

Teacher Trainee's Acceptance of Interactive eBooks for Teaching: An Analysis Using the Modified Technology Acceptance Model (TAM)

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Abstract

The current empirical study utilized the Technology Acceptance Model (TAM) to investigate teacher trainees' acceptance of interactive eBooks for teaching. The study investigated the relationships among variables such as attitude toward using interactive eBooks, perceived ease of use, perceived usefulness, enjoyment, perceived self-efficacy, and behavioural intention to use. A sample consisting of 89 teacher trainees studying in diploma and bachelor's teacher training programs from two private and public universities in Malaysia participated in the study. The TAM model, which involves seven hypotheses, was tested using the Partial Least Square Structural Equation Modelling approach (PLS-SEM). The key findings of this empirical study confirmed that attitude influences both behaviour intention to use, and perceived self-efficacy of teacher trainees in teaching using interactive eBooks. Besides, the study confirmed a direct effect of ease of use on the level of enjoyment and a direct effect of perceived usefulness on the perception of ease of use. The study findings shed light on preparing teacher trainees for technology-integrated teaching.

Keywords: Interactive eBooks, quality education, technology acceptance model (TAM), technology-integrated teaching, teacher training

Introduction

In recent years, the reading landscape has seen significant transformation due to the rapid advancement of technology and the widespread use of digital devices in our everyday lives. Traditional means of reading, such as physical books and newspapers, have been replaced by electronic equivalents as people, especially the younger generation, increasingly rely on digital platforms for their reading habits (Sari et al., 2022). The change in reading habits has led to the emergence of electronic books (eBooks), fundamentally changing how students and educators interact with learning resources.

Devices such as computers, tablets, and e-readers can access eBooks and digital versions of regular books. They are a flexible and dynamic form of literature that transcends the limitations of traditional printed media (Liao et al., 2018). Their appeal lies not only in their accessibility and portability but also in their interactive features and multimedia content, which cater to the preferences and learning styles of digital native students (Kholis & Azmi, 2023). With the growing integration of technology into educational practices, eBooks have emerged as valuable tools to enhance teaching and learning experiences in classrooms worldwide (Sari et al., 2022).

In light of the growing popularity of eBooks, experts have attempted to establish a clear definition and description of this emerging medium. Armstrong et al. (2002) define eBooks as electronic texts accessible on any screen-equipped device, regardless of their size or content. Electronic devices such as PCs, iPads, Kindles, and other portable gadgets can access and read eBooks, which Shin (2011) and Lam et al. (2009) concisely define as digital adaptations of conventional books.

The advantages of eBooks extend beyond their accessibility and portability. Vassiliou and Rowley (2008) highlight the environmental benefits of eBooks, noting their role in reducing paper consumption and minimising the carbon footprint associated with traditional printing methods. Additionally, Kholis and Azmi (2023) underscore the convenience and efficiency of eBooks, emphasising their role in facilitating anytime, anywhere access to educational materials. Additionally, eBooks offer interactive multimodal content that engages users through various sensory modalities, providing a dynamic and immersive learning experience (Kholis & Azmi, 2023; López-Escribano et al., 2021).

Previous research studies have predominantly examined the perspectives of students towards eBooks, as investigated by Biranvand and Khasseh (2014), Ebied and Rahman (2015), Khalid et al. (2017), Lin et al. (2019), and Liu et al. (2020). Although eBooks are widely accepted by students (Zhang et al., 2021), there is a lack of research on their use in classroom teaching and the training of preservice teachers. To improve teaching and learning experiences, preservice teachers must have a thorough understanding and the capacity to incorporate technology into their teaching (Salim et al., 2023; Hoon et al., 2023). Teacher training programmes play a crucial role in the development of future teachers. Therefore, teacher trainees must be able to create digital resources for their classroom instruction. By integrating eBooks into the training of preservice teachers, they gain essential skills in developing and utilising digital resources for their

microteaching lessons. This prepares them to effectively integrate technology into their future classrooms. Hence, acquiring a more profound understanding of the factors that impact the acceptance of eBooks in teaching and learning practices is crucial.

