of students who have shown a behavioural intent to use the Learning Management System (LMS) may be measured and the link between the variables used in the TAM model can be examined to determine the importance of the effect. This philosophy also builds associations with certain theories or practises by establishing causal relationships and correlations between variables. This research served as the foundation for Davis' Technology Acceptance Model (TAM). Using this model as a foundation, each of the variables employed in this study had the trait of imposing a behavioural intention to use an LMS.

4.3 Research Design

In research investigations, the methods used for data collection, analysis, interpretation and reporting are referred to as the research design (Creswell & Plano Clark 2007, p. 58). It is connected to the study's framework, which serves as a manual for carrying out the research. For this study, a quantitative research strategy was adopted. It entails measuring the goals, such as causal connections or mediation (Preacher & Hayes, 2008). Such a research plan is quite organised. In this study, structured questionnaires that were adapted from earlier research were employed. They were distributed to participants in order to gather initial data for this study. In this manner, the researcher selects a sample from a subset of people and asks them research-related questions. The feedback will be based on the opinions of the whole population from which the sample size was drawn (Sekaran, 2006). According to Chua (2020), survey research is one of the most popular non-experimental research methods in the social sciences. Survey research is usually used to describe the subject's characteristics used in the study.

In order to characterise, compare, or explain people's knowledge, attitudes, or behaviours, surveys collect data from or about individuals (Preacher & Hayes, 2016). Surveys are commonly used in descriptive and exploratory research to learn more about people, things, or situations. A descriptive study's objective, according to Boru (2018), is to describe a scenario, person, event, or explain how things are connected to one another. Despite this, it is best suited for a relatively new or unexplored research subject because it cannot explain why an event occurred. An exploratory study has been chosen when there is insufficient knowledge of a phenomenon or an issue that has not been properly recognised (Saunders et al., 2015). Its objective is to explore the subject matter at various depths rather than to provide clear-cut solutions to the research questions. In order to examine, characterise and analyse undergraduates' behavioural intention to use the LMS to learn English in Malaysia, this study draws on the scant empirical information found in the literature review of studies that are similar to the one under consideration.

4.4 Sample Design

Probability sampling is distinguished from non-probability sampling. In this study, non-probability sampling is employed. There are several varieties of non-probability sampling, including convenience sampling, purposive sampling, self-selection sampling, quota sampling and snowball sampling (Bhardwaj, 2019). This research selects and utilises the technique of purposive sampling. As non-probability sampling and the technique of purposive sampling are employed in this study to focus on the features of a population that are of interest, there are only a few requirements that must be met to conduct this study (Mauldin, 2020).

4.5 Target Population

The target population of the current study is undergraduates from Malaysian universities. This will help the current study address its primary aim of describing factors that affect students' behavioural intentions to use LMS to learn English. This study will select undergraduates from Malaysian universities who use LMS as part of a blended learning tool to learn English. Based on this population, participants who agreed to participate in this survey are recognised as the samples of this study.

4.6 Sampling technique

The research will not be performed without identifying its target respondents. Sampling is completed when representative numbers of targeted populations are chosen, and later data collection is executed to infer the targeted population.

This study's respondents comprised university students who enrolled as full-time students. These students were enrolled during the semesters of 2016–2018. They were undergraduates taking diploma and bachelor's degrees and enrolled in English classes during the course of their studies. These students also utilise the Learning Management System (LMS) in the English classes. The purpose of choosing the undergraduates as the targeted population is because they are full-time students and have physical classes supplemented with the LMS during their English lessons.

For this study, a set of questionnaires was disseminated through a Google survey. Moreover, purposive sampling was used for this research because it is convenient and members of the targeted population are easy to obtain. This is the most frequently used method of non-probability sampling. This sampling technique is frequently used in social science research. Purposive sampling is a technique in which researchers select members of the population who are easily accessible and willing to respond (Etikan et al., 2016). The

sampling strategy strategically positions this study's limited resources, such as money and time, to collect data without compromising the research outcome (Sekaran, 2006). The sampling technique can be selected due to the non-parametric character of PLS-SEM analysis. The respondents in this study volunteered to answer the questionnaire.

As a general rule, the minimum number of respondents or sample size is five times the number of independent variables to be tested. On the other hand, Hair et al. (2010) proposed a ten-to-one ratio as an acceptable ratio. In this study, due to the impossibility of obtaining a list of all population elements, the researcher used a non-probability sampling technique called purposive sampling and those who were not involved were excluded from the sample. The samples were undergraduates studying full-time at the public university where the research is conducted. A formal letter requesting institutions' permission was sent to this particular public higher education institution. When permission was granted, the questionnaire link was sent to the respondents and the institution's management confirmed.

It is critical to identify the potential data analysis for this study to select the correct sampling technique. In this scenario, Partial Linear Square-Structure Equation Modelling is the most appropriate approach to identify the impact of constructs inside an early exploratory model (PLS-SEM). The goal of this second-generation statistical analysis is to "maximise the explained variances of endogenous latent constructs (dependent variables) and build theories in exploratory studies or for prediction purposes in studies" (Ramayah et al., 2018, p. 5). While the PLS-SEM techniques are discussed in greater depth in the latter part of this chapter, this offers a framework for establishing the appropriate sample size for this study.

The sample size for this investigation was determined using power assessments that considered the model structure, predicted significance levels and estimated effect sizes. Hair and his colleagues used these criteria to make their power tables, which are also known as

the "minimum R-square technique," which helps researchers figure out the right sample size for any PLS-SEM-based study (Hair et al., 2017). Cohen's (1992) power tables for least squares regression were used as a guide. This method is grounded on a table listing the smallest sample sizes required for three variables (Kock, 2018). The maximum number of arrows pointing at the variables in a model is the first criterion of the minimum R^2 method. The second is the significance level used, while the last criterion is the model's minimum R^2 .

Based on these, the minimum sample size for this study was justifiable through the minimum R^2 , as depicted in Figure 4.1. Given that this study employs five dependent arrows pointing at the latent variable (i.e., dependent variable) and seeks a 5% significance level with a minimum R^2 score of 0.10, 147 samples are required (Hair et al., 2014, p. 21). The final sample size used in this study is 443. The number of respondents who answered the survey was able to meet the benchmark criteria set by the guidelines for sampling using the PLS-SEM R^2 method, as suggested by Hair et al. (2017).

4.7 Development of research instrument

The fundamental element of every research project is to select the most appropriate instrumentation for completing the research. The instrument used for data collection in this study was a survey questionnaire. A survey questionnaire is a data collection method used

to collect, gather and interpret the targeted population's perceptions using a written set of questions that the respondents complete (Ahmad & Usop, 2011).

Maximum Number of Arrows Pointing at a Construct	Significance Level											
	1%				5%				10%			
	Minimum R ²				Minimum R ²				Minimum R ²			
	0.10	0.25	0.50	0.75	0.10	0.25	0.50	0.75	0.10	0.25	0.50	0.75
2	158	75	47	38	110	52	33	26	88	41	26	21
3	176	84	53	42	124	59	38	30	100	48	30	25
4	191	91	58	46	137	65	42	33	111	53	34	27
5	205	98	62	50	147	70	45	36	120	58	37	30
6	217	103	66	53	157	75	48	39	128	62	40	32
7	228	109	69	56	166	80	51	41	136	66	42	35
8	238	114	73	59	174	84	54	44	143	69	45	37
9	247	119	76	62	181	88	57	46	150	73	47	39
10	256	123	79	64	189	91	59	48	156	76	49	41

Figure 4.1: Minimum R² method for adequate sampling technique

Extracted from Hair et al. (2017), “A primer on partial least squares structural equation modelling (PLS-SEM)”, *Thousand Oaks: SAGE*

According to De Vaus (2001) and Easterby-Smith (2002), questionnaires are one of the most popular data collection methods for researchers nowadays. Besides, researchers also collect data from specifically selected samples. Therefore, questionnaires are also regarded as efficient data collection methods to examine and measure the excellent results of the researcher's requirements and interests aligned with the research's objective (Sekaran & Bougie, 2010).

Furthermore, instruments also have the advantages of increasing the standardisation and generality of the data and making the respondents more confident in providing a truthful answer (Aaker et al., 1995). Thus, the proposed research design is best suited to be aligned with the objective of the research in this study. Statistical Package for the Social Sciences

(SPSS) was used to perform the validity and reliability test to determine whether the items were valid and reliable.

The samples chosen consisted of full-time students from a public institution of higher learning. Hence, the instrument consisted of 24 items that used a five-point Likert Scale ranging from “1= Strongly Disagree to 5= Strongly Agree”, which was designed to ensure valid and reliable measurement of all the variables under this study. The 5-point Likert scale gives participants the choice of neutrality and the probability of decreasing bias behaviour over other alternatives (Croasmun & Ostrom, 2011).

Besides that, the items consist of two sections: Section A and Section B. The main section A of the survey comprised five questions to understand the respondents' demographics. These include socio-demographic information such as their sex, age and Learning Management System (LMS) experience. For the second section B, 24 items were asked to assess the students' perceptions of the LMS. The items covered the six variables from the conceptual model used in the current study. These variables were taken from the Technology Acceptance Model.

The measurement scales for the variables used in this study were adapted from previous studies (Table 4.1). The items were from prior technology-based research. Some changes were made to the wording to fit the research objectives and the current research context. They were developed to collect data for a sample of the population and to understand their demographics (sex, age and Learning Management System experience). The items were also pilot-tested among 54 respondents before the actual study. As the adapted items (except Kam, 2011) were tested in non-western contexts, testing these items among different demographics can also generate empirical findings about a developing country such as Malaysia.

Table 4.1: Measurements used for this study and adapted sources

Variable	Name of variable	Items	Adapted from (Source)
Variable 1	Self-directed learning	SDL1 I can practise listening activities through the online learning system at my own pace.	I find that with Moodle, I can do more self-study at home (Kam, 2011)
		SDL2 By reading articles provided in the online learning system help me increase my writing proficiency.	I can access Moodle from my home (Kam, 2011)
		SDL3 Writing English essays and uploading them in the online learning system help me improve my English.	I find that with Moodle, I can do more self-study at home (Kam, 2011)
2	Perceived Usefulness (PU)	PU1 The online learning system is useful for my English language learning process.	Using WriteOne in the MBA program would increase my productivity (Davis, 1989)
		PU2 Using the online learning system is important as it allows me to improve my presentation skills in English.	
		PU3 The online learning system is useful because it helps me enhance my language performance.	Using WriteOne in the MBA program would increase my productivity (Davis, 1989)
		PU4 Using the online learning system to enhance my English is an excellent idea.	

Table 4.1 continued

3	Perceived Ease of Use (PEU)	PEU1 Learning to use the online learning system is easy for me.	
		PEU2 The language quizzes posted through the online learning system is easy to use.	I would find WriteOne easy to use (Davis, 1989)
		PEU3 It finds it easier to do my language revision through the online learning system.	I would find it easy to get WriteOne to do what I want it to do (Davis, 1989)
		PEU4 I can obtain feedback from my peers and lecturers easily through the online learning system on my written assignment.	
		PEU5 I find it easy to track spelling errors through the online learning system	
4	Perceived Enjoyment (PEN)	PEN1 I have fun using the online learning system to improve my writing skills.	I have fun using the website (Mun & Hwang, 2003)
		PEN2 I find the language quizzes through the online learning system flexible as I can do it anytime I like.	I do not have any difficulties completing the online quizzes (Kam, 2011)
		PEN3 Once I start participating in the interactive English activities through the online learning system, I find it hard to stop as I enjoy using it.	I find the website to be enjoyable (Mun & Hwang, 2003)
		PEN4 I am always looking forward to use the online learning system to communicate with my lecturers and my peers.	I feel Moodle improved my communication with my classmates (Kam, 2011)

Table 4.1 continued

		PEN5 The online learning system helps me to appreciate English language learning more.	I feel Moodle improved my communication with my lecturer (Kam, 2011).
		PEN 6 The online learning system allows me to practise listening in a more interesting way.	
5	Satisfaction (SAT)	SAT1 I am satisfied with my English language proficiency after using the online learning system. SAT2 I am satisfied with the quality of learning through the online learning system. SAT3 I am satisfied with the feedback given by my lecturer (answers for tutorials/comm ents).	I am satisfied with my overall experience with OBD. (Bhattachjee, 2001)
6	Behavioural Intention (BI)	BI1 I plan to participate in more online learning activities in the future. BI2 I will strongly recommend that others use the online learning system to improve their English.	I intend to continue to use Moodle in learning in the future. (Davis, 1989) I expect that I will use Moodle in learning in the future. Davis (1989)

4.7.1 Measurement of Self-Directed Learning (SDL)

The final variable chosen in this research is Self-Directed Learning (SDL). This variable was extended in Kam (2011). Some sample items include “I can practise listening activities through the online learning system at my own pace” and “Reading articles provided

in the online learning system helps me increase my writing proficiency.” The questionnaire was adapted from Kam (2011).

The rationale for adapting the questionnaire is to assess if the LMS increased students’ efforts in their self-study outside the classroom. Kam (2011) found that 44% of his respondents did out-of-class activities through the LMS. His respondents also used the LMS for online quizzes and access to teaching and learning materials. Students’ ratings for the current study can provide valuable insights into self-directed learning and technology use.

4.7.2 Measurement of Perceived Usefulness (PU)

The information provided through the Learning Management System (LMS) should be deemed proper or beneficial for language learners. They should also be helpful to the learners. The researcher has adapted questionnaires developed by Davis (1989).

The statements include “The online learning system is useful for my English language learning process,” “The online learning system is useful because it helps me enhance my language performance,” and “The online learning system is important as it allows me to improve my presentation skills in English.” The rationale for adopting these statements is to elicit participants’ perceptions of the usefulness of the learning management system used at the institution and the attitudinal aspects of English learning.

4.7.3 Measurement of Perceived Ease of Use (PEU)

Another variable taken from the Technology Acceptance Model (TAM) is Perceived Ease of Use (PEU) by Davis (1989). The operation and information provided by the Learning Management System (LMS) should be easily operated and understood. The examples of statements of PEU were “Learning to use the online learning system is easy for me,” “The language quiz posted through the online learning system is easy to use,” and “I

can obtain feedback from my peers and lecturers easily through the online learning system on my written assignment.” The rationale for adopting the questionnaire is to determine if the LMS has user-friendly features that allow the students to navigate across the system and features that can help them complete their language learning tasks. Lai et al. (2014) found that the interface design was one of the reasons why their participants failed to be voluntarily involved in online training. Multazam et al. (2022) pointed out that the participants in their study struggled with the Learning Management System (LMS), as they thought it had few features for correcting paragraph writing and difficulties in creating a video.

4.7.4 Measurement of Perceived Enjoyment (PEN)

A total of seven items were used to measure perceived enjoyment. Lai et al. (2014) highlighted that enjoyment is an attitudinal aspect. The items were adapted from Mun and Hwang (2001), Kam (2011) and Teo and Noyes (2011). The statements include “I have fun using the online learning system to improve my writing skills” and “I find the language quizzes through the online learning system flexible as I can do them anytime I like.”

The rationale for adapting this questionnaire from Mun and Hwang (2003), Kam (2011) and Teo and Noyes (2011) is that they can provide insights on how LMS can function as a student's educational experience. Will the students perceive the LMS as an annoyance or a useful learning tool? The items used for the current study also allow for a better understanding of how communication is possible through LMS, be it in synchronous or asynchronous modes, just like face-to-face class sessions. This will also allow students to improve their communication skills—speaking and writing. Students will also develop habits to participate in class discussions, ask questions to seek knowledge, interact with their lecturers and peers in an online learning community and build a sense of togetherness

through the virtual platform. The items can elicit how students use the LMS to learn English skills such as speaking and writing.

4.7.5 Measurement of Satisfaction (SAT)

The scales measuring satisfaction by Bhattacharjee (2001) were adapted. Besides, there were a total of three items measuring satisfaction. The statements for this construct include “I am satisfied with my English language proficiency after using the online learning system”.

The rationale for adapting this questionnaire is to obtain feedback amongst the students on how LMS can be a good tool to enhance their English proficiency, quality of learning and the quantity of feedback obtained from the lecturers. According to Han and Sa (2021), identifying online educational satisfaction allows a better understanding of the quality and if it meets learners’ expectations. Satisfaction is a driving force enabling learners to continue learning and improving learners’ participation and outcomes (Palmer & Holt, 2010).

4.7.6 Measurement of Behavioural Intention (BI)

The last variable chosen in this research is BI. This is also a variable taken from the TAM and adapted from Davis et al. (1989). The sample statements used were “I plan to participate in more language learning activities through the online learning system” and “I will recommend others to use the online learning system to enhance their vocabulary in the future.” The rationale for adapting these questionnaires is to understand if the LMS can still be used as a learning tool to learn English in the future. This also means that the activities can generate positive students’ perceptions of their language learning.

4.7.7 Pilot study, validity and reliability of the instruments

The measurement procedures and instruments used had acceptable levels of reliability and validity before embarking on the actual study. The instruments used in this study were adapted from prior literature. The conceptual framework for the research can be found in Section 3.4, which later guided the formulation of the questionnaires.

A pilot test was employed to assess the degree to which the statement items in the questionnaire were valid in terms of validity and reliability. This is to ensure A total of 54 respondents answered the twenty-four-item survey. The data were analysed for reliability and validity. For the validity of instruments, face and construct validity were performed.

4.7.8 Pilot study

A pilot test allows respondents' comprehension of the questionnaire by Schade (2015) before an actual study is performed. For the researcher, it allows them to identify problems such as word choice and jargon, which may affect the research process. Besides, researchers can improvise questionnaires to achieve better accuracy and reliability. This allows relevant and useful information to support the research. Thus, the actual outcome of the questionnaire would meet the expected outcome (Schade, 2015).

The validity and reliability should be established before analysing the relationship between the measurement model and the hypothesised model. The reliability of the measurement can be examined in various ways. Authors Polit and Hungler (2006) identified three aspects: stability, internal consistency and equivalence. The internal consistency approach to estimating an instrument's reliability is the most widely used. The pilot study was conducted among undergraduates at a private university in Malaysia.

Data gathered from the pilot study were analysed using the Statistical Program for Social Science (SPSS) to determine the internal reliability consistency, or, in other words,

Cronbach's alpha reliability. The values for each variable are presented in Table 4.3. Findings revealed that all of the instruments used for this study could meet the benchmark value set (0.6), as highlighted by Sharma (2016) and depicted in Table 4.2.

Table 4.2: Reliability using Cronbach's Alpha (Sharma, 2016)

Cronbach's alpha	Reliability
$\alpha \geq 0.9$	Excellent
$0.9 \geq \alpha \geq 0.8$	Good
$0.8 \geq \alpha \geq 0.7$	Acceptable
$0.7 \geq \alpha \geq 0.6$	Questionable
$0.6 \geq \alpha \geq 0.5$	Poor

Table 4.3: Pilot study findings on Cronbach's alpha values for all variables

Constructs Name	Number of Observable Indicators	Cronbach Alpha Score
Self-Directed Learning	3	0.70
Perceived Ease of Use	5	0.83
Perceived Usefulness	4	0.88
Perceived Enjoyment	7	0.94
Satisfaction	3	0.89
Behavioural Intention	2	0.78

Validity is how the instrument can measure what it is supposed to measure (Thatcher, 2010). The criteria for validity are based on content and construct validity. In this research, the content validity of the questionnaire is acknowledged by experts' validation. Expert

validation is based on face the validity of the content and comprehensibility of the research instruments (Taherdoost, 2018). Construct validity in this study employed internal consistency reliability through Cronbach's alpha values, including convergent and discriminant validity values.

To sum up, validity concerns whether the researcher measures the fundamental concepts, while reliability concerns the stability and consistency of research instruments (Sekaran & Bougie, 2010). They are significant in research as they are used to improve the accuracy of the evaluation and assessment of research (Tavakol and Dennick, 2011).

4.7.9 Data Collection Procedures for the Pilot Study

Data were obtained from participants recognised as undergraduates studying at a public institution in Malaysia who use the Learning Management System (LMS) to learn English. This study utilised an online-based survey to obtain information from various universities for two years (2016–2018). Before the pre-test was administered, an identification code was given to the students for the online survey. Also, participants were invited through email. A link for the survey where participants were invited to participate was also sent along with the email. Two reminders were later sent to smooth data collection procedures. These participants volunteered and their details were also kept confidential.

The pilot study disseminated questionnaires to one private institution in East Malaysia. The respondents were chosen based on purposive sampling. These respondents have previously used the LMS, which was used campus-wide. Besides, they have also used LMS for their English language course.

Overall, 54 respondents completed the pilot test. The respondents' opinions were keyed into SPSS to generate the reliability and validity of the items. In addition, reliability analysis for the pilot study's measurement scale was carried out.

A pilot test was performed to ensure the targeted respondents answered the reasonable probability questions. The pilot test also allows respondents to comprehend the questionnaire (Schade, 2015). For the researcher, it allows them to identify problems such as word choice and jargon, which may affect the research process. Besides, researchers can improvise questionnaires to achieve better accuracy and reliability. This allows relevant and useful information to support the research. Thus, the actual outcome of the questionnaire would meet the expected outcome (Schade, 2015). Connelley (2008) suggested that the sample size should be 10% of the research's sample size. During the pilot study, a link for an online-based survey was sent to potential respondents.

The participants were asked to survey items relevant to the seven variables used in this study, namely Self-Directed Learning (SDL), Perceived Usefulness (PU), Perceived Ease of Use (PEU), Perceived Enjoyment (PEN), Satisfaction (SAT) and Behavioural Intention (BI). These variables were adapted from prior studies of technology acceptance, but they were re-worded to resemble the significance and objectives of this study.

After the pilot test took place, the actual study began immediately. For the actual study, there were a total of 443 respondents who completed the online survey. Data analyses for the actual study were then performed at the end of 2018.

4.7.10 Expert validation

This study utilised two approaches to administering expert validation. This is to ensure feasibility, readability and language clarity. This study does not require a content validity ratio as they are not newly developed questions (Taherdoost, 2018). One expert was engaged for face validation. The expert is an academician with more than 5 years of research experience. The expert evaluated the questionnaire to check its readability and representation of what it was supposed to measure. Changes such as restructuring were made

based on the expert's recommendation. Aside from this, some of the questionnaires were found not fit to be administered. Initially, there were a total of 48 items and nine variables. Some items were deleted due to their double-barrel nature and irrelevance to the research objectives. Table 4.4 shows information about the expert.

Table 4.4: Expert information and expertise

No	Name	Expertise
1	Associate Professor Dr. Ting Su Hie	English language teaching
2	Dr. Ammar Redza	Statistics

4.8 Data analysis

This study utilised a quantitative approach. It follows the guidelines recommended by Sekaran and Bougie (2015), which involve three steps. The initial step begins with data collection using the appropriate method. The relationship between variables was later identified. The final step involves verifying the hypothesised model and confirming the theory. These processes will check if the research questions have been answered. Both descriptive and PLS-SEM analyses were performed. A detailed discussion of these analyses will follow in the next sections.

4.8.1 Descriptive Analysis

The software used to analyse results for descriptive analysis is IBM SPSS 25.0. The analysis produces a result in the form of frequency tabulated in percentages. It is used to describe the characteristics of a variable. Descriptive statistics “involves the usage of mean, standard deviation, median, mode, normal distribution and Z score” (Chua 2020, p. 4). It organises, summarises and reveals the primary facts in a straightforward yet informative manner, indicating the data's focus value. For this study, descriptive statistics are used to

analyse respondents' demographic data. Thus, simple direct demographic questions were used to collect data from respondents for both empirical and analytical analysis.

4.8.2 Partial Linear Square-Structural Equation Modelling (PLS-SEM)

To begin with data analysis, it is fundamental to understand the underlying assumptions of the statistical methods used. It allows the researcher to decide on an appropriate statistical method. Scholars Hair et al. (2011) asserted that Partial Least Square structural equation modelling (PLS-SEM) is highly dependable on certain factors, namely, the research objective, the type of measurement model specification, the modelling of structural models, data characteristics and model evaluation. For PLS-SEM analysis, it is suitable to examine both reflective and formative constructs (Chin, 1998). It allows researchers to employ either reflective or formative constructs or both. PLS-SEM is a more robust approach that can be used to analyse data that does not follow a normal distribution. Data normality is not required when using PLS-SEM because PLS employs calibration mechanisms that convert non-normal data to data that adheres to the central limit theorem (Beebe et al., 1998).

PLS-SEM is the statistical method used in this study to analyse the data. The primary goal of PLS-SEM is to maximise the variance explained by the endogenous (dependent) variable (Ramayah et al., 2018). It applies to theorists who develop hypotheses through exploratory research. It is also considered the most widely chosen analysis where theory development and explanation of variance are highlighted as part of the research objective (Hair et al., 2017).

As a result of the preceding guidelines, this study chose PLS-SEM as the statistical method for evaluating the research model for the following reasons:

This study aims to identify predictors of language learners' behavioural intention to use the LMS. As a result, it is critical to examine the latent variable scores to ascertain the underlying relationship between the latent variables. This study also examines the relationships in light of pre-existing theoretical knowledge. PLS-SEM can estimate residual correlations and assess their impact on the model to fit the approach.

The research model is evaluated using a two-step approach: the measurement model and, later, the structural model. Model validation, in general, is used to determine whether both measurement and structural models meet the empirical criteria (Urbach & Ahlemann, 2010).

The following sections narrate the analyses under PLS-SEM, namely the measurement and structural models.

4.8.3 Measurement model

In behavioural sciences, “constructs are typically latent variables that are traditionally modelled using reflective measurement” (Henseler, 2017, p. 179). Figure 4.2 shows a graphical representation of the terms being addressed. There are a total of seven structural models.

Internal consistency reliability, convergent validity and discriminant validity can all be used to validate a reflective measurement model (Lewis et al., 2004). For this study, the selection is made using Henseler's (2017) "decision tree for measurement models," as exemplified in Figure 4.3. The reflective measurement model was chosen for this study because it examines students' behaviour. The results for the analyses of the measurement model will also be based on the benchmark set by Chua (2020), as shown in Table 4.5.

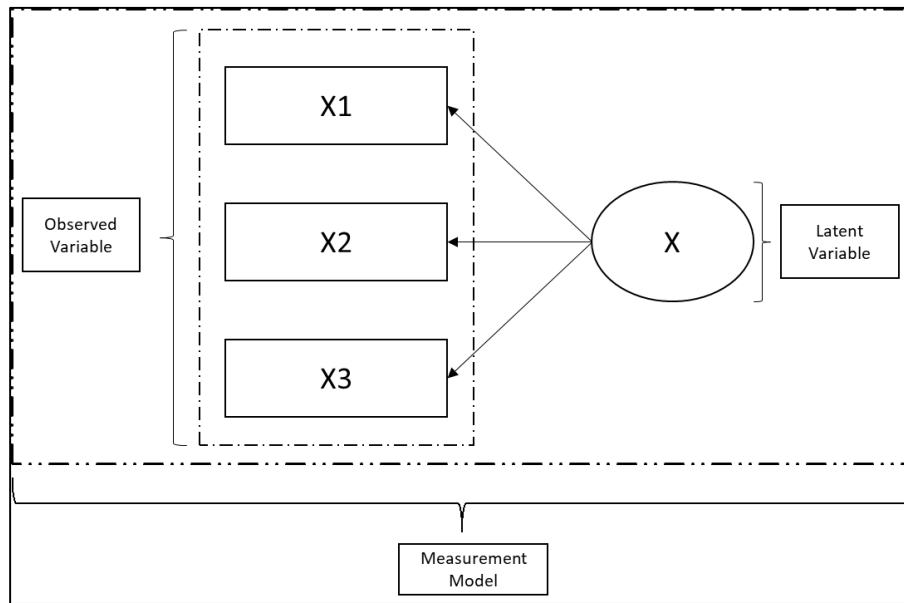


Figure 4.2: Measurement model

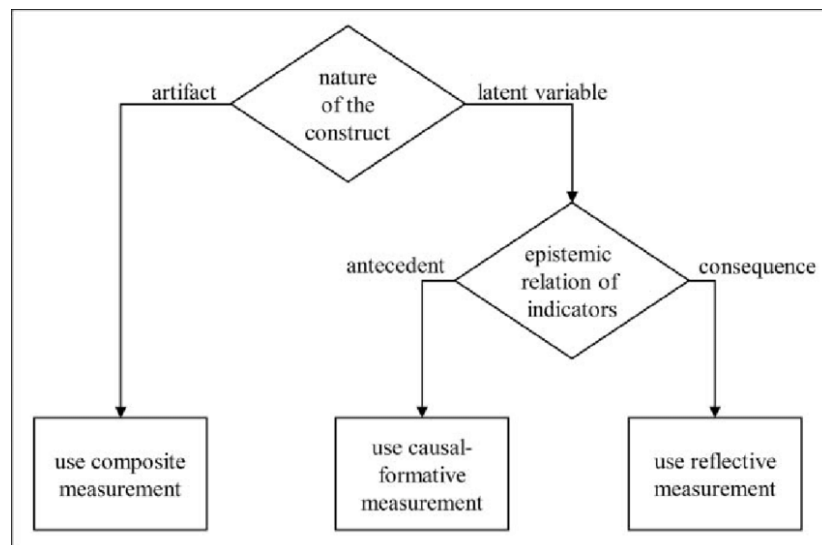


Figure 4.3: Decision Tree for Measurement Models (Adopted from Henseler, 2017)

Table 4.5: Summary of validity and reliability analysis on measurement models (Chua, 2020, p. 480)

Index	Benchmark
Validity	
A. Convergent Validity	
1. Loading	≥ 0.70 and ($p < 0.05$)
2. AVE	≥ 0.50
3. Rho A	≥ 0.70
B. Discriminant Validity	
1. Fornell-Larcker	Total square root of AVE of a latent variable is larger than the correlation with other latent variable in the model
2. Heterotrait-monotrait ration (HTMT)	≤ 0.90
Reliability	
1. Composite reliability	≥ 0.70
2. Cronbach's alpha	≥ 0.70

4.8.4 Structural model

Each latent variable will comprise a structural model, in which the variables will be classified as either exogenous or endogenous. Generally, exogenous latent variables are referred to as independent variables because they serve as the model's causal factors for other components (Ramayah et al., 2018, p. 10). In other contexts, endogenous latent variables are also known as dependent variables. The mediating variables are also known as endogenous variables. Figure 4.4 depicts a graphical representation of the variables. Additional considerations on the structural model will be presented in the parts that follow.

As mentioned earlier in this section, the measurement model will have to go through internal consistency reliability, convergent validity and discriminant validity. All these assessments will be described in the following sections.

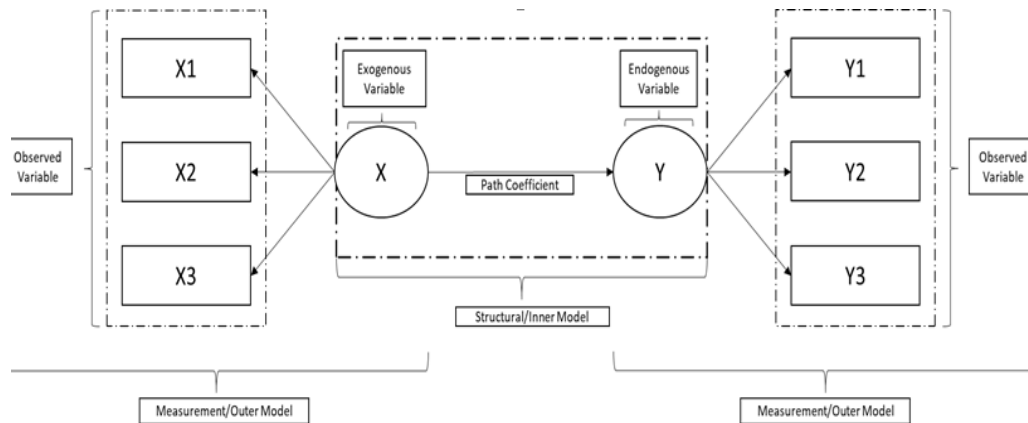


Figure 4.4: Basic Structural and Measurement Model in PLS-SEM

4.8.5 Internal Consistency Reliability

There are two reliability indicators for measurement models: composite reliability and Cronbach's alpha reliability (Chua 2020, p. 480). Cronbach's alpha is used to assess the internal consistency of a measurement item (Hair et al., 2017). Cronbach's alpha provides a reliability estimate based on indicator inter-correlations. A high Cronbach's alpha value indicates that the construct's items have a close range and meaning (Cronbach & Thorndike, 1971). For example, Cronbach's alpha reliability for a latent variable should be equal to or above 0.70 (see Table 4.5).

Internal consistency is quantified within PLS using composite reliability (CR) (Chin, 1998). The CR value comprises the loadings of indicators not present in Cronbach's alpha calculation. The cut-off value is 0.60. Exceeding this value is acceptable in exploratory research. (Ramayah et al., 2018). The values between 0.70 and 0.90 are considered acceptable, while values larger than 0.90 are considered less favourable because they reflect that all indicators measure the same concept and are unlikely to constitute a valid reliability assessment of a construct (Ramayah et al., 2018).

4.8.6 Measurement of validity

According to Chin (1998), both convergent and discriminant validity can be inferred when the PLS indicators load significantly more on their measured construct than on other constructs, specifically, when the own-loadings are greater than the cross-loadings and when the square root of each construct's average variance extracted (AVE) is greater than the correlations with other constructs. This study will analyse these two assessments, which are reported in the following section. It should be acknowledged that these two validity methods work well for reflective measurement models but are not suitable for formative measurement models (Bollen & Lennox 1991). High outer loadings on a construct indicate that the associated indicators have a lot in common. Indicator reliability is also known as outer loading size. Social scientists frequently obtain lower external loadings (0.70), especially when using new scales (Hair et al., 2014). To ensure the composite's reliability and content validity, researchers should carefully examine the effects of item removal. Composition reliability (or extracted average variance) should be increased if indicators with external loadings between 0.40 and 0.70 are removed from the scale. The AVE is the construct's mean indicator squared loading (Sarstedt et al., 2014). A construct with an AVE of 0.50 or higher explains over 50% of the variance of its items (Henseler et al., 2016; Sarstedt et al., 2014).

4.8.7 Discriminant validity

Discriminant validity assessment has become a widely accepted precondition for analysing relationships between latent variables. The Fornell-Larcker criterion and cross-loading examination are the dominant approaches for evaluating discriminant validity in variance-based structural equation modelling, such as Partial Least Squares (PLS). Unlike convergent, discriminant validity examines whether items measure something else (Urbach

& Ahlemann, 2010). Discriminant validity is how a construct is truly distinct from other constructs. Thus, discriminant validity implies that a construct is distinct from others in the model and captures phenomena not represented by others. There are two standard measures of discriminant validity in PLS: cross-loading and Fornell-criterion Larcker (Chin, 1998) (Fornell & Larcker, 1981). Chua (2020) suggested that the heterotrait-monotrait ratio (HTMT) is also assessed for discriminant validity. Cross-loading is obtained by comparing the component scores of each latent variable (Chin, 1998). If the loading of each indicator is higher for its designated construct than for any other construct, then the indicators are not interchangeable.

4.8.8 Assessing structural model

The structural model is critical in PLS-SEM analysis because it tests hypotheses or the relationship between exogenous and endogenous variables. Structural model validation can help the researcher systematically assess whether the data systematically supports the structural model's hypotheses (Urbach & Ahlemann, 2010). Hair et al. (2017) proposed five stages for determining the integrity of a structural model. As suggested by Hair et al. (2017) and shown in Figure 4.5, it involves the processes necessary for evaluating the structural model and should be reported. This section discusses how the structural model for this study was evaluated. Hair et al. (2014) suggested assessing the structural model via a bootstrapping procedure with a 5000-resample size. The indices for structural model analysis using PLS-SEM will be shown in Table 4.6.

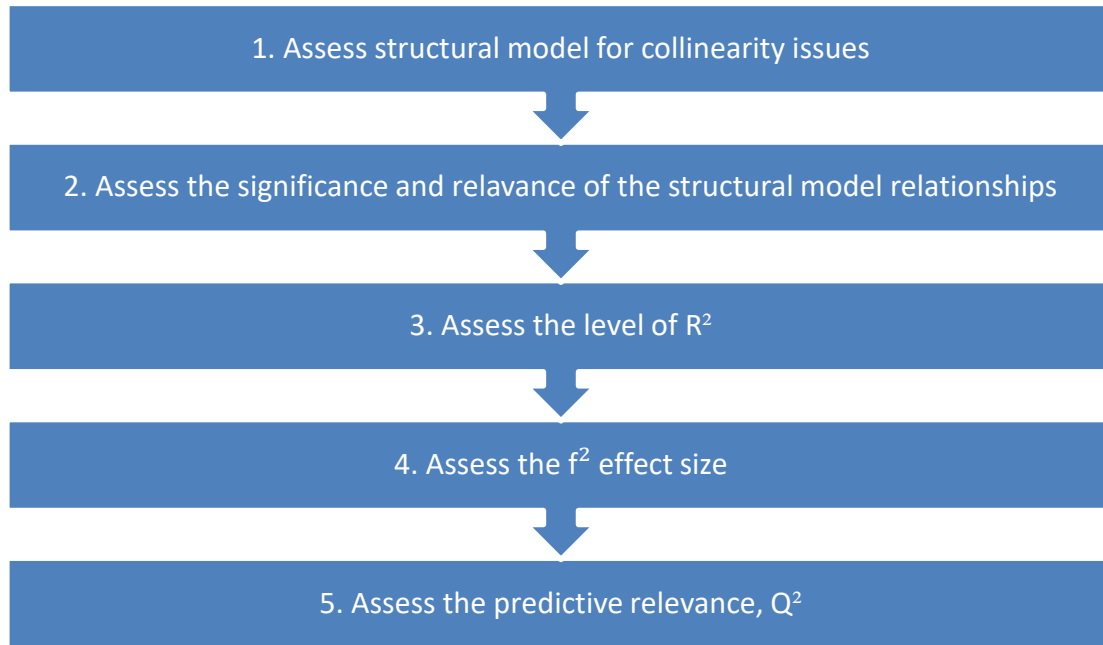


Figure 4.5: Structural Model Assessment Processes

Table 4.6: Indices for Structural Model Analysis using PLS-SEM (Ramayah et al. 2018, p. 150)

No	Assessment	Name of index	Acceptance level	Literature
1	Lateral Collinearity	Variance Inflator Factor (VIF)	$VIF \leq 5.0$	Hair et al. (2017)
2	Path Coefficient	Path Coefficient	p value < 0.05 $t > 1.96$ (2 tailed)	Hair et al. (2017)
3	R^2	Coefficient of determination	Substantial- 0.75 Moderate-0.50 Weak-0.25	Hair et al. (2017)
4	f^2	Effect size to R^2	Substantial effect size- 0.75 Medium effect size- 0.50 Small effect size-0.25	Cohen (1988)
5	Q^2	Stone Geisser Q^2 predictive relevance	Value > 0 indicates that exogenous constructs have predictive relevance for endogenous constructs	Hair et al. (2017); Stone (1974); Geisser (1974)

1. Assess Structural Model for Collinearity Issues

The same measures are used to evaluate formative measurement models to assess collinearity. The lateral collinearity issue can be solved by measuring the variance inflation factor (VIF). Each set of predictor constructs is examined individually for each subpart of the structural model. Predictor constructs' tolerance values below 0.20 (VIF value greater than 5) are considered critical collinearity levels (Hair et al., 2017). To treat collinearity problems, if the tolerance or VIF guidelines indicate a critical level of collinearity, the researcher has to consider eliminating constructs or merging predictors into a single construct.

2. Assess the Significance and Relevance of the Structural Model Relationship

The path coefficients have standardised values that range between -1 and +1 (values can be smaller or larger, but they usually fall between these bounds). Estimated path coefficients near +1 represent strong positive relationships (and vice versa for negative values) that are typically statistically significant (i.e., different from zero in the population). The weaker the relationships, the closer the estimated coefficients are to zero. Low values close to zero are rarely significantly different from zero. The standard error obtained through bootstrapping ultimately determines whether a coefficient is significant (Hair et al., 2017). The bootstrap standard error allows for the computation of empirical t and p values for all structural path coefficients. The majority of researchers use p values to determine significance.