Therefore, this study seeks to investigate the acceptance of interactive eBooks by teacher trainees for teaching using the Technology Acceptance Model (TAM) framework. By examining the factors influencing teacher trainees' intention to use interactive eBooks in their teaching practices, the study aims to contribute to the existing literature on eBook adoption from the perspective of educators. Through a comprehensive analysis of the TAM constructs, including perceived ease of use, perceived usefulness, attitude towards technology, and self-efficacy, the study aims to provide valuable insights into the determinants of eBook adoption among teacher trainees and inform strategies to enhance the integration of eBooks into teacher training programmes and classroom instruction.

Literature review

The Technology Acceptance Model (TAM) is widely recognised as a robust framework for studying the factors influencing end-user technology acceptance in many contexts. There is a consensus among researchers that the Technology Acceptance Model (TAM) is a valuable framework for comprehending the user's inclination to adopt a particular technology. The user's perception of the technology's ease of use and perceived usefulness influences this inclination (Monuwe et al., 2004; Venkatesh & Bala, 2008).

Davis (1989) developed the TAM based on Fishbein and Ajzen's (1975) theory of reasoned action (TRA), which explains the relationship between students' computer system acceptance, behavioural intention, and technology use. Davis' (1989) model has perceived usefulness and ease of use as antecedent variables to determine technology acceptance and usage behaviour (Teo and van Schaik, 2012). Consequently, Venkatesh et al. (2003) empirically added social impact, cognitive structure, experience, and subjective norms to the TAM. Later educational studies used this theory and analysis method to verify and explain students' intentions to use technology (Teo, 2011).

Despite its widespread acceptance due to its simplicity and relevance to technology adoption, the original TAM model has faced several criticisms and limitations, leading to numerous revisions and modifications (Ajibade, 2018). The literature suggests that model modifications often involve adding or removing variables and sometimes adding moderators or mediators. According to Malatji et al. (2020), the model has shortcomings, including difficulty measuring behaviours in observed investigations, as identified in the literature. Criticisms in the literature include TAM's inability to address other factors, such as innovation adoption. As new technologies emerge, TAM must be adapted and updated (Dinesh et al., 2022; Malatji, 2020). Additionally, research on the TAM model in the context of embracing information and technology systems in business is extensive compared to educators adopting new technologies in teaching and learning practices.

The current study investigated the relationships between the six variables: perceived usefulness (PU), perceived ease of use (PEOU), attitude (ATT), enjoyment (ENJ), perceived self-efficacy (PSE), and behaviour intention to use (BI) of the teacher trainees in the context of using interactive eBooks for teaching. The operational definitions of the terms and the rationale for developing the hypotheses are discussed in the sections below.

Hypotheses Development

Perceived ease of use

As Davis (1989) stated, perceived ease of use (PEOU) refers to the extent to which an individual perceives that using a system or technology is free from effort. Additionally, Nelson and Webb (2007) assert that the perceived ease of use (PEOU) correlates significantly with students' attitudes and intentions to use e-books. Therefore, the perceived ease of use (PEOU) facilitates the development of a positive disposition towards utilising eBooks among teacher trainees. Based on the literature, we propose the following research hypotheses for eBooks' perceived ease of use.

H1: Perceived ease of use positively influences the teacher trainees' attitude towards using interactive eBooks for teaching.

H6: Perceived ease of use positively influences the enjoyment of teaching using interactive eBooks.

Perceived usefulness

Perceived usefulness (PU) refers to the extent to which an individual believes that using a specific system or technology boosts work efficiency. This implies the user's subjective evaluation of the potential improvement in their performance by utilising a specific technology (Davis et al., 1989). In this research context, the perceived use of interactive eBooks can be characterised as the degree to which teacher trainees believe that teaching using eBooks can improve their teaching performance to achieve the expected learning outcomes in students. While the original TAM model depicts the impact of PEOU on PU, the current research intends to study the impact of PU on PEOU. The rationale for using PU to predict PEOU is based on the interconnectedness of these concepts, which influence the acceptance and utilization of technology (Toros, et al., 2024). Specifically, users are more inclined to perceive technology as valuable when they believe that it can improve their everyday tasks and enhance their productivity. Users may cultivate a favourable perception of utility, leading them to believe that using technology would not be excessively complicated. Consequently, perceived usefulness contributes to a favourable perception of ease of use (Venkatesh & Davis, 2000).

Numerous studies have demonstrated the relationship between perceived usefulness and the behavioural intention of individuals who utilise e-books (Farzana, et al., 2021; Hyman, et al., 2014; Letchumanan & Tarmizi, 2011; Ngafeeson & Sun, 2015; Tao, 2008; Zhang et al., 2021). According to Jin (2014), previous studies have indicated that perceived usefulness and attitude

substantially impact the behaviour and intention to use. Therefore, the hypotheses below are studied.

H2: Perceived usefulness positively influences the teacher trainees' attitude towards using interactive eBooks for teaching.

H7: Perceived usefulness positively influences perceived ease of use of interactive eBooks for teaching.

Attitude, perceived self-efficacy, and behaviour intention to use-interactive eBooks

Attitude is an individual's inclination or predisposition to use a particular system or technology (Davis, 1989). Furthermore, it refers to an individual's subjective evaluation of a favourable or unfavourable feeling associated with a specific system (Davis, 1989; Davis et al., 1989; Grandon & Mykytyn, 2004). Fishbein and Ajzen (1975) provide a conceptual framework that defines attitude as the cognitive representation of an individual's evaluation or judgement towards certain objects, events, or concepts. Additional research findings indicate that attitudes and perceived usefulness variables exhibit a statistically significant and favourable influence on the desire to continue using a certain product or service (Wu & Chen, 2017). According to Nelson and Webb (2007), the authors argue that the perception of usefulness (PU) plays a crucial role in predicting the extent to which students will utilise eBooks in the future.

The concept of intention to use refers to the cognitive and psychological state of an individual's inclination to utilise a specific system or technology (Davis, 1989; Davis et al., 1989). In this study, behaviour intention to use refers to the teacher trainees' willingness to consider and recommend the usage of interactive eBooks for teaching. Furthermore, previous studies have demonstrated that attitude is a highly influential factor in determining the likelihood of adopting a specific technology (Teo & Zhou, 2014). According to Jin (2014), there is a notable impact of attitudes towards the utilisation of eBooks on their desire to continue using them. Furthermore, research indicates that perceived ease of use and perceived usefulness of eBooks are significant elements that impact users' views on adopting them (Legris et al., 2003). Moreover, according to Jin's (2014) study, there is a substantial relationship between users' enjoyment of eBooks and their intention to continue using them. Lee (2013) conducted a study that revealed the impact of perceived usefulness on attitude and intention to use. Besides, based on the findings of Wu and Chen (2017) as well as Farzana et al. (2021), there is a positive relationship between attitude and students' intention to use eBooks. Based on the existing literature, the current study investigated hypothesis H5, which studied the impact of attitude on behaviour intention to use.

Besides behaviour and intention to use, the current study investigated perceived self-efficacy as another endogenous variable. The term "Perceived Self-Efficacy" (PSE) refers to an individual's perception of one's ability to effectively carry out a particular task to attain the desired outcomes (Venkatesh & Bala, 2008). In this study, perceived self-efficacy refers to teacher trainees' beliefs about their ability to teach using interactive eBooks in future classroom practices. While previous research using the TAM models viewed self-efficacy as an external element

impacting attitude development (Alyami & Spiteri (2015), Hernández et al. (2011), this study investigated perceived self-efficacy as an outcome variable, which is the belief in one's ability to continue using technology in future teaching practices. Various aspects influence self-efficacy, such as the level of experience (Venkatesh & Bala, 2008), emotions and feelings (Zhou et al., 2007), and self-confidence (Dash & Saji, 2007; Zhang et al., 2022). Several factors influence an individual's self-efficacy, including their amount of experience (Venkatesh & Bala, 2008), emotions and feelings (Zhou et al., 2007), and self-confidence (Dash & Saji, 2007; Zhang et al., 2022). Consequently, teacher trainees must gain experience and practice with technology before developing views about their ability to integrate technology into teaching. Furthermore, developing self-efficacy beliefs before using certain technology may become invalid. In the present study, teacher trainees attended workshops and received adequate training before engaging in the technology considered for this study. Therefore, the study investigated the impact of attitude on perceived self-efficacy as given in hypothesis H4. The proposed hypotheses are as follows.