3. Assessing the level of R²

The structural model shows the causal relationships between the constructs in the model, including the estimation of the path coefficients and the R² value. The R² value also verifies the prediction power of the model (Hair et al., 2014). The coefficient of

determination is the most widely used structural model metric (R^2 value). This coefficient measures the model's predictive power by comparing an endogenous component's actual and anticipated values. In general, greater R^2 values indicate better predictive accuracy. Acceptable R^2 values are difficult to define because they vary in model complexity and study discipline. For success driver studies (e.g., to explain customer happiness or loyalty), researchers demand substantially higher values, such as 0.75 and above. Endogenous latent variable R^2 values of 0.75, 0.50, or 0.25 are considered substantial, moderate, or weak in scholarly marketing studies (Hair et al., 2011; Henseler et al., 2009).

4. Effect size f^2

In terms of effect size, the change in R^2 value when an exogenous construct is removed from the model can be used to assess if the excluded construct significantly impacts the endogenous constructs. This is called the f^2 effect size (Hair et al., 2014). The R^2 values vary after estimating the PLS path model twice. It is estimated twice, once with the exogenous latent variable (producing $R_{\text{included}2}$) and once without (yielding $R_{\text{excluded}2}$). 0.02, 0.15 and 0.35 are considered minor, medium and high impacts of the external latent variable (Cohen, 1988). Effect sizes less than 0.02 imply no effect (Hair et al., 2014; Ramayah et al., 2018).

5. Blindfolding and Predictive Relevance of Q^2

Along with the magnitude of the R^2 values as a proxy for predictive accuracy, researchers should also analyse Stone- Q^2 Geisser's value (Geisser, 1974; Stone, 1974). This metric indicates the model's predictive power or significance outside the sample. When a PLS path model is predictively relevant, it accurately predicts data not used to estimate the model. Q^2 values greater than zero for a certain reflective endogenous latent variable

indicate the path model's predictive relevance for a particular dependent construct in the structural model.

4.8.9 Ethical Considerations

Some ethical concerns were noted for this research's purpose. As pointed out by Babbie (2001), respondents' voluntarism, anonymity and confidentiality were to be considered. Informed consent assures that all participants understood the nature of this research and voluntarily decided to participate or not in the survey. This was transparently written as part of the instructions. Participants showed their consent simply by agreeing to complete the survey and clicking on the link. They could quit the survey at any time. An assurance of the respondents' anonymity and confidentiality was also provided. This is especially possible for online surveys, as it is effortless to conduct online surveys. In this study, the researcher cannot identify who the participants were or their responses. All in all, no issues were discovered during the online survey administration.

4.9 Mediation analysis

Some of the study's aims are focused on investigating how one component affects another. During this analysis, the researcher is looking at the impact of Perceived Usefulness and Perceived Ease of Use (PEU) on Behavioural Intention (BI) through Perceived Enjoyment (PEN) and Satisfaction.

A mediator variable is the “generative mechanism through which the focal independent variable can influence the dependent variable of interest, which is best done in a case of a strong relationship between the predictor and criterion variable” (Baron & Kenny, 1986, p. 1173, 1178). Exogenous construct changes cause mediator variable change, which modifies endogenous construct. Analyzing the mediator variable's interactions with other constructs reveals the cause-and-effect processes between exogenous and endogenous

components. The simplest study examines one mediator variable, although the path model can include many (Hair et al., 2017; Ramayah et al., 2018). Mediation is sometimes known as an "indirect effect" type since it depends on a strong priori theoretical or conceptual underpinning, which is required to investigate meaningful mediation effects (Hair et al., 2017).

Figure 4.6 shows direct and indirect mediating effects. Single-arrowed relationships show direct effects. Associations with an intervening notion are examples of indirect effects. Numerous arrows depict a chain of two or more direct effects as having an indirect impact. Figure 4.6 exhibits a direct c' influence between X1 and X3 and an indirect X1 X2 X3 impact. The arrow that interacts with b represents X2's mediating effect on X1 and X3.

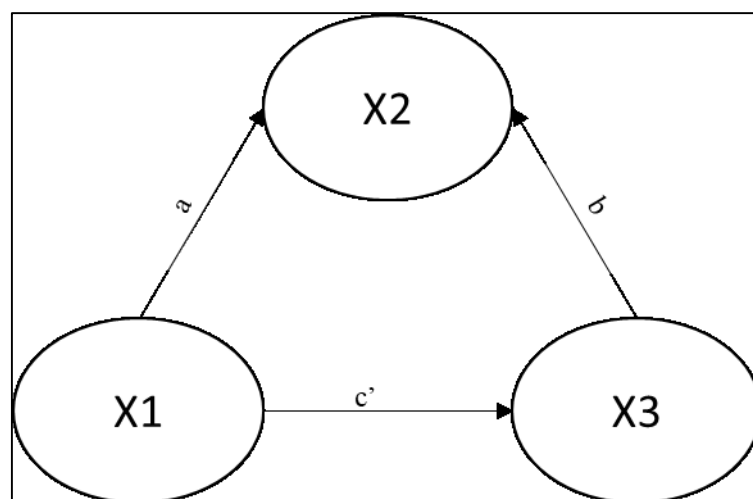


Figure 4.6: General Mediation Model

Baron and Kenny's (1986) causal procedure method is widely used in social science research to investigate the mediation effect. Barron and Kenny's causal procedural approach is popular; however, new quantitative research methodologies show numerous limits. This method has flaws. Under this procedure, all four phases must be significant before mediation can be approved; if any step is insignificant, no mediation will occur. The first step demonstrates an insignificant association; hence, the mediation test must be discontinued.

Other steps are similar. This approach is recognised as having lower power and will increase Type 1 errors (a false mediation when there is no mediation that exists) (Rungtusanatham et al., 2014). MacKinnon et al. (2007) said Barron and Kenny's method does not quantify the mediation effect or handle inconsistent mediation.

Preacher and Hayes (2008) have criticised the mediation effect method used by Barron and Kenny. Numerous academics advise against requiring a significant direct effect while looking for mediation (Zhao et al., 2010). The explanation is that, given the small sample size, a meaningful association might not be found, or there might not be sufficient power to predict the actual impact. In a mediation analysis, the indirect influence is crucial (Hayes & Rockwood, 2017). As seen in Figure 4.7, this is known as bootstrapping the indirect effect (Preacher & Hayes, 2008).

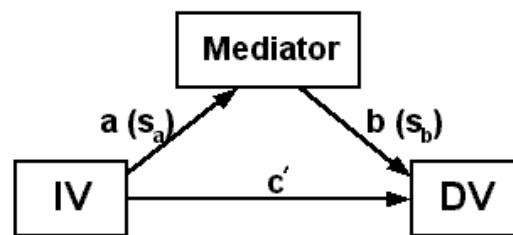


Figure 4.7: Bootstrapping indirect effect

Hair et al. (2013) argued that bootstrapping should be used for mediation analysis. The authors argued that "when testing mediated effects, researchers should follow Preacher and Hayes (2008) and use the bootstrapping distribution of the indirect effect, which works for both simple and multiple mediator models" (p. 223). This method is ideally suited for PLS-SEM since it makes no assumptions about the statistical distribution or sampling distribution and may be applied to tiny sample sets (Hair et al., 2017).

For this research, the Preacher and Hayes (2008) method of analysis focusing on indirect effects will be used. As established in the problem statement (see Section 1.3), there

is an established relationship between X (PU and PEU) and Y (BI) and the researcher wants to explore whether M (PEN and SAT) can mediate the relationship and test the direct effect of X and Y to confirm whether there are any additional conclusions while controlling the mediator. To "avoid the nomenclature of the complete or partial mediation process while hypothesising mediation processes," Rungtusanatham et al. (2014) stated that it is not required to declare the kind of mediation (full or partial mediation) (p. 106).

4.10 Summary of the chapter

The research methods chapter describes the design and validation of the knowledge produced by this study. The ontological and epistemological pillars of the study were covered in Chapter 1. It is quantitative research that bases its empirical data on hypothesis testing in realism ontology and positivist epistemology. The theoretical and conceptual framework that guided the course of the investigation is described in the next section. Three core hypotheses (discussed in the third chapter of this thesis) served as the foundation for the theoretical framework. The research hypotheses were established based on the conceptual research framework. The research methodology used in this study is quantitative, as it enables researchers to select respondents in accordance with predetermined criteria. Purposeful sampling was used for this study.

Data gathering and research equipment design are also covered in this chapter. The substance of the questionnaire and its sources are also covered. The features part details the pilot research that looks at the validity and reliability of the modified instruments. The outcomes of the pilot research aid in the statistical validation of the instruments. Additionally, data analysis was covered. Also included was information on the use of descriptive and inferential statistics. This study tested its research assumptions using PLS-SEM as an inferential statistic. A chapter conclusion marks the end of this chapter. The

design and validation of the knowledge produced by this investigation are also explained in the present chapter. The results of the research will be detailed in the next chapter.

CHAPTER 5

RESEARCH FINDINGS

5.1 Overview

This chapter presents the study's findings using the outputs from both statistical software packages: SPSS for Windows 25 and Smart PLS 3. This chapter is divided into six sections. The initial section provides the basic statistical descriptions of the participants' demographic information (age, sex, LMS experience and course they enrolled in). The following section narrates the descriptive statistics for the measurements used in this study. The subsequent section shows the results of the measurement model analyses. The succeeding section presents the findings of the structural model analyses. The following section presents the results of the predictive PLS analysis. The final section presents the results of the hypotheses testing. This chapter ends with a summary of the chapter.

5.2 The Demographics of the Respondents

This chapter begins with an overview of the respondents' demographic background, such as age, sex, LMS experience and their course registered.

The samples for this study are Malaysian undergraduates who took the English language as a subject in a blended learning approach. The respondents in the actual study consist of 443 students from one public institution of higher learning in Sarawak. Moreover, this research also ensured that the sample size could reasonably represent the research population to avoid selection bias.

Table 5.1: Demographic details of the respondents (N=443)

Variable	Category	Frequency	%
Sex	Male	139	31.3
	Female	304	68.6
Age (years)	17-20	215	48.2
	21-25	216	48.4
	> 25	12	2.7
LMS experience	< 1 year	100	22.5
	1 year	206	46.5
	2 years	37	8.3
	>2 years	100	22.5
Course	Bachelor's Degree	443	100.00

The findings Table 5.1 revealed that female respondents were more compared to males, representing 139 respondents out of 443 respondents, while males (31.3%) and females comprised 304 respondents (68.6%), respectively. The age of the respondents ranges from 17 to above 25 years old, of which 48.2% were categorised as 17–20 years old, 48.4% belonged to the 21-25 age group and only 2.7% were above 25 years old. The table also exhibited that most respondents have at least two years of experience using the Learning Management System (LMS).

As mentioned in Chapter 1, this study utilised Structural Equation Modelling (SEM). SEM is a set of statistical models that seek to clarify relationships among multiple variables. SEM is commonly used as a confirmatory technique, contrary to the exploratory technique (Abu Samah, 2017).

SEM's capacity to analyse causal links between variables with many measurement items was the basis for its use in data analysis (Hair et al., 2006). In addition, it is acknowledged that dealing with multiple models requires a rigorous, difficult and robust process (Hair et al., 2006; Tabachnick & Fidell, 2001). While the structural model was used to confirm links between variables, confirmatory factor analysis (CFA), also known as a

measurement model, was used to evaluate the correlations between latent and observable variables (Hair et al., 2006). SEM has the ability to calculate variance and covariance across variables and is widely used to assess the model's mediator and moderator assumptions (Awang et al., 2015).

A researcher must select one of two options in order to employ SEM. One uses covariance-based software, while the other makes use of SEM with variance. The covariance-based programmes AMOS and Linear Structural Relations (LISREL) are two examples (Chin & Newsted, 1999).

The significance and confidence intervals for the proposed model are directly provided by the Partial Least Square (PLS) approach. A meaningful test of the model is directly provided by the parameter estimations. The Confirmatory Factor Analysis (CFA) analysis consists of two steps. The initial step involved the assessment of the measurement model, where model fitness, validity and reliability tests were conducted. Then, as the results were satisfactory, the researcher proceeded with the second step, the structural model testing, which involved hypotheses testing procedures. The Statistical Package for Social Science (SPSS) version 25.0 was employed for this particular research to analyse the initial stage data. SPSS is a commonly used software as part of an analysis technique. Its functions include data screening, computing frequencies, means, standard derivations and common method bias assessments.

The process of creating a structural model and utilising structural equation modelling (SEM) to evaluate the assumptions presented in Chapter One comprised the second step. For the purposes of this study, SmartPLS version 3 was used to analyse the data. The idea behind SEM first emerges when the researcher plans to examine the correlation between the research's variables. These connections are later included in a theoretical framework that is

represented by a schematic diagram. This diagram will show the hypothesised relationships to be tested. The variables, commonly known as latent variables, are measured using a set of items in a questionnaire (observed variables). It also consists of selected scales ranging from 1 to ten to ensure the requirements of parametric analysis. This research only used five scales. The measurement scale for each item should either be an interval or a ratio.

5.3 Descriptive Statistics

5.3.1 Self-Directed Learning (SDL)

Table 5.2: Measures of the construct SDL and Descriptive Statistics

	Statement	Mean	Median	SD	%				
					1	2	3	4	5
SDL1	I can practise listening activities through the online system at my own pace.	4.06	4	0.71		0.5	21	50.6	28
SDL2	Reading the articles provided in the online learning system helped me increase my writing proficiency.	3.99	4	0.69		1.1	20.8	55.5	22.6
SDL3	Writing English essays and uploading them to the online learning system helps me improve my English.	3.96	4	0.71		0.9	24.4	52.1	22.6

Note: N = 443 for all items. All items were measured using a 5-point Likert scale. SD = standard deviation

The investigation revealed that the current study's mean and standard deviation values for the variable self-directed learning (SDL) vary between 3.96 and 4.06, as shown in Table 5.2. The outcome showed that the statement in SDL1 had the highest mean score, 4.06 (SD = 0.71). Most participants rated 4 (50.6%) for this item, while only 0.5% rated 2. For item SDL 2, the mean value was 3.99 (SD = 0.69). Participants rated 4 “Agree” (45.5%) and 5 “Strongly Agree (22.6%) as the first two highest scales. SDL3 had the lowest mean score of 3.96 (SD = 0.71).

Based on the aforementioned findings, it may be assumed that English language learners in Malaysia use the Learning Management System (LMS) on their own initiative. This set of items was modified to assess if students are more independent learners outside of the classroom using the LMS. The results would show more precisely how the LMS changed the students' study time and learning behaviour.

5.3.2 Perceived Usefulness (PU)

Table 5.3: Measures of the construct PU and Descriptive Statistics

	Statement	Mean	Median	SD	%				
					1	2	3	4	5
PU1	The online learning system is useful for my English language learning process.	4.03	4	.68		0.5	20.1	54.6	24.8
PU2	Using the online learning system is important as it allows me to improve my presentation skills in English.	3.89	4	.67		1.6	30.9	44.2	23.3
PU3	The online learning system is useful because it helps me enhance my language performance.	3.98	4	.76		0.7	23.3	52.6	23.5
PU4	Using the online learning system to enhance my English is an excellent idea.	3.94	4	.69		0.5	25.5	54.0	20.1

Note: N = 443 for all items. All items were measured using a 5-point Likert scale. SD = standard deviation

Table 5.3 portrays the items of the variable language learners' Perceived Usefulness (PU). The PU variable comprises four items that measure students' perceptions of how the LMS is beneficial for their language learning process, improves their presentation skills, enhances language performance and enhances their English language.

The result depicted that the highest mean score was 4.03 (SD =.68) for the statement in PU1. The participants rated the scale 4 (Agree) at 54.6% as the highest and the scale 2 (Disagree) 0.5% as the lowest. For item PU2, the mean value was 3.89 (SD=.67). The participants rated scale 4 as the highest at 44.2% and scale 3 as the second highest at 30.9%.

For item PU3, the mean value was 3.98 (SD = 0.76). The highest percentage rated was scale 4 (Agree) at 52.6%, while scale 3 (neither agree nor disagree) was rated at 23.3%, and scale 5 (strongly agree) was rated at 23.5%. The mean value for item PU4 was 3.94 (SD = 0.69). The highest rating is scale 4 (Agree) at 54% and scale 5 (strongly agree) is the third highest rating at 20.1%.

5.3.3 Perceived Ease of Use (PEU)

Table 5.4: Measures of the construct PEU and Descriptive Statistics

	Statement	Mean	Median	SD	%				
					1	2	3	4	5
PEU1	Learning to use the online learning system is easy for me.	4.01	4	0.68		0.7	21.2	54.9	23.3
PEU2	The language quizzes posted through the online learning system is easy to use.	3.89	4	0.70		1.4	27.1	52.8	18.7
PEU3	I find it easier to do my language revision through the online learning system.	3.95	4	0.72		1.4	24.4	51.9	22.3
PEU4	I can obtain feedback from my peers and lecturers quickly through the online learning system on my written assignment.	3.89	4	0.75		2.0	27.5	49.0	21.4
PEU5	I find it easy to track spelling errors through the online learning system.	3.95	4	0.75		1.8	25.3	48.3	24.6

Note: N = 443 for all items. All items were measured using a 5-point Likert scale. SD = standard deviation

Table 5.4 portrays the five items of the construct language learners' Perceived Ease of Use (PEU) of the Learning Management System (LMS). The findings revealed that the mean and standard deviation values for PEU have mean scores ranging from 3.89 to 4.01, while the standard deviation ranges from .68 to .75.

For PEU1, the participants rated scale 4 (Agree) as the highest scale at 54.9% and lowest scale 2 (disagree) at 0.70%. For item PEU2, the highest rating went to scale 4 at 54.9% and the lowest to scale 2 at 6.7%. For items PEU3, PEU4 and PEU5, the highest

rating was for scale 4 with 51.9%, 49.0% and 48.3%, respectively. Based on the results above, it can be speculated that the English language learners in Malaysia were at ease using the LMS.

5.3.4 Perceived Enjoyment (PEN)

Table 5.5: Measures of the construct PEN and Descriptive Statistics

	Statement	Mean	Median	SD	%				
					1	2	3	4	5
PEN1	I have fun using the online learning system to improve my writing skills.	3.83	4	.75		2.3	31.2	47.2	19.4
PEN2	I find the language quizzes through the online learning system flexible as I can do it anytime I like.	4.00	4	.70		0.9	21.9	53.5	23.7
PEN3	Once I started participating in the interactive English activities through the online learning system, I find it hard to stop as I enjoy using it.	3.62	4	.82		6.5	40.2	37.9	15.3
PEN4	I am always looking forward to use the online learning system to communicate with my lecturers and my peers.	3.91	4	.76		1.8	28.7	46.7	22.8
PEN5	The online learning system helps me to appreciate English language learning more.	3.98	4	.73		0.2	27.1	46.5	26.2
PEN6	The online learning system allows me to practise listening in a more interesting way.	3.94	4	.74		1.4	26.2	49.0	23.5
PEN7	I like the idea of using the online learning system to learn English.	4.08	4	.72		1.1	19.0	50.3	29.6

Note: N = 443 for all items. All items were measured using a 5-point Likert scale. SD = standard deviation

Table 5.5 portrays the five items of the construct of language learners' Perceived Enjoyment (PEN) using the LMS. The findings from this study depict mean index values ranging from 3.83 to 4.08, while the standard deviation ranged from .70 to .82.

For PEN1, the participants rated scale 4 (Agree) as the highest scale at 47.2% and lowest scale 2 (disagree) at 2.3%. For item PEN2, the highest rating went to scale 4 at 53.5% and the lowest to scale 2 at 0.9%. For item PEN3, the highest rating was for scale 3 with

40.2% and the lowest was for scale 2 at 6.5%, respectively. For PEN4, PEN5, PEN6 and PEN 7, the highest rated scale was 4, with percentages ranging from 46.5% to 50.3%. Based on the results above, it can be speculated that the English language learners in Malaysia were at ease using the LMS. The results above conclude that the English language learners in Malaysia enjoyed using the Learning Management System (LMS) to acquire the language.