H4: Teacher trainees' attitude has a positive influence on perceived self-efficacy in using interactive eBooks for teaching.

H5: Teacher trainees' attitude has a positive influence on the behaviour intention to use interactive eBooks for teaching.

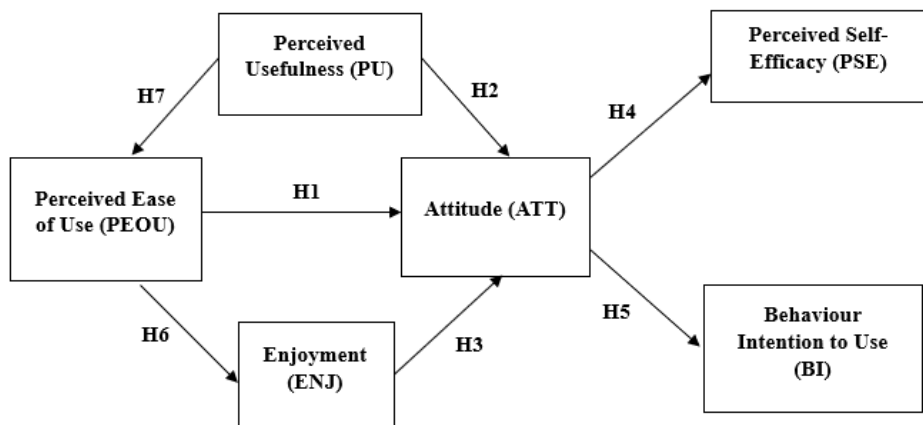
Enjoyment in teaching using interactive eBooks

According to Venkatesh and Davis (2000), perceived enjoyment is the extent to which utilising a system is enjoyable in itself, regardless of performance repercussions. According to Venkatesh and Bala (2008), the purpose and intensity of technology use depend on perceived enjoyment. Due to initial comfort, a user's perception of the programme will be comfortable. According to the Technology Acceptance Model (TAM), perceived enjoyment is positively associated with intrinsic motives, facilitating engagement in an action solely for completion (Teo & Noyes, 2011). Perceived enjoyment (ENJ) refers to the subjective assessment of the level of satisfaction experienced when engaging in technology use, irrespective of any expected gains (Sun & Zhang, 2006). Previous research has indicated a significant correlation between perceived enjoyment, perceived ease of use, and other behavioural factors. Holdack et al. (2020) posited that there exists a favourable association between perceived enjoyment and perceived ease of use in facilitating the adoption and utilisation of digital technology. The literature review revealed a scarcity of research studies that employ the TAM model to understand the level of enjoyment experienced when using interactive eBooks for educational purposes. Thus, the present study has formulated the subsequent research hypotheses.

H3: Teacher trainees' enjoyment positively influences the attitude towards using interactive eBooks for teaching.

Based on the literature review, the proposed research framework for the study and the hypotheses are presented in Figure 1.

Figure 1
Conceptual framework of the study



Methodology

The current research is a quantitative cross-sectional study designed to examine the relationships between independent and dependent variables and to test hypotheses. We evaluated the research model for this study using Smart PLS 4.0 software in conjunction with Partial Least Squares Structural Equation Modeling (SEM-PLS). In this predictive study, the ability of exogenous variables to predict endogenous variables was analysed. We chose PLS-SEM due to its numerous advantageous features over other statistical methods, including its ability to accommodate both formative and reflective indicators for latent variables. Furthermore, it requires minimal measurement scales and can process small sample sizes and non-normally distributed data.

Samples

The study used a purpose-sampling technique. Purposive sampling was employed as the aim of the study, which requires teacher trainees to engage in training and workshops on creating eBooks, which are also linked to their course assignments and microteaching sessions. Therefore, the samples were selected based on their availability and their willingness to participate in the study. Eighty-nine teacher trainees from public teacher training institutions and private universities participated in the study. The sample consisted of 38 teacher trainees studying in the Diploma in Education programme, 18 from the Master's in Teaching and Learning programme at a private university, and 51 from two public teacher training institutions who are pursuing a Bachelor's in Education programme. All respondents were female teacher trainees.

Measures

The questionnaire used for this study was developed from existing instruments available in the literature. The questionnaire has two sections, Section A consists of 28 items measuring the six constructs, and Section B aimed at collecting the background details of the respondents. The questionnaire was based on the 5-point Likert scale with options ranging from strongly disagree to strongly agree. The questionnaire items are derived from pertinent sources and modified to align with the research context and the technology used in the study. The questionnaire for constructs such as perceived usefulness, perceived ease of use, and attitude was adapted from the questionnaire developed by Farzana, et al. (2021) and Liao et al. (2018). The questionnaire to measure intention to use behaviour and enjoyment in using interactive eBooks for teaching was adapted from the study by Alyami and Spiteri (2015), Seock and Bailey (2008), and Venkatesh and Bala (2008). The instrument with valid items is presented in the appendix.

Data Collection

To achieve its objectives, the study collected data from teacher trainees after they completed microteaching sessions using interactive eBooks. The teacher trainees involved in this study created eBooks as part of their course assignments. The task requires them to develop eBooks as a group activity and conduct microteaching sessions. When creating eBooks, they must embed interactive and multimedia elements such as videos, audio narrations, quizzes, online worksheets, puzzles, game-based interactives, 3D visuals, and other embeddable features that are compatible with web-based applications. The students prepared eBooks based on the subjects and topics of interest at the primary school level. To enable them to develop eBooks, they attended workshops on creating eBooks using web-based applications such as Book Creator and Canva. The students worked in groups following the training sessions and designed and developed their eBooks. We allowed teacher trainees to seek advice and suggestions from in-service teachers on developing effective teaching resources. We conducted microteaching sessions and collected data using an online survey questionnaire. The online survey form gathered the students' consent and willingness to participate in the study.

Data Analysis

The proposed research model employed analysis of Partial Least Squares Structural Equation Modelling (SEM- PLS) using Smart PLS 4.0 software (Ringle et al., 2022). The current study is predictive-oriented, which assessed how well the exogenous variables, behaviour intention to use, and self-efficacy could be predicted by the endogenous variables, perceived usefulness, perceived ease of use, enjoyment, and attitude towards interactive eBooks.

Findings

The proposed model was tested using the two-step model recommended by Anderson and Gerbing (1984). The first step involves analysis of the measurement model followed by the assessment of the structural model. Finally, to test the significance of the path coefficients, a bootstrapping procedure was employed for 5000 samples (Ringle et al., 2015).

Assessment of measurement model

The first stage in the assessment of the measurement model is to examine the reliability and validity measures of the items, which was done by checking the convergent and discriminant validity of the items in the model (Sekaran & Bougie, 2010).

Internal Consistency Reliability

The inter-item consistency of the measuring items was evaluated using composite reliability and Cronbach's alpha coefficient. It is recommended that Cronbach's alpha and composite reliability scores be greater than 0.70. Regarding Cronbach's Alpha and composite reliability values, Hair et al. (2022) stated that reliability score above 0.90 is considered excellent, above 0.80 is satisfactory, above 0.70 is acceptable, above 0.60 is dubious, and below 0.50 is substandard. Table 1 presents the values of Cronbach's alpha and composite reliability (ρ_a) for each construct. It was evident that each reliability rating exceeded the recommended level of 0.70. The validation process confirmed the reliability of the items. Some items that did not match the criteria of the assessment model were discarded from the model. The appendix provides the valid items used for the model validation.

Convergent validity

Convergent validity refers to the extent to which different measures of the same construct are positively correlated, indicating that they are measuring a particular construct instead of indications of different constructs (Urbach & Ahleman, 2010). The Average Variance Extracted (AVE) is tested to establish convergent validity. The AVE (Average Variance Extracted) measure quantifies the variance the indicators explain with the measurement error. According to Hair et al. (2017), acceptable measures of average variance extracted (AVE) are recommended to exceed a value of 0.50. In the present investigation, the average variance extracted (AVE) for all constructs exhibited a range of 0.631 to 0.740, exceeding the threshold of 0.50. This outcome serves as a confirmation of the convergence validity of the measurement instruments.