5.3.5 Satisfaction (SAT)

Table 5.6: Measures of the construct SAT and Descriptive Statistics

	Statement	Mean	Median	SD	%				
					1	2	3	4	5
SAT1	I am satisfied with my English language proficiency after using the online learning system.	3.70	4	.68		1.8	37.7	49.7	10.8
SAT2	I am satisfied with the quality of learning through the online learning system.	3.92	4	.69		0.7	25.7	53.7	19.9
SAT3	I am satisfied with the feedback given by my lecturer (answers for tutorials/comments).	3.91	4	.72		1.8	25.1	52.6	20.5

Note: N = 443 for all items. All items were measured using a 5-point Likert scale. SD = standard deviation

Table 5.6 portrays the five items of variable Satisfaction (SAT). The questionnaire for this study was adapted from Bhattachjee (2001).

The values of the mean for Satisfaction (SAT) were 3.70 to 3.91. For the standard deviation, the values ranges from .68 to .72. For SAT1, SAT2 and SAT3, the participants rated scale 4 (Agree) as the highest scale, ranging from 49.7% to 53.7% and the lowest scale 2 (disagree) ranging from 0.7% to 1.8%.

Based on the result above, it can be speculated that English language learners are satisfied with the e-learning platform.

5.3.6 Behavioural Intention (BI)

Table 5.7: Measures of the construct BI and Descriptive Statistics

	Statement	Mean	Median	SD	%				
					1	2	3	4	5
BI1	I plan to participate in more language learning activities through the online learning system	3.88	4	.74		1.6	29.1	48.1	21.2
BI2	I will recommend others to use the online learning system to enhance their vocabulary in the future	4.06	4	.72		0.9	20.1	50.3	28.7

Note: N = 443 for all items. All items were measured using a 5-point Likert scale. SD = standard deviation

Based on Table 5.7, the BI questionnaire was adapted from Davis (1989). The mean values ranging from 3.88 to 4.06 depict excellent figures above the recommended value of 2.5. For BI1 and BI2, the participants rated scale 4 (Agree) as the highest scale, ranging from 48.1% to 50.3% and the lowest scale 2 (Disagree) ranging from 1.6% to 0.9%. The results mean that the respondents highly intend to use the LMS in their language learning process.

5.4 Assessing the Measurement Model

This section narrates the measurement model's requirements for each underlying construct with a description of the path diagram. Then, it uses multi-item scales to measure each construct in the measurement model. Before analysing the structural model, it is necessary to assess the measurement model to determine its construct validity. Instrument reliability, convergent validity and discriminant validity are examined at this stage (Ramayah et al., 2018).

5.4.1 Internal Consistency Reliability

For each measurement model, multiple items were used to measure each construct. If there is any redundancy, the item(s) must be deleted. The parsimonious, uni-dimensional construct is achievable (Anderson & Gerbing, 1988). There are some criteria to achieve unidimensionality. Reliability is noted to be an essential aspect of the pre-validity stage. As emphasised by Ahmad and Usop (2011), it is possible to have a reliable measure that is not valid, but an accurate measure must also be reliable. The concept of reliability assumes that unidimensionality exists in a sample of test items and if this assumption is violated, it may cause a significant underestimate of reliability. Cronbach's alpha is the most general method used to assess reliability. Other assessment criteria for the reliability of a measurement model can be achieved using some requirements, such as the Composite Reliability (CR).

Table 5.8: Validity and reliability scores

No.	Constructs	Items	Loadings	Cronbach's Alpha Score	Composite Reliability (CR) Score	Average Variance Extracted (AVE) Score
1	SDL	SDL1	0.739	0.721	0.843	0.643
		SDL2	0.827			
		SDL3	0.837			
2	PU	PU1	0.775	0.789	0.863	0.612
		PU2	0.783			
		PU3	0.793			
		PU4	0.779			
3	PEU	PEU1	0.699	0.797	0.860	0.554
		PEU2	0.789			
		PEU3	0.801			
		PEU4	0.709			
		PEU5	0.719			

Table 5.8 continued

4	PEN	PEN1	0.727	0.861	0.894	0.548
		PEN2	0.637			
		PEN3	0.723			
		PEN4	0.730			
		PEN5	0.807			
		PEN6	0.774			
		PEN7	0.773			
5	SAT	SAT1	0.745	0.746	0.855	0.663
		SAT2	0.875			
		SAT3	0.816			
6	BI	BI1	0.897	0.721	0.843	0.797
		BI2	0.894			

Table 5.8 reveals validity and reliability scores. In terms of reliability, the values of Cronbach's alpha of Self-Directed Learning (0.721), Perceived Usefulness (0.789), Perceived Ease of Use (0.797), Perceived Enjoyment (0.861), Satisfaction (0.746) and Behavioural Intention (0.745). The Composite Reliability score for Self-Directed Learning (0.843), Perceived Usefulness (0.863), Perceived Ease of Use (0.860), Perceived Enjoyment (0.894), Satisfaction (0.855) and Behavioural Intention (0.843) were more significant than 0.70, as shown in Table 5.8. All the variables examined in this study demonstrate satisfactory results on both tests and, thus, meet the requirements for reliability. The factor loadings for each latent variable are shown in Table 5.8. All the loadings exceed the recommended value of above 0.50, as shown in Table 5.8 and Figure 5.1. Therefore, it is depicted that the instruments used for this study were reliable based on the assessments performed.

The Rho A values for Self-Directed Learning (0.727), Perceived Usefulness (0.791), Perceived Ease of Use (0.801), Perceived Enjoyment (0.866), Satisfaction (0.764) and

Behavioural Intention (0.764) are shown in Table 5.9. This indicates that the indicators for the six latent variables are valid for their measurement.

Table 5.9: Rho A scores for the variables in the study

No.	Variables	Rho A
1	Self-directed learning	0.727
2	Perceived Usefulness	0.791
3	Perceived Ease of Use	0.801
4	Perceived Enjoyment	0.866
5	Satisfaction	0.764
6	Behavioural intention	0.745

5.4.2 Convergent validity

Convergent validity refers to the degree to which the measurement items correspond to the construct as predicted theoretically and is determined by examining the item loadings and average variance extracted (AVE). Convergent validity of the item loadings and an AVE of 0.5 and above indicates that the variable accounts for more than 50% of the variance in its items (Henseler et al., 2016). The AVE scores are summarised in Table 5.8. All variables met the benchmark of an AVE of 0.5 or greater. Self-Directed Learning's AVE (0.643), Perceived Usefulness (0.612), Perceived Ease of Use (0.554), Perceived Enjoyment (0.548), Satisfaction (0.663) and Behavioural Intention (0.797) are all greater than 0.50.

5.4.3 Discriminant validity

Another aspect of validity is discriminant validity. Discriminant validity is defined as how much two latent variables in an SEM model overlap in concept (Chua, 2020, p. 497). If the indicators of two latent variables measure the same concept, then their discriminant validity is low. The Fornell-Lacker criterion was used to assess discriminant validity (Sarstedt et al., 2014).

In this method, the AVE value of each construct is compared to its squared inter-construct correlation, which is a way to find out how much of the variance between constructs is shared. The recommended guideline is that a construct's shared variance with any other construct should not be greater than its AVE value (Sarstedt et al., 2014).

The Heterotrait-Monotrait ratio of correlation (HTMT) test was also used to assess discriminant validity between constructs. The correlation ratio within constructs to correlate between constructs is referred to as HTMT (Ramayah et al., 2018, p. 85). When the confidence interval score is 1 or higher, it indicates a lack of discriminant validity between the constructs (Ramayah et al., 2018). The study's findings show that all constructs have acceptable discriminant validity scores on both the Fornell-Lacker Criterion test and the HTMT test, indicating that the constructs are distinct. Fornell-Lacker Criterion results for the constructs used in the study are shown in Tables 5.10 and 5.11. shows HTMT scores.

Table 5.10: Fornell-Larker Criterion Result for Constructs in the Study

	Behavioural Intention	Perceived Ease of Use	Perceived Enjoyment	Perceived Usefulness	Satisfaction	Self- Directed Learning
Behavioural Intention	0.8929					
Perceived Ease of Use	0.7242	0.7443				
Perceived Enjoyment	0.6266	0.679	0.7402			
Perceived Usefulness	0.6235	0.643	0.6277	0.7827		
Satisfaction	0.5754	0.563	0.6174	0.6701	0.8147	
Self- Directed Learning	0.5540	0.557	0.5405	0.574	0.7561	0.8022

n=443 Correlation is significant at 0.01 level (2-tailed). Discriminant validity: results from the correlations between the variables, as shown in the following table (Table 5.10), according to the Fornell-Larcker criterion.

Table 5.11: Heterotrait-Monotrait ratio of correlation (HTMT) Results for variables in the study

	Behavioural Intention	Perceived Ease of Use	Perceived Enjoyment	Perceived Usefulness	Satisfaction	Self-Directed Learning
Behavioural Intention						
Perceived Ease of Use	0.724					
Perceived Enjoyment	0.625	0.678				
Perceived Usefulness	0.623	0.642	0.625			
Satisfaction	0.573	0.565	0.617	0.670		
Self-Directed Learning	0.546	0.554	0.545	0.570	0.755	

5.5 Structural Model Analysis

The structural model was also examined using Smart PLS version 3.0. The previous chapter (Chapter 4) covered the evaluation of the structural model in PLS-SEM. The structural model shows the relationships among the six latent variables. This section will cover the six steps to assess the structural model together with the main coefficients used to interpret the relationships among latent variables: β , R^2 , f^2 , Q^2 and PLS Predict. The following are the five steps:

1. Assessment of structural model for collinearity issues
2. Assessment of the significance and relevance of the structural model relationship
3. Assessment of the level of R^2
4. Assessment of the Effect Size (f^2)
5. Assessment of predictive relevance (Q^2)
6. PLS Predict

5.5.1 Assessment of Structural Model for Collinearity Issues

Collinearity is critical for validating the structural model's integrity because it prevents two distinct sets of constructs from being causally related (Ramayah et al., 2018). Hence, the variance inflation factor is chosen to determine the lateral collinearity issue through the variance inflation factor (VIF). Hair (2017) identified that the VIF value of 5 and above indicates the possibility of collinearity. However, all inner VIF values for all sets of predictor constructs in the structural model are below 5, indicating that lateral multicollinearity was not a concern in this study and that further examination of the model is possible. The VIF values for each predictor construct are tabulated in Table 5.12.

Table 5.12: VIF results

	VIF
BI1	1.5471
BI2	1.5471
PEN1	1.7027
PEN2	1.3978
PEN3	1.629
PEN4	1.6622
PEN5	2.0536
PEN6	1.8568
PEN7	1.8073
PEU1	1.4254
PEU2	1.7446
PEU3	1.7485
PEU4	1.4039
PEU5	1.4284
PU1	1.6136
PU2	1.5583
PU3	1.5567
PU4	1.6108
SAT1	1.3809
SAT2	1.7375
SAT3	1.5312
SDL1	1.2842
SDL2	1.5333
SDL3	1.5647

5.5.2 Assessment of the Significance and Relevance of the Structural Model Relationships

The significant level and t-statistics for all paths are important to test the developed hypotheses. T and P values for each relationship are shown in Table 5.12. Bootstrapping analysis using SmartPLS 3.0 was used to obtain each relationship's t and p values. 5,000 sub-samples were generated and the confidence interval was calculated using the “Bias Corrected and Accelerated (BCa) two-tailed test” (Hair et al., 2017). A “t-value greater than 1.96 and a p-value <0.05 indicate a significant relationship” (Ramayah et al., 2018, p. 145). The results showed that two out of fourteen hypotheses had a t-value lower than 1.96 (H8 and H12).

The following section is divided into subdivisions that review the study's findings. For a better understanding, each objective is linked with the respective research hypotheses and findings are compared to the results of previous studies. Subsequently, this study's main research objectives are covered and an overall discussion is provided.

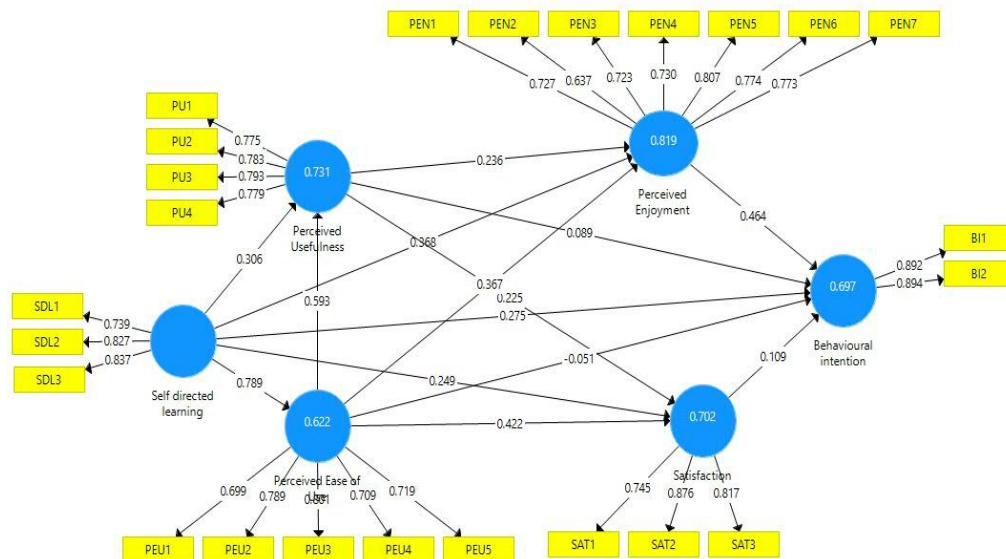


Figure 5.1: Results of PLS SEM analysis

5.5.3 Research objective 1: To investigate the impact of external variable (Self-Directed Learning) on cognitive variables (Perceived Usefulness and Perceived Ease of Use) and Behavioural Intention to use LMS in learning English.

An analysis to assess the significance of this study was performed using SmartPLS3. The results of the PLS analysis is shown in Figure 5.1. The first objective of this study is to investigate whether Self-Directed Learning (SDL) impacts Perceived Usefulness (PU), Perceived Ease of Use (PEU) and Behavioural Intention (BI).

Hypothesis 1 (H1) assumed that Self-Directed Learning (SDL) had a significant impact on Perceived Usefulness (PU). The bootstrap analysis revealed that SDL had a direct and statistically significant effect on PU with a path coefficient of 0.30, a p-value less than .001 and a t-value of 6.96, Lower Limit (LL) of 0.223 and an Upper Limit (UL) of 0.392. Therefore, H1 failed to be rejected.

Hypothesis 2 (H2) proposed that Self-Directed Learning (SDL) had a significant impact on Perceived Ease of Use (PEU). Based on the analysis, SDL had a direct and statistically significant effect on PEU with a path coefficient of 0.78, a p-value less than .001 and a t-value of 38.44 (LL = 0.742, UL = 0.824). Thus, H2 was fully supported.

Hypothesis 3 (H3) proposed that Self-Directed Learning (SDL) had a significant impact on Behavioural Intention (BI). The results revealed that Self-Directed Learning (SDL) had a direct and statistically significant effect on Behavioural Intention (BI) with a path coefficient of 0.27, a p-value less than .001 and a t-value of 4.60 (LL = 0.158, UL = 0.391). SDL could explain the 69% variance of BI. Based on these findings, H3 was fully supported.

The findings of this study indicate that SDL has significant positive relationships with Perceived Usefulness (PU), Perceived Ease of Use (PEU) and BI. Thus, H1, H2 and H3

were fully supported. These results answered research objective 1: Self-Directed Learning (SDL) impacted PU, PEU and BI significantly.

5.5.4 Research objective 2: To investigate the impact of the external variable Self-Directed Learning (SDL) on affective variables Perceived Enjoyment (PEN) and Satisfaction (SAT) to use LMS in learning English.

This study's second objective is to investigate if SDL impacts two affective variables, PEN and SAT.

Hypothesis 4 (H4) assumed that Self-Directed Learning (SDL) had a significant impact on Perceived Enjoyment (PEN). The findings revealed that H4 SDL had a significant positive relationship with PEN with a beta value of 0.36, a t-value of 9.38 and a p-value of less than .001 (LL = 0.287, UL = 0.445).

Hypothesis 5 (H5) assumed that Self-Directed Learning (SDL) had a significant impact on Satisfaction (SAT). The bootstrap analysis revealed that SDL and SAT had a significant positive relationship. The results showed a beta coefficient of 0.24, a t-value of 5.50 and a p-value of less than .001 (LL = 0.164, UL = 0.341).

The findings of this study indicate that SDL has significant positive relationships with Perceived Enjoyment (PEN) and Satisfaction (SAT). Thus, H4 and H5 were fully supported. These results answered research objective 2: Self-Directed Learning (SDL) impacted PEN and SAT significantly.

5.5.5 Research objective 3: To investigate the impact of cognitive variables (PU and PEU) on affective variables Perceived Enjoyment (PEN) and Satisfaction (SAT) and Behavioural Intention (BI) to use LMS in learning English.

The study's third objective is to investigate whether cognitive variables (PU and PEU) impact affective variables (PEN, SAT) and BI.

Hypothesis 6 (H6) assumed that Perceived Usefulness (PU) had a significant impact on Perceived Enjoyment (PEN). For H6, the findings revealed that PU has a significant

positive relationship with PEN. Based on the bootstrap analysis, the standardised estimate is 0.23, while the t-statistic is 6.30 and the p-value is less than .001 (LL=0.159, UL=0.306). Thus, H6 failed to be rejected.

It was proposed in Hypothesis 7 (H7) that Perceived Usefulness (PU) had a significant impact on Satisfaction (SAT). For H7, PU has a significant positive impact on Satisfaction (SAT). The beta score for this relationship was 0.225, while the t statistic is 4.10 and the p-value is below .001 (LL = 0.122, UL = 0.332). Based on these findings, H7 was fully supported.

The eighth hypothesis (H8) assumed that Perceived Usefulness (PU) has a significant impact on Behavioural Intention (BI). For H8, PU had a negative impact on BI. The insignificant relationship was found with a beta value of 0.088, a t-value less than 1.96 (1.488) and a p-value of 0.136 (LL = -0.028, UL = 0.205). Thus, this hypothesis was rejected.

It was proposed in Hypothesis 9 (H9) Perceived Ease of Use (PU) has a significant impact on Perceived Usefulness (PU). For H9, a positive impact was found between PEU and PU. The standardised regression weight is 0.59, with a t-value of 14.18 and a p-value below .001 (LL = 0.506, UL = 0.667). Thus, H9 failed to be rejected.

It was proposed in Hypothesis 10 (H10) that Perceived Ease of Use (PEU) has a significant impact on Perceived Enjoyment (PEN). For H10, there is a significant positive relationship between PEU and PEN. The beta value is 0.36, the t-value is 8.48 and the p-value is less than .001 (LL = 0.281, UL = 0.454). Hence, H10 was accepted.

It was proposed in Hypothesis 11 (H11) that Perceived Ease of Use (PEU) has a significant impact on Satisfaction (SAT). For H11, PEU and SAT showed a positive impact. The beta score is 0.421 and the t-value is 8.65, with a p-value less than .001 (LL = 0.324, UL = 0.517). Based on these findings, H11 was fully supported.

It was proposed in Hypothesis 12 (H12) that Perceived Ease of Use (PEU) has a significant impact on Behavioural Intention (BI). For H12, an unexpected finding in the proposed research hypothesis was the identification of a negative association between Perceived Ease of Use (PEU) and Behavioural Intention (BI). The beta score is -0.050, with a t-value of 0.801 and a p-value of 0.422 (LL=-0.18, UL=0.071). Based on these findings, H12 was fully supported.

It was proposed in Hypothesis 13 (H13) that Perceived Enjoyment (PEN) has a significant impact on Behavioural Intention (BI). For H13, an important point the model suggested was about the behavioural intention, which was inclined to be directly affected by PEN with a beta score of 0.463. Significantly, the results revealed a t-value of 6.24 and a p-value less than .001 (LL = 0.304, UL = 0.600). Based on these findings, H13 was fully supported.