Table 1

Results of Reliability and Convergent Validity for the Measurement Model

Constructs	Items	Convergent Validity			AVE	VIF
		Item Loadings	Cronbach's Alpha	Composite reliability (rho_a)		
PU	PU1	0.790	0.895	0.884	0.723	2.47
	PU2	0.953				2.67
	PU3	0.797				2.405
PEOU	PEOU1	0.865	0.851	0.845	0.650	2.948
	PEOU2	0.775				1.786
	PEOU3	0.776				2.284
ENJ	ENJ1	0.877	0.843	0.834	0.631	2.174
	ENJ2	0.743				1.843
	ENJ4	0.757				1.894
ATT	ATT1	0.726	0.862	0.853	0.663	2.474
	ATT2	0.895				2.873
	ATT5	0.813				1.745
SE	SE3	0.852	0.922	0.919	0.740	3.283
	SE4	0.937				2.747
	SE5	0.834				3.332
	SE6	0.812				2.801
BI	BI4	0.869	0.831	0.829	0.709	2.003
	BI5	0.815				2.003

Discriminant validity

Discriminant validity refers to the extent to which each construct in the study is mutually exclusive and unique (Ramayah et al., 2018). To establish discriminant validity, it is necessary to meet three specific criteria: cross-loadings, Fornell and Larcker's criterion, and the Heterotrait-Monotrait ratio of correlations (HTMT). One potential approach to assess discriminant validity is by examining the Heterotrait-Monotrait Correlation Ratio (HTMT), which quantifies the ratio of correlations within constructs to correlations between constructs. A correlation below 0.9 for the HTMT ratio is deemed acceptable to establish the discriminant validity of the components. The results in Table 2 show that the square root of AVE for each construct: intention to use behaviour (0.850), enjoyment (0.842), perceived ease of use (0.806), perceived usefulness (0.850) and perceived self-efficacy (0.798) have relatively higher values compared to the correlations with other constructs in off-diagonal. The HTMT criterion for the variables is shown in Table 3 and all values are within the acceptable range. Table 3 presents the HTMT values, and all the values are within the expected range.

Table 2

Fornell and Larcker's criterion

	ATT	BI	ENJ	PEOU	PU	PSE
ATT	1.000					
BI	0.722	0.850				
ENJ	0.571	0.756	0.842			
PEOU	0.950	0.8	0.695	0.806		
PU	0.951	0.764	0.718	0.713	0.850	
PSE	0.975	0.826	0.813	0.774	0.778	0.798

Table 3

Heterotrait- Monotrait ratio of Correlations Criterion

	ATT	BI	ENJ	PEOU	PU	PSE
ATT	0.814					
BI	0.803	0.842				
ENJ	0.854	0.844	0.795			
PEOU	0.897	0.795	0.833	0.806		
PU	0.767	0.717	0.813	0.687	0.85	
PSE	0.827	0.87	0.875	0.876	0.796	0.86

The structural model explains the relationships between the underlying constructs within the model (Hair et al., 2017). Once the measurement model has been tested, it is essential to analyze the structural model in order to ascertain the relevance of the inner paths. Ramayah et al. (2018) highlighted the importance of evaluating the degree of lateral collinearity among the constructs. Furthermore, Kock and Lynn (2012) have noted that the presence of lateral collinearity might result in deceptive results and create difficulties, even when the prerequisites for discriminant validity are met. Moreover, the Variance Inflation Factor (VIF) is used to assess the presence of lateral collinearity. Besides, according to Diamantopoulos and Winklhofer (2001), the requirements for assessing the variance inflation factor (VIF) are rigorous, which indicates that a VIF value of 3.3 or higher confirms collinearity problems. In the present investigation, the variance inflation factor (VIF) values for all indicators are below 3.3, indicating the absence of any significant concerns about lateral collinearity. The variance inflation factor (VIF) values are presented in Table 1.

Assessment of the structural model

The R^2 and correlation coefficients of the endogenous variables that jointly represent the fitness of the data in support of the hypotheses are presented in Table 4.

Table 4

Effects of the variables on the endogenous variables (Direct path)

Endogenous Constructs	PU	PEOU	PSE	BI
PU				
PEOU	0.688* (H7)			
ENJ		0.933* (H6)		
ATT			0.927* (H4)	0.816* (H5)
R^2	81.1%	87.1%	86.0%	81.6%

*Significance at $p < 0.01$

The research revealed a significant correlation between perceived usefulness and perceived ease of use, accounting for 81.1% of the variance. Likewise, the dependent variable, enjoyment in using interactive eBooks for teaching, could be explained by the perceived ease of use of the construct, yielding an R^2 value of 0.871. This indicates that the impact of perceived ease of use on enjoyment is 87.1%. Furthermore, attitude determines the perceived self-efficacy of teacher trainees in preparing interactive eBooks for teaching, accounting for 86.0% of the variance. Moreover, the study reveals that attitude accounts for 81.6% of the variance in teacher trainees' behavioural intention to use interactive eBooks for teaching and learning.

Table 5

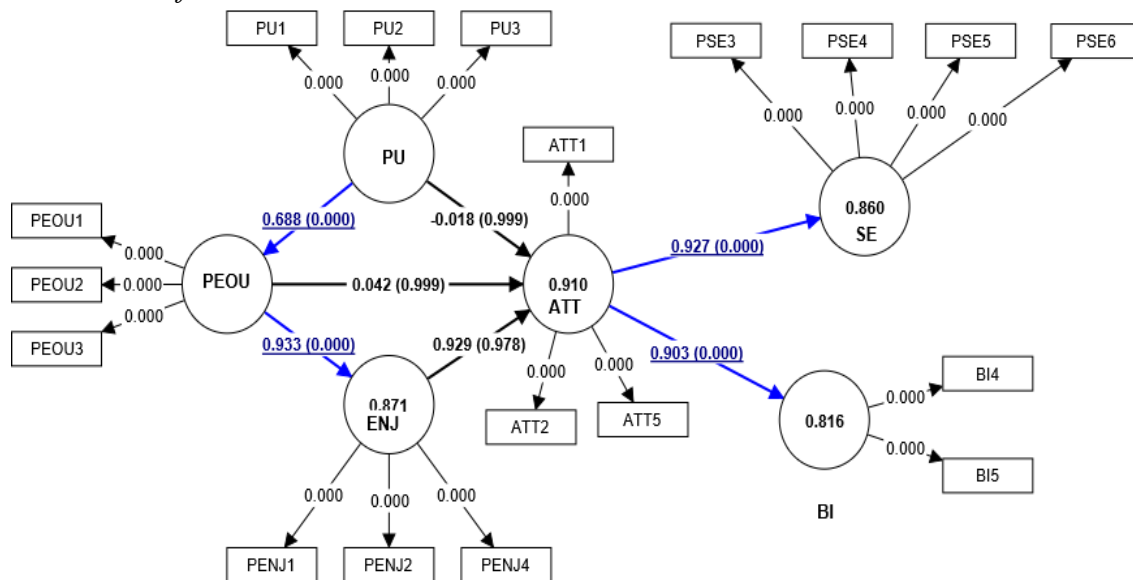
Hypotheses Testing

Hypotheses	Path coefficient (β)	t - values	p -values	Decision
H1: PEOU \rightarrow ATT	0.942	0.002	0.099	Rejected
H2: PU \rightarrow ATT	-0.018	0.001	0.999	Rejected
H3: ENJ \rightarrow ATT	0.929	0.028	0.978	Rejected
H4: ATT \rightarrow BI	0.903	18.304	0.000	Accepted
H5: ATT \rightarrow SE	0.927	19.591	0.000	Accepted
H6: PEOU \rightarrow ENJ	0.933	20.375	0.000	Accepted
H7: PU \rightarrow PEOU	0.688	7.210	0.000	Accepted