It was proposed in Hypothesis 14 (H14) that Satisfaction (SAT) has a significant impact on Behavioural Intention (BI). For H14, there was a positive impact between SAT and BI with a beta coefficient of 0.108, a t-value of 1.992 and a p-value of 0.046. Based on these findings, H14 was fully supported.

Overall, the cognitive variables PU and PEU were able to exert direct relationships with the affective variables SAT and PEN. PEU and PU were positively correlated. Both cognitive variables were found to have insignificant effects on BI. Both affective variables had a significant relationship with BI. This answered research objective 3.

5.5.6 Research objective 4: To investigate the mediation effect of Perceived Enjoyment (PEN) in between Perceived Usefulness (PU) and Behavioural Intention (BI) to use LMS in learning English.

In the first mediation model, a mediation analysis was performed to assess whether PEN indirectly affects PU and BI as hypothesised in Hypothesis 15 (H15). Based on Table

5.14, the results revealed a significant indirect effect of PEN between PU and BI ($\beta = 0.109$, $t = 4.40$, $p < 0.001$). The total effect of PU on BI is significant ($\beta = 0.222$, $t = 3.807$, $p < 0.001$) with the inclusion of the mediator effect of PU on BI, while the results for the direct effect were not supported ($\beta = 0.0887$, $t = 1.488$, $p = 0.136$). The indirect effects (95% Boot CI Bias Corrected (Preacher & Hayes, 2008) did not straddle a 0 in between [LL = 0.002, UL = 0.058], indicating there is mediation. This means that an indirect relationship flowed from PU to BI via the mediation effect of PEN. Hypothesis 15 is thus supported. This finding answered research objective 4.

5.5.7 Research objective 5: To investigate the mediation effect of Satisfaction (SAT) between Perceived Ease of Use (PEU) and Behavioural Intention (BI) to use LMS in learning English.

The second mediation model, Hypothesis 16 (H16), was evaluated to determine the indirect impacts of SAT between PEU and BI. A bootstrapping analysis was performed. Based on Table 5.14, the results discovered an insignificant effect of PEU and BI via the mediator SAT ($\beta = 0.024$, $t = 1.74$, $p = 0.08$). The total effect of PEU on BI was significant with the inclusion of the mediator ($\beta = 0.0297$, $t = 5.538$, $p < 0.001$) and for the direct effect of PEU on BI (H12), the result was insignificant ($\beta = -0.0505$, $t = 0.801$, $p = 0.422$). The indirect effects of 95% Boot CI Bias Corrected by Preacher and Hayes (2008) they did straddle a 0 in between [LL= 0.001, UL= 0.097], indicating there is no mediation. Therefore, it is concluded that no indirect relationship flowed between PEU and BI via the mediation effect of Satisfaction (SAT). Hence, H16 was not supported. This finding answered research objective 5.

Table 5.13: Path Coefficient results of the current study

	Hypotheses	Std Beta	T Statistics (O/STDEV)	Interval Estimate		<i>P</i> Values	Significance level
				<i>LL</i>	<i>UL</i>		
H1	SDL→PU	0.3063	6.9651	0.2235	0.3923	***	Supported
H2	SDL→PEU	0.7887	38.44	0.7426	0.8243	***	Supported
H3	SDL→BI	0.2746	4.602	0.1585	0.3919	***	Supported
H4	SDL→PEN	0.3682	9.368	0.2875	0.4451	***	Supported
H5	SDL→SAT	0.2494	5.508	0.1645	0.3413	***	Supported
H6	PU→PEN	0.2364	6.304	0.1596	0.3069	***	Supported
H7	PU→SAT	0.225	4.106	0.1221	0.3323	***	Supported
H8	PU→BI	0.0887	1.488	-0.0286	0.205	0.136	Not supported
H9	PEU→PU	0.5927	14.18	0.5064	0.6672	***	Supported
H10	PEU→PEN	0.3673	8.485	0.2811	0.4541	***	Supported
H11	PEU→SAT	0.4219	8.650	0.3241	0.517	***	Supported
H12	PEU→BI	-0.0505	0.801	-0.18	0.0711	0.421	Not supported
H13	PEN→BI	0.4636	6.249	0.3045	0.6009	***	Supported
H14	SAT→BI	0.1089	1.992	0.0011	0.2155	0.046	Supported

Note: *p <0.10, **p <0.05, ***p <0.001; BC = Bias Corrected; UL = Upper Level, LL = Lower Level

Table 5.14: Hypothesis testing on mediation

Total effects (PU→BI)			Direct effect (PU→BI)			Hypothesis	Indirect Effects of PU on BI					Percentile bootstrap	
β	t	p	β	t	p		β	SD	t	p			
0.222	3.807	***	0.088	1.488	0.136	H15: PU→PEN→BI	0.1096	0.0249	4.401	***		LL	UL
												0.002	0.0581
Total effects (PEU→BI)			Direct effect (PEU→BI)			Hypothesis	Indirect Effects of PEU on BI					Percentile bootstrap	
β	t	p	β	t	p		β	SD	t	p			
0.2978	5.538	***	-0.050	0.801	0.422	H16 : PEU→SAT→BI	0.0245	0.0152	1.74	0.08		LL	UL
												0.0019	0.097

Note: *p <0.10, **p <0.05, ***p <0.001; BC = Bias Corrected; UL = Upper Level, LL = Lower Level

5.5.8 Assessment of the Level of R^2 (Coefficient of Determination)

The coefficient of determination (R^2) is evaluated using the Smart PLS tool. R^2 is a predictive power metric that shows a dependent variable's variance. It can also be seen as the sum of the effects of exogenous variables on an endogenous variable (Ramayah et al., 2018). Hair et al. (2017) state that the endogenous construct's R^2 values of 0.25, 0.50 and 0.75 are considered weak, moderate and substantial. Findings are depicted in Table 5.15. The findings of the current study revealed moderate explanatory power.

Table 5.15: R^2 values for Endogenous variable for this study

Variable	R Square	R Square Adjusted
Behavioural intention	0.6967	0.6932

5.5.9 Assessment of the Effect size (f^2)

Cohen (2013) f^2 is used to calculate the effect size of the predictor constructs (Wassertheil & Cohen, 1970). The value of f^2 determines the effect size, where large – 0.35, medium – 0.15 and small – 0.02 are identified (Ramayah et al., 2018). The f^2 value discovered in the study is shown in Table 5.16. The results for the effect size in this study range from small to large. The most significant effect size was found between SDL and PEU (f^2 - 1.646), while the lowest effect size was discovered between Self-Directed Learning and Behavioural Intention (f^2 - 0.0654). The medium effect size was discovered between Perceived Ease of Use and Perceived Enjoyment (f^2 - 0.1889) and Perceived Ease of Use and Satisfaction (0.1511)

Table 5.16: f^2 effect size of the current study

	Behavioural intention_	Perceived Ease of Use_	Perceived Enjoyment	Perceived Usefulness	Satisfaction	Self directed learning_
Behavioural int...						
Perceived Ease ...	0.0017		0.1889	0.4943	0.1511	
Perceived Enjo...	0.1192					
Perceived Usef...	0.0063		0.0831		0.0456	
Satisfaction	0.0109					
Self directed le...	0.0654	1.6464	0.2505	0.1320	0.0697	

5.5.10 Assessment of the Predictive Relevance (Q^2)

The predictors' predictive relevance (Q^2) was determined in this study through the blindfolding procedure. If the Q^2 value is greater than 0, the exogenous constructs have predictive values for the endogenous construct (Fornell & Cha, 1994). The omission distance D of 7 was also utilised. Table 5.17 shows that the endogenous variable Behavioural Intention has a value of 0.547, indicating that the model has sufficient predictive relevance.

Table 5.17: Predictive Relevance (Q^2) value for Endogenous variable for the current study

	SSO	SSE	$Q^2 (=1-SSE/SSO)$
Behavioural intention	886	401.2333	0.5471
Perceived Ease of Use	2215	1459.849	0.3409
Perceived Enjoyment	3101	1796.174	0.4208
Perceived Usefulness	1772	990.6518	0.4409
Satisfaction	1329	705.0404	0.4695

5.5.11 Predictive PLS

Using PLS-SEM, the predictive analysis of the model was performed. The PLS-SEM is a more robust analytical technique that utilises training and holding data than the usual Q^2 method (Shmueli, 2019). The important endogenous construct of BI has been identified in Table 5.18 to evaluate the degree of the prediction error of these variables in the model. Q^2 predicts that the statistical values of PLS-SEM-based predictions are greater than zero for

all constructs. Therefore, the PLS-SEM model's prediction statistics can be compared to the naive linear regression (LM) benchmark model.

For very symmetrically distributed prediction errors, the root mean squared error (RMSE) serves as the standard (Shmueli, 2019). Figure 5.1 shows a flow chart for deciding the predictive power. The Q^2 values are >0 , which means that the prediction errors are highly symmetrically distributed. When comparing the RMSE statistic values of PLS-SEM to the RMSE values of the relevant naive LM benchmark, most of the PLS-SEM RMSE values are less than the RMSE values of the naive LM benchmark, as shown in Table 5.17.

Consequently, PLS-SEM analysis has medium predictive power as shown in Figure 5.2 is able to provide guidance in PLS-SEM Q^2 predict.

Table 5.18: PLS predict assessment of variables

Item	RMSE	$Q^2_{predict}$	LM RMSE	PLS-SEM-LM RMSE
BI1	0.5453	0.4666	0.5457	-0.0004
BI2	0.5164	0.4888	0.5162	0.0002
PEU3	0.5623	0.3941	0.5647	-0.0024
PEU1	0.5811	0.2871	0.5800	0.0011
PEU5	0.6043	0.3614	0.6066	-0.0023
PEU4	0.6134	0.3318	0.6141	-0.0007
PEU2	0.5791	0.3331	0.5824	-0.0033
PEN3	0.6914	0.2942	0.6935	-0.0021
PEN1	0.6044	0.3618	0.6076	-0.0032
PEN2	0.6078	0.2533	0.6104	-0.0026
PEN6	0.5578	0.4354	0.5606	-0.0028
PEN4	0.5841	0.4126	0.5869	-0.0028
PEN7	0.5192	0.4875	0.5205	-0.0013
PEN5	0.5501	0.4448	0.5519	-0.0018
PU4	0.5734	0.3039	0.5639	0.0095
PU3	0.512	0.4725	0.5111	0.0009
PU2	0.6159	0.3653	0.6201	-0.0042
PU1	0.5703	0.3047	0.5712	-0.0009
SAT3	0.5646	0.3923	0.5652	-0.0006
SAT1	0.5915	0.2509	0.592	-0.0005

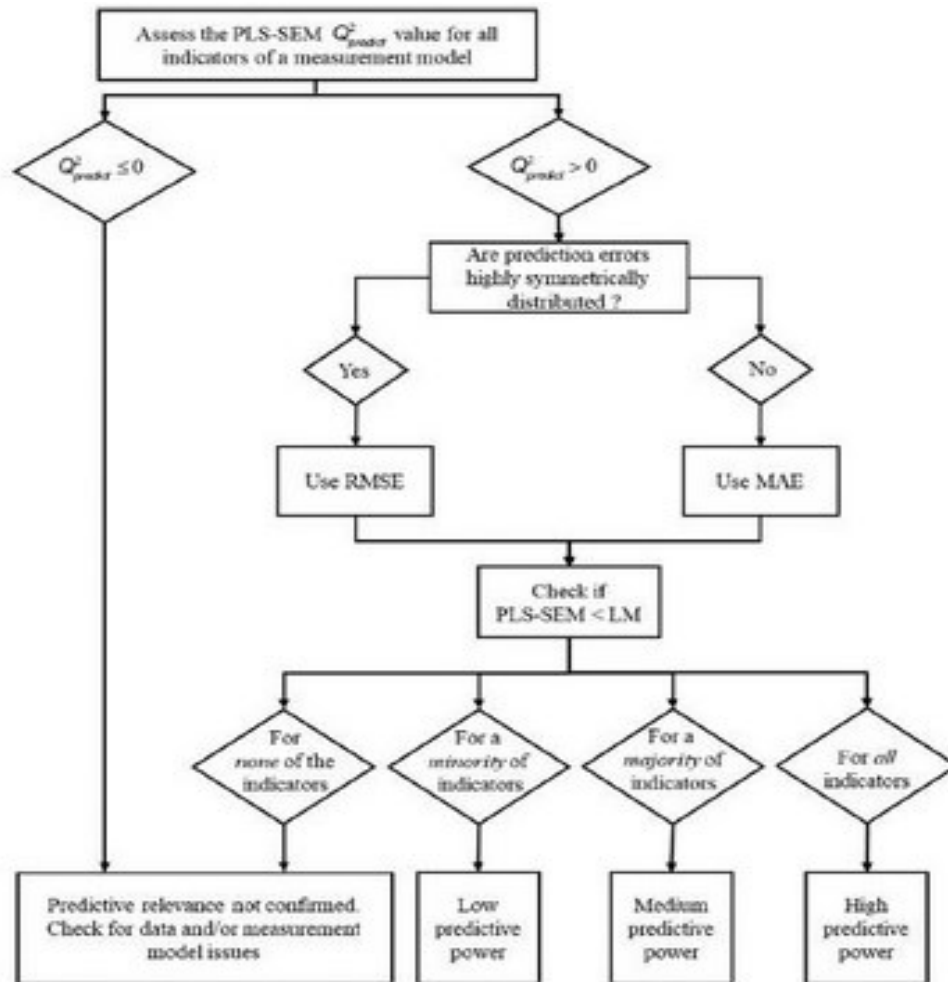


Figure 5.2: Predictive model of PLS-SEM (Shmueli et al., 2019, p. 8)

5.5.12 Hypotheses Testing and results

A total of sixteen research hypotheses were developed to accomplish the study's stated objective. The data in this chapter have been analysed, allowing for the testing of hypotheses. Table 5.19 summarises the hypotheses and the decision regarding whether they are supported or not.

Table 5.19: Summary of results for hypothesis testing

No	Hypothesis	Description	Decision
1	Hypothesis 1	Self-Directed Learning (SDL) has a significant impact on Perceived Usefulness (PU).	Supported
2	Hypothesis 2	Self-Directed Learning (SDL) has a significant impact on Perceived Ease of Use (PEU).	Supported
3	Hypothesis 3	Self-Directed Learning (SDL) has a significant impact on Behavioural Intention (BI).	Supported
4	Hypothesis 4	Self-Directed Learning (SDL) has a significant impact on Perceived Enjoyment (PEN).	Supported
5	Hypothesis 5	Self-Directed Learning (SDL) has a significant impact on has a significant effect on Satisfaction (SAT)	Supported
6	Hypothesis 6	Perceived Usefulness (PU) has a significant impact on Perceived Enjoyment (PEN).	Supported
7	Hypothesis 7	Perceived Usefulness (PU) has a significant impact on Satisfaction (SAT).	Supported
8	Hypothesis 8	Perceived Usefulness (PU) has a significant impact on Behavioural Intention (BI)	Not Supported
9	Hypothesis 9	Perceived Ease of Use (PEU) has a significant impact on Perceived Usefulness (PU).	Supported
10	Hypothesis 10	Perceived Ease of Use (PEU) has a significant impact on Perceived Enjoyment (PEN).	Supported
11	Hypothesis 11	Perceived Ease of Use (PEU) has a significant impact on Satisfaction (SAT).	Supported
12	Hypothesis 12	Perceived Ease of Use (PEU) has a significant impact on Behavioural Intention (BI).	Not Supported
13	Hypothesis 13	Perceived Enjoyment (PEN) has a significant impact on Behavioural Intention (BI).	Supported
14	Hypothesis 14	Satisfaction (SAT) has a significant impact on Behavioural Intention (BI).	Supported
15	Hypothesis 15	Perceived Enjoyment (PEN) will mediate the impact of Perceived Ease of Use (PEU) on Behavioural Intention (BI).	Supported
16	Hypothesis 16	Satisfaction (Sat) will mediate the impact of Perceived Usefulness (PU) on Behavioural Intention (BI).	Not Supported

5.6 Chapter Summary

This chapter began with an overview of the chapter. The data analysis involved two stages. The initial stage involved the preliminary analysis of the data. This stage allows the researcher to meet the essential criteria required by Structural Equation Modelling (SEM). It includes non-inferential analyses of the respondents' backgrounds and descriptive analyses. Next, assessments of the measurement model and structural models were

conducted. Inferential analysis was also performed to determine the relationships between the variables hypothesised. The final section of the chapter revealed the hypotheses testing to decide whether the hypothesis are supported or not. The following chapter discusses the summary and conclusion, research implications and suggestions for future research.

CHAPTER 6

DISCUSSION, SUMMARY OF FINDINGS, IMPLICATIONS AND DIRECTION OF FUTURE STUDIES AND CONCLUSION

6.1 Overview

This chapter summarises the previous chapter's data analysis findings. In the first section, each hypothesis' findings are thoroughly discussed. The significant findings from this study will be discussed in Section 6.2. The following section shows how the study's three objectives were met. The study's implications are presented in three forms: theoretical and practical contributions. A discussion of the study's limitations and recommendations for future research is presented in the following section. The concluding sections of this chapter will contain the study's overall conclusion and recommendations for future studies.

6.2 Summary of major research findings

This empirical study focused on understanding language learners' behavioural intention to use the Learning Management System (LMS) to learn English in a Malaysian university. According to the study's research findings, language learners' Self-Directed Learning positively impacts their perceptions of Usefulness (PU), Ease of Use (PEU), Perceived Enjoyment (PEN), Satisfaction (SAT) and Behavioural Intention (BI). Positive impacts were also shown between PU on Perceived Enjoyment (PEN) and Satisfaction (SAT). The variable PEU positively impacts PU, PEN and SAT, but not BI. PEN has a positive direct impact on BI. SAT was shown to have a significant positive impact on BI. The mediation analyses showed that PEN had an indirect effect on PU and BI. SAT did not have any indirect effect between PEU and BI. This means that three out of sixteen hypotheses were not supported.

6.3 Discussion

This study aims to identify the variables that influence English language learners' behavioural intention to learn English through the Learning Management System (LMS) within a higher institution in Malaysia. A total of 443 respondents took part in the survey. The methodology used in this study was a Partial Least Squares (PLS) that was used to test the empirical model.

This research utilised a research model known as the Extended Technology Acceptance Model (ETAM) with variables based on the original Technology Acceptance Model (TAM) by Davis et al. (1989). Based on what was highlighted in the literature gaps, Gamble (2018) and Lai (2015) pointed out that TAM was minimally found in English as a second language (ESL) contexts and should be extended into Asian regions. In addition, this study also extended learners' characteristics of self-directed learning (SDL) as an exogenous variable into the model. As argued by Lee et al. (2017), the inclusion of affective constructs can amplify attitude and behaviour more precisely. Thus, this study added Satisfaction (SAT) and Perceived Enjoyment (PEN) as affective variables. The original variables Perceived Ease of Use (PEU), Perceived Usefulness (PEU) and Behavioural Intention (BI) were maintained in ETAM.

The ETAM proposed the causal relationships based on what was assumed in the sixteen hypotheses shown in Section 1.6.1. This section describes the overall conclusions based on the results of the five research objectives and provides suggestions regarding the current research.

For the first research objective, this research aims to examine how Self-Directed Learning affects cognitive variables (Perceived Usefulness and Ease of Use) and behavioural intention to use LMS to learn English. In this study, Self-Directed Learning (SDL) was

operationalised as the extent to which Malaysian undergraduates who are self-disciplined, motivated learners can self-direct their English language learning. The findings of this study indicate that SDL has significant positive relationships with Perceived Usefulness (PU), Perceived Ease of Use (PEU) and Behavioural Intention (BI). Thus, H1, H2 and H3 were fully supported. For H1, the results are in parallel with Ya-Chu and Kuo-Hung (2011), Lai (2015) and Lai et al. (2016) in terms of the direct relationship between SDL and PU in the context of online learning. However, the findings by Al-Adwan (2020), who extended Self-Regulated Learning (SRL) into Technology Acceptance Model (TAM), found a negative relationship between SRL and PU. This finding implied that the respondents of Al-Adwan's (2020) study who had low self-regulated skills would be less likely to engage with Massive Open Online Courses (MOOCs) than learners with higher levels of self-regulated learning. When students enrol in online learning platforms such as MOOCs, it necessitates a readiness to engage in a learning environment that emphasises a significant degree of self-directedness, learner autonomy and self-regulation. The inherent characteristic of MOOCs implies a limited level of engagement between students and instructors, necessitating that students take responsibility for controlling their learning.

Based on the findings, the author concluded that the Learning Management System (LMS) can be a catalyst to encourage language learners' agency in increasing their responsibilities for language acquisition. The findings provided insights into how Malaysian educators enhance self-directed learning (SDL) skills among language learners. As highlighted by Adams et al. (2018), students need to be prepared for SDL, but Osman (2015) cautioned that first-year students need some form of instructor's intervention to help them be self-directed.

Conclusively, the LMS could potentially promote language learners' agency, emphasising their role in language acquisition. The results offer valuable insights for Malaysian educators to bolster SDL among language learners, keeping in mind that newer students might require more instructor intervention to cultivate self-direction.

For Hypothesis 2 (H2), the results are in parallel with Ya-Chu and Kuo-Hung (2011), or, in other words, the significant direct relationship between SDL and PEU. This may indicate that students who have higher SDL levels think the LMS is simpler to use. For effective online learning, SDL skills are crucial for language learners who use technology. Therefore, instructors of languages should mentor their students to promote independent learning.

For Hypothesis 3 (H3), SDL had a significant direct relationship with Behavioural Intention (BI). This finding affirmed what Adel-Ali and Arshad (2018) discovered, where the authors hypothesised that Learner Autonomy (LA) had a positive direct relationship with BI. From the perspective of language educators, guidance should be provided for learners to facilitate their autonomous learning effectively.

The research findings revealed that English language learners' perceptions of the Learning Management System (LMS) became more favourable after actively engaging with the online platform and exercising control over their learning. This is evident in the observations for H1, H2 and H3, where learners who are adept at utilising Self-Directed Learning (SDL) skills tend to perceive the LMS as user-friendly, beneficial and efficient. Further analysis revealed that the external factor, SDL, influences the cognitive aspects, specifically Perceived Usefulness (PU) and Perceived Ease of Use (PEU). These positive perceptions subsequently amplify students' Behavioural Intention (BI) to adopt the LMS in their English language learning. Collectively, the findings for H1, H2 and H3 validate the

first research objective, asserting the substantial and positive role of SDL on PU, PEU and BI.

The second research objective is to investigate the impact of the external variable Self-Directed Learning (SDL) on the affective variables Perceived Enjoyment (PEN) and Satisfaction (SAT) when using LMS in learning English. The findings of Hypothesis 4 (H4) were in parallel to those of Resnik and Dewaele (2021), who discovered that Learner Autonomy is positively correlated with Foreign Language Enjoyment (FLE).

Based on H4, the findings indicated that the more students employ self-direction in their language learning, the higher the chances they will experience enjoyment in learning English. The items of enjoyment comprise both hedonic and utilitarian elements. This means that learning English can be useful in improving the students' English language skills, such as writing, speaking and listening skills. At the same time, the interactive activities through the LMS also provide hedonic values, which made the students enjoy and appreciate language learning more. The findings showed the highest mean value for PEN2 is "I find the language quizzes through the online learning system flexible as I can do them anytime I like." This finding implies that students enjoy participating in the quizzes due to their flexibility. When students do online assessments, they can get immediate feedback on their performance once they have completed them. Immediate feedback helps students and teachers assess comprehension, identify concepts that need review and prepare for summative tests (Grier et al., 2021). The authors also mentioned, "Technology-based formative feedback can help students prepare for summative exams and students prefer fun and competitive tools that give them feedback right away" (p. 193). In line with this claim, Alzaid and Alkarzae (2019) argued that technology has significantly enhanced the administration and grading of examinations for feedback and increased students' learning

and motivation. The LMS can offer an interactive and fun learning environment, allowing them to complete the activities at their own pace and helping them to enhance their English language skills.

This study also revealed that the students enjoy communicating with their lecturers and peers through the online learning platform, as they find it not boring.” Communication through the Learning Management System (LMS) may be a difficult process compared to face-to-face communication. Studies have found that the teaching and learning of speaking skills revealed positive perceptions and improvements in speaking performance when done online (Truong, 2021). The speaking sessions need not be conducted formally; they can also be a session where students can engage in casual or small talk with their peers and lecturers. Riasari et al. (2021) found that students can speak freely without worrying about grammar when their lecturer uses a casual speech style. The learners feel comfortable since the lecturer uses language for daily use. This means that LMS can help reinforce students’ communication skills, provide opportunities to practice the language and lessen students’ anxiety, especially when topics are of interest and relevant to them or even casual conversations such as small talk. The physical barrier does not isolate students, as they can participate in conversations and be part of the learning community.

Students in this study generally use the LMS to hone their various English language skills, such as reading, writing, speaking, listening, grammar and vocabulary. Based on the findings, these students perceived listening activities such as watching a forum, group discussion after watching a video, or even gap-filling exercises to practise vocabulary. These activities can be fun and useful as they can challenge students' concentration in grasping the foreign accent used by the listening audio and critical thinking skills. For listening skills, Daneil et al. (2019) and Rahmawati (2022) found that their respondents' listening abilities

increased when conducting this skill through the use of blended learning modes. Kashghari and Asseel (2014) found that Blackboard improved students' listening skills as they were more open to real-world listening resources, more motivated to study independently and improved their vocabulary.

The LMS can also help language learners improve their writing abilities while engaging in reading activities. When practicing reading comprehension skills, the reading materials can also improve students' writing styles through the vocabulary gained from the reading texts and their ability to identify language structures. According to Fageeh and Mekheimer (2013), the Blackboard LMS instilled users' writing and critical thinking abilities. Writing is seen as a challenging skill and the blended learning method for teaching writing in English can be beneficial since it improves student-teacher relationships, lowers anxiety and inspires self-directed learners to improve their writing abilities. Students may develop self-governance and improve their attitude toward studying the English language (Mabuan & Ebron, 2017). According to Hassan's (2020) research, mastering writing techniques can boost students' motivation to learn and their writing proficiency and confidence. The author also mentioned that using various online tools, such as forums and videos, allows a better exploration of students' writing potential.

The use of Learning Management Systems (LMS) in language learning has proven to be a multifaceted and effective approach. Students in this study have demonstrated a penchant for honing their English language skills through the LMS, encompassing reading, writing, speaking, listening, grammar and vocabulary. Therefore, the integration of LMS in language learning is a comprehensive strategy that engages students in a dynamic learning process, enhancing various language skills and motivating them to excel in their English language endeavours.

LMS functions as a powerful tool in language learning. It is adaptable and efficient, enabling students to develop multiple language abilities. Integrating a learning management system (LMS) into language education provides a comprehensive learning environment, thereby encouraging students to increase their engagement with the English language.

In Hypothesis 5 (H5), Self-Directed Learning (SDL) had a direct relationship with Satisfaction (SAT). This finding corroborated to the findings of Abuhasna et al. (2020), who utilised Student Autonomy (SA) to predict Satisfaction (SAT) and found their positive relationships. Graduate students' self-directed learning strategies (e.g., motivation, self-monitoring and self-management) in online courses were explored by Zhu et al. (2023). Their finding showed that self-directed learning contributed to students' online learning satisfaction, which was corroborated by the current study's findings. Also discovered in their study was that the design and instructional components of online learning contributed to students' satisfaction. The findings also implied that students acknowledge the instructor's teaching presence, such as by checking on students' progress. The findings of Zhu et al. (2023) provided insights on the fundamental roles played by instructors in fostering students' support and empathy. Through this, students felt motivated and were more engaged in the online learning courses. The significance of learners' capacity to self-direct their learning and learn effectively through the online learning framework must also be acknowledged in light of these findings. As stated by Kuong (2015), "an effective online class involves motivation, self-direction and goal-orientedness from learners, not just translating traditional course contents to electronic format" (p. 1005).

Learners go through a range of feelings as they go through the process of learning and utilising a second language, both in traditional classroom settings and in online learning environments. Online learning can lead to isolation, negatively affecting students'

satisfaction. According to Botes et al. (2020), the experience of happy emotions benefits learning and performance. Other feelings, like enjoyment and satisfaction, have been studied in online learning environments. Hence, this study put forth two affective variables: satisfaction and enjoyment.

The results of Hypotheses 4 and 5 conclusively address the second research objective, demonstrating that SDL has a significant and positive effect on both Perceived Enjoyment and Satisfaction. For the third research objective, it aims to investigate the impact of cognitive variables Perceived Usefulness (PU) and Perceived Ease of Use (PEU) on affective variables Perceived Enjoyment (PEN) and Satisfaction (SAT) and Behavioural Intention (BI) to use LMS in learning English.

For Hypothesis 6 (H6), it was found that Perceived Usefulness (PU) had direct relationship with Enjoyment (PEN). This finding was consistent with Kim and Lee (2020) and Findik-Coşkunçay (2018). Based on the findings, Perceived Usefulness (PU) and Perceived Enjoyment (PEN) correlated significantly, thus, increasing students' behavioural intentions. In this study, individuals who thought that the features of the Learning Management System (LMS) were beneficial and also enjoyed using them were more likely to utilise them during their studies. Both of these studies focused on distinct platforms (MOOCs and LMS), but they were concerned with understanding user behaviour in the context of online learning. Similar to the current research's findings, it underlines how crucial it is to comprehend the user's viewpoint. Designing platforms that users find both useful and enjoyable will invariably lead to better adoption rates and more significant learning outcomes. These findings are invaluable to a wide range of stakeholders, from educators and administrators to tech developers and policymakers. They provide a deeper understanding of what learners value and how they interact with digital learning platforms,

enabling more informed decision-making. The MOOC study may provide worldwide or regional preferences, whereas the LMS research may reveal higher education-specific insights. Both perspectives matter in online education developments.

The future of education depends on understanding these processes, especially as online learning evolves. The application of these findings will likely affect MOOC design, LMS adoption and how institutions and educators adapt to serve learners in the digital age.

For Hypothesis 7 (H7), it was found in the current study that Perceived Usefulness (PU) had direct relationship with Satisfaction (SAT). This outcome aligns with the conclusions drawn from the study conducted by Mouakket and Bettayeb (2015), where PU and SAT correlate positively, but the findings of Kim and Lee (2020) showed an insignificant relationship between PU and SAT.

Mouakket and Bettayeb (2015) used the Expectation-Confirmation Model (ECM) to understand further university educators' continuance intentions to use Blackboard as an online learning platform. Their study also extended individual characteristics (computer self-efficacy), technological factors (user interface design) and organisational factors (technical support and training), Satisfaction (SAT), PU and Continuance Intention (CI) into their ECM model. According to the ECM, users' expectations are validated after their initial use of the system, which affects their Perceived Usefulness (PU). Users are satisfied with the system after confirmation and perceive its usefulness. Both PU and SAT later affect intention. Based on the findings, students are both satisfied with the LMS and perceive its usefulness, which in turn drives behavioural intention.

The findings of Kim and Lee (2020) revealed an insignificant correlation between PU and SAT. According to the authors, the findings may mean that the design of the system can impact the user's satisfaction. They reiterated that there are differences between

customised and universal designs of Massive Open Online Courses (MOOC). They suggested that analyses of cross-cultural learner characteristics of the system can provide valuable insights into the relationships between PU and SAT.

For Hypothesis 8 (H8), the findings revealed that Perceived Usefulness (PU) did not affect Behavioural intention positively. This finding meant that even if the language learners think that the Learning Management System (LMS) has useful features for their learning, it does not mean that they would want to use the LMS in the future. The findings may also imply that the quantity of materials and activities posted on the LMS were sufficient for students to practice. In the communication processes between the lecturers and the students, students and their peers may also provide input such as feedback, opportunities to interact and confidence to use English to communicate with their lecturers and peers. The LMS was beneficial because it provided useful functionalities such as the ability to track spelling errors and high-quality learning resources for them to do their revision. However, the participants were still inclined to exert behavioural intention to use the Learning Management System (LMS) in the future.

The findings could be attributed to a few factors. As the questionnaire also asked, "I will use the online learning system to learn English in the future," some English courses may be offered to university students once during their undergraduate studies. In contrast, some universities offer basic classes and later proceed with a more advanced level the following semester. This could be one of the reasons they may not use the LMS in future English classes, despite having positive perceptions of its usefulness. Moreover, the materials and activities on the LMS might have met the students' immediate practice needs, making them feel less compelled to return. With regards to communication within the LMS platform, direct communication, whether with lecturers or peers, provides students with critical

feedback and interaction possibilities that can increase students' linguistic confidence. The human element of learning, particularly in language studies, can be invaluable. As a result, even with all of the digital tools available, learners may choose human interaction over relying only on technology, as discovered by Truong (2021). Having valuable features and resources does not guarantee that students will use an LMS long-term. The study reveals that while digital tools and platforms like LMS can benefit learners, other variables, particularly human interaction, are crucial to their journey and platform use.

For Hypothesis 9 (H9), Perceived Ease of Use (PEU) had a positive correlation with Perceived Usefulness (PU). This is the fundamental connection between the Technology Acceptance Model (TAM), as suggested in the findings of Davis et al. (1989). Given the positive correlation between PEU and PU, it can be deduced that PEU substantially impacts PU. In other words, when students see a Learning Management System (LMS) as easy to use, they are more likely to perceive using an e-learning system as beneficial. Both of these TAM variables are crucial to technology adoption. Ease of use determines how easily a user can use the system, while perceived usefulness determines its capacity to achieve the desired result. These two variables can greatly impact a student's learning experience and outcomes.

In a study conducted by Lee et al. (2009), it was shown that PEU plays a crucial role in determining the PU of a system. Additionally, learning content design was identified as a key factor in enhancing the PEU. Furthermore, this discovery holds significance in the context of developing systems with reduced complexity to enhance the efficacy of e-learning services (Lee et al., 2009). The aforementioned finding is corroborated by Al-Adwan (2020) and Al-Rahmi et al. (2018), who found that PEU impacts PU significantly.

Findings from the previous studies are important because they provide insights into understanding LMS adoption in different circumstances. They emphasise the relevance of

user perceptions (ease of use and usefulness) of a platform's success. These rigorous model insights from TAM provide educators, institutions and platform developers with actionable advice. Digital education is always changing and such research helps create more effective and user-friendly platforms.

While studies on the adoption of e-learning have been conducted on a global scale, concentrating on a specific context, such as Malaysia, as shown in Al-Rahmi et al. (2018), offers deeper insights that guide the decision-making processes within the Malaysian context and may provide guidelines for similar areas or institutions.

For H10, there is a significant positive relationship between PEU and PEN. This result is consistent with Findik-Coşkunçay et al. (2018), where enjoyment impacts PEU significantly. The findings of Findik-Coşkunçay et al. (2018) have significant implications for how such platforms are designed, implemented and promoted. It underscores the importance of considering both functional and emotional aspects of technology adoption, particularly in the context of online education.

Enjoyment, an intrinsic drive, can affect technology use (Al-Adwan et al., 2023). If learners enjoy using the LMS, they may be more inclined to explore its capabilities and characteristics, which may affect their opinion of its ease of use.

According to Venkatesh (2000), when users acquired more direct experience with the system, the impact of enjoyment increased. PEU can influence students' perceived effectiveness of online learning for a variety of reasons. Students' learning performance and usefulness improve when they like virtual learning portals that assist them with their learning productivity. As previously proposed, the LMS must be simple to use and require minimal effort to engage students instinctively in order to boost their usefulness.

The Technology Acceptance Model (TAM) emphasises primarily on Perceived Usefulness and Perceived Ease of Use as technology adoption variables. Nevertheless, this finding can contribute to broader discussions and iterations of TAM in which other constructs, such as enjoyment, play a significant role in influencing technology perceptions and adoption.

For H11, PEU and SAT showed a positive impact. This result revealed a parallel point with some other studies by Teo et al. (2019); Al-Adwan (2020); Al-Rahmi et al. (2018); Findik-Coşkunçay et al. (2018); Al-Azawei and Lundqvist (2015); Cidgem and Ozturk (2016); and Abdel-Moksoud (2017), who also asserted that Satisfaction (SAT) was predicted by Perceived Ease of Use (PEU). The findings of this study implied that the more the students perceived ease of usage, that would possibly be reflected in their level of satisfaction with the system. The studies by Al-Azawei and Lundqvist (2015) and Abdel-Maksoud (2018) also showed that students' satisfaction was also influenced by other additional factors such as user interface and course content quality.

In this current study, the language learners who perceived the LMS as easy to use were satisfied with their language proficiency, the quality of their learning and the feedback given by their instructor. As argued in previous literature by Al-Adwan (2020) and Findik-Coşkunçay et al. (2018), learner satisfaction can also be associated with the instructor's presence, such as their engagement and responsiveness in the online learning process.

While there are certainly common elements among this research, such as the relevance of perceived ease of use, perceived usefulness and social influence, unique findings and contextual changes may lead to discrepancies in results. The type of platform (e.g., Moodle, MOOCs), cultural setting and emphasis on satisfaction and intention to use can all have an impact on the outcomes of these studies.

For Hypothesis 12 (H12), the results showed that Perceived Ease of Use (PEU) failed to impact Behavioural Intention (BI) positively. This finding is consistent with Han and Sa (2021) and Al-Bashayreh et al. (2022). One key difference between this study and Han and Sa (2021) and Al-Bashayreh et al. (2022) was the context of the studies. Han and Sa focus on online educational classes, which are typically web-based, while Al-Bashayreh et al. (2022) examine mobile learning applications, which are designed for mobile devices. Moreover, there was a potential time difference between the studies (Han and Sa in 2021, Al-Bashayreh et al. in 2022). This time gap could reflect changes in technology, user preferences and societal norms, which may affect findings. For instance, the adoption of online education might have accelerated in the wake of the COVID-19 pandemic.

The participants in the current survey believed that using the LMS allows them to attain higher learning performance with lesser effort. They also thought the LMS was reliable. However, this had little effect on their behavioural intention to utilise the LMS.

Findings from prior studies share a common interest in understanding user acceptance and intention to use technology but differ in terms of context, technology type and potentially the demographic makeup of their participants. These contextual differences can lead to variations in the specific findings and implications of each study.

For H13, an important point the model suggested was about Behavioural Intention (BI) which was inclined to be directly affected by PEN. This discovery aligns with the findings of prior research by Khalid (2014), Alraimi et al. (2015), Findik-Coşkunçay et al. (2018) and Al-Rahmi et al. (2021). Similar to the current study, all these studies investigate factors that influence students' adoption or intention to use Learning Management Systems (LMS). They aim to understand the drivers behind students' decisions to use these systems. The studies also share a common context of higher education, focusing on how LMS

adoption relates to students in higher education institutions. The studies, however, were conducted in different years, which might reflect differences in the technological and educational landscape. There may have been changes in educational procedures and technological developments throughout this time. Overall, cultural and institutional factors also play important roles in LMS adoption.

Based on the findings of the current study, if a learner finds using a learning system enjoyable, he or she is more likely to have a positive attitude toward the system and a greater intention to use the system and they will be more likely to use it again in the future. Thus, educators should prioritise their teaching in a manner that fosters student engagement and enjoyment. In order to enhance the educational experience, it is recommended that educators make a concerted effort to involve students in a greater number of online activities, thereby capitalising on the inherent enjoyment that these activities offer to learners.

For Hypothesis 14 (H14), this study found that language learners are satisfied with LMS use, thus increasing a favourable impact on their behavioural intention to utilise the system in the future. This relationship suggests that when students experience increased satisfaction with LMS, it has a favourable impact on their behavioural intention to use LMS in the future. In a similar vein, previous research conducted by Alraimi et al. (2015), Kim and Lee (2020) and Pozón-Lopez et al. (2021) demonstrated that there exists a positive relationship between satisfaction and intention. In other words, these studies implied that users' satisfaction with Massive Open Online Courses (MOOCs) played a crucial role in determining learners' intention to continue using these platforms. High levels of satisfaction are generally associated with a greater likelihood of learners wanting to continue using MOOCs. Also discovered in these studies was the fact that perceived quality of MOOCs,

course content and design and perceived value can increase students' intentions to continue using MOOCs in the future.

Overall, the cognitive variables PU and PEU were able to exert direct relationships with the affective variables SAT and PEN. Both cognitive variables were found to have insignificant effects on BI. The findings of H6, H7, H8, H9, H10, H11, H12, H13 and H14 were able to answer research objective 3 that cognitive variables (PU and PEU) can impact affective variables (PEN and SAT) as well as Behavioural Intention (BI).

For the fourth research objective, this study seeks to investigate the mediation effect of Perceived Enjoyment (PEN) in between Perceived Usefulness (PU) and Behavioural Intention (BI) to use LMS in learning English.

The mediation analysis for Hypothesis 15 (H15) portrayed that Perceived Usefulness (PU) and Perceived Enjoyment (PEN) can better enhance students' Behavioural Intention (BI) to use the Learning Management System (LMS).

In other words, the students of this study perceived that the LMS is a robust learning tool, which enhanced their perception of its usefulness. The existence of hedonic values such as fun and pleasure in using the system will shape students' acceptance and use in the future with a higher intensity.

Maheswari (2020) and Hung (2022) used the variable enjoyment as a mediator in prior studies, while Humida et al. (2021) used it as a predictor. The findings of Maheswari (2020) showed that there was no indirect effect between the intrinsic factors (perceived ease of use and self-efficacy) and online learning intentions but a direct effect between enjoyment and online learning intention. This finding showed that enjoyment directly correlates with intention, which is parallel to the current study's finding. In line with the current study's findings, Hung (2022) proved that foreign language enjoyment could mediate teachers'

emotional support and intrinsic motivation to learn English. Students who reported feeling a greater sense of emotional care from their English as Foreign Language instructors reported greater enjoyment in learning English and, in turn, an increase in their intrinsic motivation to learn English.

This hypothesis's key finding is that Perceived Enjoyment (PEN) acts as a mediator for this study, in between Perceived Usefulness (PU) and Behavioural Intention (BI). These findings add to the body of knowledge of how enjoyment can impact students' perceptions directly and indirectly in the context of English language learning through the online learning platform. The findings of H15, were able to answer research objective 4 that Perceived Enjoyment had an indirect effect between PU and BI.

For research objective 5, this study seeks to investigate the mediation effect of Satisfaction (SAT) between Perceived Ease of Use (PEU) and Behavioural Intention (BI) to use LMS in learning English. The second mediation model Hypothesis (H16) was evaluated to determine the indirect impacts of SAT between PEU and BI.

In Dash's (2022) study, he expanded the Technology Acceptance Model (TAM) (Davis, 1989) by including factors for e-learning technologies (PU, PEU and BI). The author tested the relationships between Perceived Usefulness (PU), Perceived Ease of Use (PEU), on Behavioural Intention (BI), with Satisfaction (SAT) as a mediator. The overall findings for Dash (2022) were that there was no indirect effect that flowed between $PEU \rightarrow SAT \rightarrow BI$. This finding is consistent with the current study's outcome.

PU has always played a significant role in increasing student and teacher satisfaction (Dash & Chakraborty, 2021). When it comes to e-learning, PEU is crucial in increasing both user satisfaction and their purpose for using the platform (Mohammadi, 2015).

This hypothesis's key finding is that satisfaction did not act as a mediator for this study, in between Perceived Ease of Use (PEU) and Behavioural Intention (BI). These findings add to the body of knowledge on how to promote better learners' satisfaction through online learning platforms to boost students' perceptions directly and indirectly in the context of English language learning.

According to Dash and Chakraborty (2021), both PU and PEU were shown to increase behavioural intention to use but indirectly affect satisfaction (Salloum et al., 2019). The mediating effect of satisfaction is crucial, especially when the underlying determinants do not significantly alter behavioural intention (Jaber, 2016).

The findings of H16 were not able to answer research objective 5, where Satisfaction did not have an indirect effect on PEU and BI.

This study's findings could shed light on how perceptions shape institutional decision-making for transitioning toward technology in teaching English and align with the post-pandemic period where technology usage has become the norm. Perceptions play a crucial role in shaping institutional decision-making when it comes to transitioning toward technology in teaching English. The attitudes, beliefs and opinions held by stakeholders, including administrators, teachers, students and parents, can influence the adoption and integration of technology in educational settings. Positive perceptions of technology in teaching English, such as the belief that it enhances learning outcomes, improves engagement, or provides flexibility, may encourage institutions to prioritise and invest in technological resources, training programs and infrastructure. Conversely, negative perceptions, such as concerns about technology replacing traditional teaching methods, a lack of technological skills, or scepticism about the effectiveness of technology in language learning, may impede the adoption of technology. The post-pandemic aspect is relevant

because the COVID-19 pandemic has significantly accelerated the use of technology in education. Many educational institutions worldwide have had to shift to remote or hybrid learning models, heavily relying on technology platforms, online resources, and virtual classrooms. The sudden and widespread adoption of technology during the pandemic has forced institutions to reconsider their approaches to teaching and has brought about a paradigm shift in educational practices.

While institutions have recently emerged from the pandemic, the experience of relying on technology during the crisis has likely impacted their perceptions and attitudes toward technology in education. The post-pandemic period offers an opportunity to reflect on this experience, assess the benefits and challenges of technology integration, and make informed decisions about its role in future teaching practices. Therefore, understanding how perceptions shape institutional decision-making in adopting technology in teaching English is crucial for educational stakeholders to leverage the potential of technology effectively and align with the emerging educational landscape influenced by the post-pandemic "new normal."

6.4 Summary of Findings

This study was primarily conducted to investigate undergraduates' behavioural intention to use the Learning Management System in learning English at a public Malaysian university. The Technology Acceptance Model (TAM) by Davis et al. (1989) was selected as a theoretical framework for this study due to its flexibility and effectiveness in examining student use of the e-learning system. The analysis of quantitative data in Chapter 5 showed many results. The key findings obtained from this study are summarised as follows:

1. Self-Directed Learning (SDL) has a significant positive impact on Perceived Usefulness (PU).

2. Self-Directed Learning (SDL) has a significant positive impact on Perceived Ease of Use (PEU).
3. Self-Directed Learning (SDL) has a significant positive impact on Behavioural Intention (BI).
4. SDL has a significant positive impact on Perceived Enjoyment (PEN).
5. SDL has a significant positive impact on Satisfaction (SAT).
6. Perceived Usefulness (PU) has a significant positive impact on Perceived Enjoyment (PEN).
7. Perceived Usefulness (PU) has a significant positive impact on Satisfaction (SAT).
8. Perceived Usefulness (PU) has a negative impact on Behavioural Intention (BI).
9. Perceived Ease of Use (PEU) has a significant positive impact on Perceived Usefulness (PU).
10. Perceived Ease of Use (PEU) has a significant positive impact on Perceived Enjoyment (PEN).
11. Perceived Ease of Use (PEU) has a significant positive impact on Satisfaction (SAT).
12. Perceived Ease of Use (PEU) has a negative impact on Behavioural Intention (BI).
13. Perceived Enjoyment (PEN) has a significant positive impact on Behavioural Intention (BI).
14. Satisfaction (SAT) has a significant positive impact on Behavioural Intention (BI).
15. There is an indirect effect between Perceived Usefulness (PU) and Behavioural Intention (BI) through Perceived Enjoyment (PEN).
16. There is no indirect effect between Perceived Ease of Use (PEU) and Behavioural Intention (BI) through Satisfaction (SAT).

6.5 Implications of the study

Based on the results, this section provides some guidelines to various stakeholders in the LMS, such as educators of institutions of higher learning, online learning system designers, the Education Ministry of Malaysia and policymakers.

The findings of empirical analyses bring about the following significant theoretical and practical implications.

6.5.1 Theoretical contribution

Students' views on online learning systems used in high education institutions are examined in many studies (Amid & Din, 2021; Binyamin, 2019; Chung et al., 2020). These studies showed how students' e-learning experiences could be improved. The actual outcome of this research is the development of a novel model that can better understand Malaysian undergraduates' behavioural intention to use LMS in learning English. The new conceptual model is a significant addition to the current body of knowledge that will enhance the Technology Acceptance Model (TAM) dimensions. The model is recognised as the Extended Technology Acceptance Model (ETAM), which comprises six variables, Self-Directed Learning (SDL), Perceived Usefulness (PU), Perceived Ease of Use (PEU), Perceived Enjoyment (PEN), Satisfaction (SAT) and Behavioural Intention (BI).

In higher education, the Technology Acceptance Model (TAM) explains students' online learning acceptance and behavioural intention in e-learning. The current outcome demonstrates ETAM's validity in explaining students' behavioural intentions toward Malaysian public higher education institutions. In research objectives 1 and 2, extended variable self-directed learning (SDL) is recognised as an important construct in the realm of technology use and the learning of English. It was found to have direct positive relationships on Perceived Ease of Use (PEU), Perceived Usefulness (PU), Perceived Enjoyment (PEN),

Satisfaction (SAT), Behavioural Intention (BI). These findings contributed to new relationships in the Technology Acceptance Model (TAM) literature in Malaysia. It also adds to the literature on English language learning and technology use with the inclusion of SDL in the TAM. It bridges the gap that variables of TAM can be applied to measure students' behavioural intention to use the Learning Management System (LMS), as pointed out by Gamble (2018) and Lai (2015), who found that TAM is minimally applied in an English as a Second Language (ESL) context.

The findings of this study also found the significance of affective factors Perceived Enjoyment (PEN) and Satisfaction (SAT) to be applied to the TAM model to bridge the gap that cognitive variables Perceived Usefulness and Perceived Ease of Use (PEU) have always been utilised in technology acceptance studies and that affective factors should be explored according to Lee et al. (2017). As found in this study, both cognitive (PU and PEU) and affective (PEN and SAT) variables are important to explain students' behavioural intention to use the LMS to learn English. The cognitive variables PU and PEU were found to have significant positive relationships with the affective variables PEN and SAT.

Another contribution of this study is that the findings demonstrated the significance of the variables in explaining Behavioural Intention (BI). The proposed extended technology acceptance model (ETAM) was able to explain 69% of the variance in BI. The final contribution of this study to theory concerns the investigation of the mediating effect of affective variables Perceived Enjoyment (PEN) and Satisfaction (SAT) on cognitive variables Perceived Usefulness (PU) and Perceived Ease of Use (PEU) on Behavioural Intention (BI). Prior studies revealed that SAT and PEN were found to function as mediating variables (Joo et al., 2018; Maheshwari, 2021; Ngah et al., 2022; Nugroho et al., 2019). The findings from this study revealed that there was an indirect effect of Perceived Usefulness

(PU) on Behavioural Intention (BI) through Perceived Enjoyment (PEN). There was no mediation that flows between Perceived Ease of Use (PEU) and BI. It also signifies that an affective factor such as PEN can function as an exogenous variable (Humaida et al., 2021) and as a mediator.

The findings of this study will allow future researchers to evaluate the efficiency of learning management systems and replicate this extended model in the context of e-learning.

6.5.2 Practical contributions

Data analysis results may have practical consequences for university online learning system development and management. It is not surprising that positive perceptions about ease of use, usefulness and behavioural intention are essential for accepting most new technologies. Findings from the literature support that the use of blended learning in ESL classrooms can develop various English language skills (Daneil et al., 2019; Ghazizadeh & Fatemipour, 2017; Rahmawati, 2022; Rusli et al., 2019) and enhance student engagement (Zhang & Zhu, 2018). These findings call for language educators to provide more opportunities for students to practice language learning outside of the allotted class time. For example, educators can identify activities such as problem solving, critical thinking and researching that they can do before any physical class through the online learning platform, such as the flip classroom concept. The students can prepare ahead for the tasks given by their lecturer and later, a discussion may follow during the physical class. These activities provide them ample opportunities to be well prepared for their classes and allow them to take charge of their learning process.

The findings of this study also revealed that the Learning Management System (LMS) failed to impact students' perceptions of usefulness and ease of use on behavioural intention. This means that the environment of the LMS in terms of its efficacy and

effectiveness, did not impact the language learners' perceptions of their ability to engage in the various activities available through the system.

The findings also proved that students' self-directed learning behaviours were able to have a direct impact on Perceived Usefulness (PU), Perceived Ease of Use (PEU), Perceived Enjoyment (PEN), Satisfaction (SAT) and Behavioural Intention (BI). Both cognitive factors (PU and PEU) were able to positively affirm their enjoyment and satisfaction of using the LMS.

As technology use is mandatory and inevitable, it is also essential to empower learners to evaluate and use technology effectively for their language learning. At this current post-pandemic time, many classes will still be conducted through a blended learning (BL) approach. Thus, this framework supporting a mixed learning climate remains significant in the educational realm. As suggested by Cobo-Rendón et al. (2022), the current post-pandemic conditions represent a defining moment for determining how higher education will deliver instruction. It requires constructing an institutional framework for BL implementation from a theoretical and practical perspective to provide critical elements for implementing a high-quality BL model post-pandemic.

Language instructors should continuously nurture certain behavioural patterns, such as being self-directed, autonomous and having a positive attitude. Students who transition from high school should also be given support in using the LMS, such as training and encouragement by their lecturers in adapting to the new teaching norm. When support and encouragement are given, it can indirectly affect students' feelings; they will feel satisfied and enjoy the language learning process. Findings by Işık and Balçıkanlı (2020) revealed the importance for language educators to motivate students, offer linguistic advice and encourage peer collaboration in language classes by using resources, capacity, technology

and social support. The authors also reiterated that educators could boost students' goal-setting and language confidence by using technology to make language learning fun. In line with the findings by Lai (2015), teachers' influence through encouragement and endorsement can increase students' self-directed technology use for language learning beyond the classroom.

For the LMS system, LMS designers should design a high-quality system that is effortless in its use; fast-paced, accessible and easily adaptable features can alter the users' perceptions. LMS designers play prominent roles in designing a system with tabs that can be clicked easily. Such tabs could be categorised in alphabetical order so students can easily navigate. These tabs include assignments, forums or discussions, tutorials and even quizzes. The decision-makers of higher institutions in Malaysia should also opt for online learning platforms that can be customised and personalised according to the user's preference to ensure ease of use. Oliwa (2021) argued that developing an online platform requires the collaborative efforts of students, lecturers and administrative personnel, as they all have prior experience working with online platforms or have special needs for their functionality. The Technology Acceptance Model assumes that the usefulness and ease of use of a platform can influence the acceptance of an information system; as a result, if the online platform users are in charge of the construction process (customising and personalising online learning platforms), it can increase users' behavioural intention to use the platform.

With more mobile devices, such as smartphones and tablets, it is also better to consider the type of LMS compatible with them, as they are more convenient to carry and download through mobile application stores. The efforts to sustain Learning Management System (LMS) usage would entail students' continuous use of the system, thus enhancing their perception of ease of use. When students possess a certain level of confidence, they can

quickly adapt to the LMS with continuous usage, although it can be challenging during the initial stage.

Language educators can increase students' perceptions of usefulness through the activities, assessments and learning materials posted on the platforms that match the students' learning objectives and their level of competency. Based on the findings, students enjoyed completing interactive activities and participating in the quizzes on the learning platform. The students also used the LMS to brush up on their language skills, such as writing and speaking. All these tasks were found to increase their perception of enjoyment.

It can also be implied that the affective variables could justify their applicability in explaining behaviour. The respondents to this study acknowledged that the learning materials were enjoyable and satisfying while acquiring language. Since this study measured hedonic and utilitarian values, both values are essential in measuring students' behavioural intentions. The findings can also be generalised to show that students were comfortable using the LMS, thus increasing their satisfaction. Institutions should consider features that capture students' satisfaction. Upon achieving satisfaction and enjoyment, users of the LMS would develop a strong positive attitude toward using it. As pointed out by behaviourist theorists, a person's positivity can lead to behavioural undertakings. Their aim to learn English is fundamental to impacting their behavioural intentions.

Tapping into students' self-directed learning skills can be challenging. Therefore, language educators and syllabus designers should inform language learners about language learning strategies. Learners can be trained to exercise skills and language learning strategies at the highest level. These strategies can be introduced as part of the learning component at the start of the language class to prepare first-year students to transition to the university level.

Stakeholders are to adhere to the plans of technology used to keep abreast of other developed countries and support lifelong learning, as highlighted in the aspirations of the Malaysian Education Blueprint (2015–2025) and the Sustainable Development Goal (SDG) plans.

Some guidelines should be drawn by the Higher Education Institutions (HEIs) when implementing e-learning. For instance, there should be a clear vision mandated by all HEIs as to how they can go about implementing e-learning initiatives on their campuses. There should also be comprehensive guidelines for educators to follow and support should be given through continuous training to facilitate the effectiveness of e-learning implementation. Educators should also be empowered to employ activities that best suit the e-learning needs of their students. Feedback and evaluation of the online learning system should also be provided to the technical teams in case of technical glitches. This can help to improve the quality of the system and users' perceptions, in particular usefulness, ease of use and behavioural intention.

The fundamental essence of students' behavioural intentions in second language (L2) learning is still a growing field. Educators should embrace high motivation and a positive attitude to be role models for students to adopt a similar stance. Practically, this study may help language educators understand what motivates students to shape their perceptions and intentions when language and technology use are mandatory.

6.6 Directions for Future Research

This study found that the exogenous variable Self-Directed Learning (SDL), affective variables Perceived Enjoyment and Satisfaction (PEN and SAT) and cognitive variables Perceived Usefulness and Perceived Ease of Use (PU and PEU) affect Behavioural Intention (BI). Future studies can look at what can further support affective and cognitive

traits affecting students' behaviour. Some of the problems highlighted in the literature were the challenges of using the online learning system (Mohammadi, 2021). The current study elicited students' views on Perceived Ease of Use. Based on the findings in Section 5.23, the mean values for PEU ranged from 3.89 to 4.01.

The results implied that students perceived using the LMS to learn English as easy. However, little is known about the characteristics or quality of the LMS. Thus, future studies can extend another variable impacting both cognitive and affective variables of the Technology Acceptance Model (TAM), namely, system quality. A recent study by Haddad (2018) highlights that system quality can affect a user's satisfaction with a system. Problems faced by students of online learning platforms, such as technical issues and complicated interfaces, can further create frustration and demotivation. A recent study by Shazad et al. (2020) highlighted that system quality could significantly impact students' satisfaction with the e-learning portal. The authors reiterated that Malaysian universities' policymakers, the Ministry of Higher Education, should be involved in establishing policies and programmes for the nation's e-learning platforms.

As most research on self-directed learning has been conducted in traditional learning environments, investigating the idea in non-traditional learning settings can be seen as an ongoing effort. The findings of this study indicate that further research is warranted to identify learners' characteristics in accepting technology. An extension of the model with variables such as users' Self-Learning Management (SLM) in the existing Technology Acceptance Model (TAM) allows an expansion of the literature on students' learning initiative and self-discipline to take charge of their learning. Online learning is inevitable and language learners who wish to participate in any virtual learning platform must exercise the highest motivation. It has been previously demonstrated that self-learning management

plays a critical role in facilitating higher learning performances. Huang (2014) labelled SLM as having the potential to be a crucial driver of learning achievement. Huang also linked SLM to variables like learner autonomy (LA), independent learning and self-directed learning. The literature also depicted that SLM was previously associated with extrinsic and intrinsic motivation. SLM was also significantly associated with students' self-discipline and autonomous learning. The adoption of SLM as a useful variable concerning online learning can be looked into to gather empirical findings in Malaysian education.

One of the challenges highlighted by Jalleh (2021) is the lack of support from lecturers and peers, which is one of the barriers to LMS. Thus, the researcher suggests that instructor support is another variable to be extended in future research. For example, the instructor can continually guide and nurture the students to perform better and shape positive behaviour to learn. This is especially true within the current sociocultural context, where individuals value and treat their elders with the highest respect (Ahmad et al., 2018). Therefore, with the magnitude of an instructor's support and language learners' attitudes, students can apply their motivations for self-directed technology learning to their English language learning.

6.7 Limitations and Delimitations

As with any research, this study possessed some limitations. These include the research population, research methodology, variables used and self-reporting format.

The research findings may be limited to the research population, which consisted of 443 samples. This sample is only a tiny proportion of the entire population of Malaysian LMS users and the type of LMS being studied. Next, the population involves only undergraduates from one Malaysian public university but not from other institutions. It does not cover postgraduate students, as the population is smaller than undergraduates. As the

samples come from one public institution in Malaysia, the characteristics of the Learning Management System (LMS) of this institution may be similar or drastically different from those of other institutions. Thus, generalisability was also limited based on the characteristics above and only the institutions studied. Hence, future research should include samples from other institutions of higher learning.

This research was carried out through a quantitative variance-based SEM approach using Smart PLS software, requiring a minimum sample size of 50. The measures used were indirect because actual observations of these behaviours were not feasible. A quantitative study does not usually provide the same holistic understanding as a qualitative approach. It has limited the depth of knowledge, particularly students' verbal opinions on the tested variables. It will be primarily valuable for future studies to include a qualitative research design through observations and interviews. The variables used in this study only focused on TAM variables, which measure behavioural intention and do not measure other learning traits. It is also advisable to further extend the model with other significant variables to justify students' behavioural intention to use the LMS to learn English.

This study utilised a survey method using a questionnaire, which means that self-report measures were used. The main drawback of self-report questionnaires might be the high possibility of providing invalid answers.

Aside from limitations, the researcher also identified significant delimitations for this study. These include research objectives, research context and research populations.

This research has five achievable objectives. The first objective is the uniqueness of the research model that can justify Malaysian students' behavioural intention to use LMS to learn English. Based on the analysis, the extended technology acceptance model (ETAM) can explain Malaysian undergraduates' behavioural intention to use the LMS to learn

English. This means that this study has significantly contributed to the TAM in ESL literature in Malaysia, which is still very limited. The population of this study involved only 443 students who volunteered to participate in the survey. As undergraduates in Malaysia are using online learning platforms, it is thus ideal to study these groups of sample size and discover their behavioural intention to use the LMS to learn English.

6.8 Conclusion

This chapter discusses the results obtained based on the hypothesised relationships and the research objectives. In addition, it includes a discussion of the findings of the six variables that were examined by the sixteen hypotheses. The supported and unsupported relationships in the structural model were explained to help understand the influence of Self-Directed Learning (SDL) on the cognitive variables (PU and PEU) and the affective variables (PEN and SAT) on Behavioural Intention (BI).

In a nutshell, this research contributes to the use of e-learning systems (LMS) in higher education institutions in Malaysia. It proposes that self-directed learning, perceived usefulness, perceived ease of use, satisfaction, perceived enjoyment and behavioural intention are six variables that affect undergraduates' behavioural intention to use LMS to learn English. The study's sample size comprises 443 undergraduates who volunteered to participate in the survey. The primary goal of the current study was to evaluate the role of the extended Technology Acceptance Model (TAM) and its variables, which could impact behavioural intentions to adopt LMS in academic settings.

Research on online learning will continue to be performed as more innovative teaching and learning platforms continue to emerge. More efforts should be put forward, as the findings in this study cannot be generalised amongst all educational institutions in

Malaysia regarding undergraduates' behavioural intention to use the Learning Management System (LMS) to learn English.

Due to the constant influx of new technology, educators can now change the type of education they provide both within and outside of the classroom. As a result, they must think of creative ways to leverage the diverse range of technical tools as they replace outdated teaching strategies. While face-to-face (F2F) sessions and additional language practise may be done outside of the classroom with the aid of the Learning Management System (LMS), blended learning offers a flexible learning environment for learning English. Face-to-face classes are conducted in a more formal setting; the other mode made available through the LMS enables students to gain language skills and indirectly use other language learning techniques.

The teaching and learning environment has undergone an unheard-of transformation throughout the COVID-19 period. Language-related applications, virtual tutors, video conferencing technology and online learning software have increased since the COVID-19 epidemic (Han & Sa, 2021). Every institution globally has undergone a significant change in how it teaches, requiring all classes to be conducted online. This demonstrates how technology is both necessary and flexible. Universities must face and adjust to the modifications and realities of such a transformation. Shift 9 of the Malaysian Educational Blueprint aims for sustainability, which can influence students' educational experiences. To do this, they must simultaneously establish clear goals while being innovative (2015–2025).

Literature on the challenges of learning online due to connection issues has always been highlighted and is seen as a global phenomenon. While students are engaging in online classes, their ability to be involved in online classes may dwindle due to connection issues and the struggle to adjust to online pedagogy, creating stress and impacting their motivation

to study in an online environment. Government initiatives must be implemented to offer high-speed connectivity to ensure a high rate of internet penetration for everyone.

Since online learning is highly challenging, it does not mean that the role of lecturers is redundant but functions as a mediator in facilitating students to be keener in their learning processes. One particular role they should exhibit is to nurture students from the beginning of their foundation years to be more self-directed and proactive in strategising their language learning and to be successful language learners. Both students and lecturers must consider changing their attitudes, beliefs, behaviours, mindsets and habits to remain adaptable to changes (Cigdem & Ozturk, 2016).

The Malaysian educational system has historically used a teacher-centered methodology. The education system itself places an excessive amount of emphasis on students' academic performance while ignoring the development of critical skills like digital literacy, training and developing learning strategies and skills, creative thinking, communication skills, critical and problem-solving skills and independent learning that are necessary to prepare students to remain competitive globally and increase employment opportunities. With cutting-edge technology tools, students may practise independent study and are encouraged to pick up and master the English language.

Higher education institutions throughout the world should always be prepared to investigate and rebuild a virtual platform culture that can close isolation gaps by encouraging improved 21st-century teaching and upgrading students' 21st-century abilities. Lecturers are essential in encouraging students to study English online while also nurturing them to think positively and engage in active learning on a regular basis.

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APPENDICES

Expert's validation form

Undergraduates' behavioural intention to use Learning Management System (LMS) to learn English: An extended Technology Acceptance Model (TAM)

Prof. / Assoc. Prof. / Dr. / Sir / Madam

The main purpose of the study is to explore undergraduates' behavioural intention to use LMS to learn English: An extended Technology Acceptance Model. This questionnaire is meant to gauge students' perception of the variables used in this study. The respondents of this study comprise of undergraduates from 1 public institution in Malaysia. The questionnaire will be administered via Google Form. The related research objective and research question are as follows:

Research aim	To explore undergraduates' behavioural intention to use LMS in learning English through an enhanced technology acceptance model (TAM).
Research objectives	1. To investigate the impact of external variable (Self-directed learning) on cognitive variables (Perceived Usefulness and Perceived Ease of Use) and Behavioural intention (BI). 2. To examine the impact of external variable (Self-Directed Learning) on affective variables (Perceived Enjoyment and Satisfaction) and Behavioural Intention (BI).

	3. To examine the effect of affective variables (Perceived Enjoyment and Satisfaction) on Behavioural Intention (BI). 4. To examine the mediation effect of Perceived Enjoyment (PEN) in between Perceived Usefulness and Behavioural Intention (BI). 5. To examine the mediation effect of Satisfaction (SAT) in between Perceived Ease of Use (PEU) and Behavioural Intention (BI).
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The purpose of this validation is **to assess the questionnaire's content validity in relation to the main constructs**. The results of this validation will be used to improve on the research instrument.

Please kindly return the completed validation form by **26 November 2021**. Your cooperation is highly appreciated.

Christine Shane
PhD student,
Faculty of Language and Communication
UNIMAS

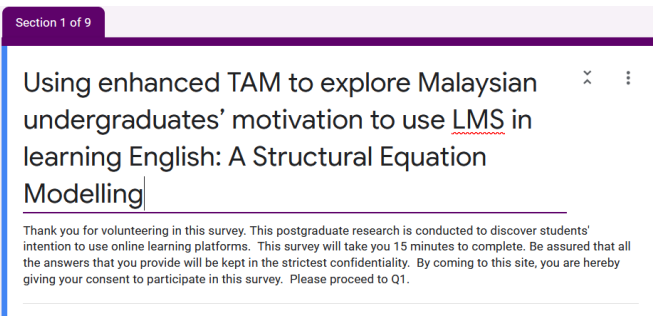
INSTRUCTIONS:

1. The questionnaire, in the actual Google Form format, is provided in the left column of the table below.
2. To validate the questionnaire, kindly **fill in the right column with any comments or suggestions** that you might have about the questionnaire.
3. For Section 2 of the questionnaire:

- the items are based on a 5-point Likert scale based on frequency with regard to the respondents' perceptions.
- There are a total of 48 items asked and 9 variables used.

4. **Rate each item in Section 2** according to the following scale by placing a tick (/) in the relevant box:

1 – Strongly	2 – Disagree	3 – Neither	4 – Agree	5. Strongly
Disagree		agree nor		Agree
		disagree		

Title	COMMENTS
	

Section A- Demographic of the respondents

Q1. Sex *

- 1 2
- Male ☐ ☐ Female

Q2. Programme *

1. Foundation Studies
2. Diploma
3. Bachelor's Degree

Q3. Age *

1. 17-20 years old
2. 21-25 years old
3. Above 25 years old

Q4. SPM English result (Malaysian students only)

1. A+
2. A
3. A-
4. B+
5. B
6. B-

7. C+

8. C

9. D

10. E

11. G

Q5. MUET English result (Malaysian students who had sat for MUET Exam) - Band 1 - Band 2 - Band 3 - Band 4 - Band 5	
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5. Band 5 6. Band 6 Q6. IELTS Exam Short answer text Q7.TOEFL Exam grade (where necessary) Short answer text Q8.Which online learning management system are you currently using? (eg: NEO LMS (UCSI Uni), Moodle, Blackboard,etc). Short answer text	
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Q9. How many years have you been using the online learning system? * 0.5 years 1 year 2 years - Above 2 years	
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Q10. Which institution are you from? - UCSI University Sarawak & Kuala Lumpur Campus - UNIMAS - Universiti Malaysia Sabah - University Tunku Abdul Rahman (UTAR) - Add option	Dropdown ▼ X X X X
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	Students may give a few answers to Q8, but Q9 assumes that there is only one answer to Q8. Students may use system 1 for 1
--	---

	year and system 2 for 5 years!!
--	--

Section B of Questionnaire

Comments on constructs	Questionnaire items
General comment: some constructs here are not in conventional TAM models (those marked with XX) and their inclusion requires a strong justification. There are also misplaced items.	

XXSystem Characteristics - How does this construct come into TAM? Whose questionnaire has this? - This could possibly be named as External factors: Facilitating conditions. See who Hind Abdulaziz Alfadda and Hassan Saleh Mahdi (2021) who categorised External factors as comprising these 3 sub-constructs: - <u>External variables</u> - Subjective norm The social pressure exerted by family and friends to engage in a particular - behavior (Agudo-Peregrina et al. 2014) - Computer self-efficacy The belief in one's ability to successfully complete a task using a computer - (Holden and Rada 2011) - Facilitating conditions The belief that adequate infrastructure exists to support the use of the technology. Infrastructure may include knowledge, admini	The online learning system provides me with enough features to learn English 1. The online learning system allows me to access Grammar exercises. 2. It is convenient to navigate through the online learning system for my language learning process. 3. The online learning system allows me to practise Vocabulary without any disruptions. 4. The online learning system has a stable internet speed that allows me to download my English language class materials.
XXComputer self-efficacy – confidence/no anxiety	Q1.I have the skills required to use the online learning system to improve my English language proficiency. Q2.My computer skills allow me to communicate effectively with my friends and lecturers through the online learning system. Q3.I have experience using the online learning system to learn English. Q4.The online learning system has a variety of functions that helped me in my writing skills

Your items require students to report skills they have, and ‘skill’ is different from ‘confidence’/self-efficacy. Item 4 is on features of the online learning system.	Q5.All in all, I consider myself competent to use the online learning system to enhance my language competency.
XXSelf-directed learning - Where does this construct come from? You need to cite somebody established to include this in TAM. - Items 2 and 3 are reports of activities they do, but do not show self-directed learning clearly. - Items 4 and 5 are like perceived usefulness type of items.	Q1.I can practise listening activities through the online learning system at my own pace.
	Q2.I will do error correction activities through the online learning system at home.
	Q3.I often participate in forums or discussions through the online learning system where I get to comment on my friends' essay or other activities outside the campus or at home.
	Q4.Reading articles provided in the online learning system helps me to improve my writing proficiency.
	Q5.Writing English essays and uploading them in the online learning system help me to improve my English.
Perceived usefulness – enhance job performance Items cover different aspects of learning, good. However, Items 2, 5 and 6 are on features that the online learning system has, not perceived usefulness.	Q1.The online learning system is useful for my English language learning process.
	Q2.The online learning system has an audio dictionary that allows me to check and practise pronunciation
	Q3.Using the online learning system is important as it allows me to improve my presentation skills in English.
	Q4.The online learning system is useful because it helps me to enhance my English language performance.
	Q5.The online learning system enables me to track my performance using the grade book.
	Q6.The feedback I got on the wrong answers to the quizzes I took through

Items 3 is on importance which is not usefulness. If you wish to investigate these aspects of learning, the items have to be reworded to focus on how xx increases/improves/enhances learning/doing something more quickly ...	the online learning system helps me to understand language structures.
Perceived Ease of use – convenience, fluency and flexibility. You can include items on whether they understand. You can have items on problems too (difficult to use, troublesome to use) The items look alright but cover only one aspect.	1. Learning to use the online learning system is easy for me.
	2. It is easy to be skillful in using the online learning system for my English language learning.
	3. I find it easy to do my language revision through the online learning system.
	4. I am able to obtain feedback from my peers and lecturers easily through the online learning system on my written assignment
	5. I find it easy to track spelling errors through the online learning system.
Perceived Enjoyment- free of physical and mental effort - Treated as same as Ease of Use by Davis (1989) and others like Rentler and Apple (2020). - Item 2 does not belong here, it should be under Ease of Use.	1. I have fun using the online learning system to improve my writing skills
	2. I find the language quizzes through the online learning system flexible as I can do it anytime I like.
	3. The videos uploaded in the online learning system motivate me to learn English as they are entertaining and enjoyable.
	4. Once I start participating in the interactive English activities through the

- Items 3 and 5 are double-barrelled. Item 5 is particularly problematic because assignment and tutorials are different.	online learning system, I find it hard to stop as I enjoy using it.
	5. Chatting with my lecturer and peers regarding my assignment/tutorials through the online learning system is never boring.
XXSatisfaction - I presume you are adapting somebody's framework that has this construct - Items 2 and 4 has too many parts, which means that students may agree with one part (cause) but may not agree with the other part (effect).	1. I am satisfied with my English language proficiency after using the online learning system.
	2. I am pleased with the amount of reading articles in the online learning system posted by my lecturer to enhance my reading skills.
	3. I am satisfied with the quality of learning through the online learning system.
	4. I am satisfied with the lecture notes and materials posted in the online learning system where my tasks and other activities are quickly completed.
	5. I am satisfied at the feedback given by my lecturer (tutorial/assignment) through the online learning system.
Attitude	1. Using the online learning system to enhance my English is an excellent idea.
	2. I am always looking forward to use the online learning system to communicate with my lecturers and my peers.
	3. The online learning system helps me to appreciate English language learning more.
	4. The online learning system allows me to practise listening in a more interesting way.
	5. I like the idea of using the online learning system to learn English
Behavioural intention – adoption intention and continued use intention: frequency, time/duration, usage level	1. I am willing to use the online learning system to download lecture notes, participate in online quizzes and submit English assignments in the future.
	2. I intend to increase the usage of the online learning system in and out of the English classes.

Item 1 is a double-barrelled item which can be separated into 3 items. Item 2 has two items inside. Items 3 and 4 have overlaps because Item 3 is very broad. But if you can justify that they mean different things, then it is ok. Item 5 is on user acceptance, need to cite somebody to use this to measure intention, which is usually about own intention. Items 5 and 6 have overlaps because Item 6 is very broad. But if you can justify that they mean different things, then it is ok.	3. I predict that I will use the online learning system for my English language studies next semester.
	4. I plan to participate in more language learning activities through the online learning system in the future.
	5. I will recommend others to use the online learning system to enhance their vocabulary in the future.
	6. I will recommend my friends to use the online learning system to improve their English in the future.

SIGNATURE: TSH (1 Dec 2021)

NAME OF VALIDATOR: Associate Professor Dr Ting Su Hie

INSTITUTE/ORGANISATION: Faculty of Language and Communication, Universiti Malaysia Sarawak

POSITION: Lecturer

FIELD OF EXPERTISE: Language use, identity and attitude, communication strategies, health communication and academic writing. I have conducted studies using the Theory of Planned Behaviour which underlies Technology Acceptance Model.



CENTRE FOR LANGUAGE STUDIES

QUESTIONNAIRE

Dear Respondents,

This questionnaire aims at understanding undergraduates' Behavioural Intention to use Learning Management System (LMS) to learn English.

This survey is conducted for **academic purpose only**. The responses to this questionnaire are anonymous and will be kept strictly confidential and the actual responses will not be available to the upper management. Thus, it is essential that the responses to the questionnaire to remain authentic.

Section A: Demographic

This section is to collect students' demographic information.

Section B: Students' behavioural intention to use e-learning

This section is to collect students' particulars and students' opinions on their usage of LMS.

Please follow the instructions given to complete this questionnaire.
Thank you!

The researcher,
Christine Ong Yik Fang
PhD. Student

Section A: Demographic information

Complete the following:

1. Gender

Male ☐

Female ☐

2. Age: _____

3. Name of institution: _____

4. Program:

Foundation ☐

Diploma ☐

Bachelor's Degree ☐

5. How long have you been using the online learning platform?

1 semester _____

0.5 year _____

1 year _____

2 years _____

More than 2 years _____

Section B: The Questionnaires

Instruction: For each questions below, circle the response that best characterize how you feel about the statement.

1	2	3	4	5
Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree

1. I can practise listening activities through the online system at my own pace.	1	2	3	4	5
2. Reading the articles provided in the online learning system helped me increase my writing proficiency.	1	2	3	4	5
3. Writing English essays and uploading them to the online learning system helps me improve my English.	1	2	3	4	5
4. The online learning system is useful for my English language learning process.	1	2	3	4	5
5. Using the online learning system is important as it allows me to improve my presentation skills in English.	1	2	3	4	5
6. The online learning system is useful because it helps me enhance my language performance.	1	2	3	4	5
7. Using the online learning system to enhance my English is an excellent idea.	1	2	3	4	5
8. Learning to use the online learning system is easy for me.	1	2	3	4	5
9. The language quizzes posted through the online learning system is easy to use.	1	2	3	4	5
10. I find it easier to do my language revision through the online learning system.	1	2	3	4	5
11. I can obtain feedback from my peers and lecturers quickly through the online learning system on my written assignment.	1	2	3	4	5
12. I find it easy to track spelling errors through the online learning system.	1	2	3	4	5
13. I have fun using the online learning system to improve my writing skills.	1	2	3	4	5

14. I find the language quizzes through the online learning system flexible as I can do it anytime I like.	1	2	3	4	5
15. Once I started participating in the interactive English activities through the online learning system, I find it hard to stop as I enjoy using it.	1	2	3	4	5
16. I am always looking forward to use the online learning system to communicate with my lecturers and my peers.	1	2	3	4	5
17. The online learning system helps me to appreciate English language learning more.	1	2	3	4	5
18. The online learning system allows me to practise listening in a more interesting way.	1	2	3	4	5
19. I like the idea of using the online learning system to learn English.	1	2	3	4	5
20. I am satisfied with my English language proficiency after using the online learning system.	1	2	3	4	5
21. I am satisfied with the quality of learning through the online learning system.					
22. I am satisfied with the feedback given by my lecturer (answers for tutorials/comments).	1	2	3	4	5
23. I plan to participate in more language learning activities through the online learning system.	1	2	3	4	5
24. I will recommend others to use the online learning system to enhance their vocabulary in the future.	1	2	3	4	5

END OF QUESTIONNAIRE