Table 5 presents the results of the evaluation of the structural model with the hypotheses and their corresponding path coefficients, t -values, and p -values. The hypotheses were tested by analysing the path coefficients. The results confirmed that the direct effect of attitude on behaviour intention to use interactive eBooks for teaching [$\beta = 0.903$, $t = 18.304$, $p < 0.01$] and perceived self-efficacy [$\beta = 0.927$, $t = 19.591$, $p < 0.000$] were positive and significant supporting the hypotheses

H5 and H4 respectively. Furthermore, as expected, the relationship between perceived usefulness and perceived ease of use [$\beta = 0.688, t=7.21, p<0.000$] was positive and significant and, in turn, supported the hypotheses H7. Furthermore, the effect of perceived ease of use on enjoyment was positive and significant [$\beta = 0.933, t=20.375, p<0.000$]. However, the study concluded that there was no significant effect of perceived ease of use, perceived usefulness, and enjoyment on attitude, which led to rejecting hypotheses H1, H2, and H3, respectively. The assessment of the structural model and the corresponding t -values are represented in Figure 2 below.

Figure 2
Assessment of structural model



Discussion

The current research aimed to study the adoption of interactive eBooks among teacher trainees, using the modified Technology Acceptance Model (TAM) (Davis, 1989). Through empirical analysis, the research aimed to elucidate the factors that influence teacher trainees' attitudes, behavioural intentions to use, and perceived self-efficacy in the use of interactive eBooks for instructional purposes. The study tested seven hypotheses, and the results supported four of them. This study provides insight into the main factors that influence teacher trainees to use eBooks for teaching.

The study findings indicated that attitude plays an important role in influencing the behaviour intention of teacher trainees and their perceived self-efficacy in using interactive eBooks as teaching materials. These findings agree with previous research findings, emphasising the importance of attitude in technology acceptance (Mailizar et al., 2021; Zhang et al., 2021). The findings of Alyami and Spiteri (2015), Wenjie (2010), and Wu et al. (2023) indicated that students had a higher degree of adaptivity and willingness to learn new technologies. The current study findings are aligned with the research findings from Asrowi et al. (2019), who concluded that the

use of these interactive eBooks corresponds effectively with the characteristics of the current generation of digital native learners who are skilled at adapting to emerging technologies. Therefore, the positive attitude of teacher trainees towards interactive eBooks improves their readiness and intention to use digital resources in their teaching practices, highlighting a positive disposition towards technology-integrated teaching.

Furthermore, the study uncovers a direct impact of the ease of use of interactive eBooks on the level of enjoyment experienced by teacher trainees in carrying out microteaching sessions. Teacher trainees derive enjoyment from the interactive features in the eBooks, such as animations, quizzes, and games embedded into the eBooks, which allow a higher level of engagement between teacher trainees and students (Alyami & Spiteri, 2015). Therefore, the current study's findings highlight the importance of designing intuitive and user-friendly web interfaces to leverage digital resources in creating digital teaching aids. Contrary to previous research, the study suggests that the level of enjoyment experienced by teacher trainees does not affect their attitudes towards using eBooks. Although positive emotions and feelings towards technology adoption are important, other factors, such as perceived usefulness and ease of use, also significantly shape user experiences (Sumi & Ahmed, 2022).

The study's results indicated that the perception of the usefulness of teachers' trainees positively affects the ease of use of interactive eBooks. Though the relationship studied in the present study is contrary to the original TAM model, recent studies have acknowledged the impact of perceived use on perceived ease of use based on the nature of the samples and the technology considered for the study (Toros et al., 2024). This conclusion aligns with research by Chang et al. (2012) and Farzana et al. (2021). Additionally, according to Alyami and Spiteri (2015), the findings showed that interactive eBooks proved user-friendly for teachers to develop proficiency. Furthermore, the current study's findings indicate that teacher trainees' attitude has a direct and positive impact on their intention to use interactive eBooks as a teaching aid. This finding is in line with previous studies conducted by Mailizar et al. (2021), Farzana, et al. (2021), and Zhang et al. (2021). The use of interactive eBooks by teacher trainees is a determining factor in their adoption, as it enables them to use these resources with confidence and effectively save time (Zhang et al., 2021).

In contrast to the expected results, the results showed no significant positive influence of perceived ease of use, perceived usefulness, or enjoyment on teacher trainees' attitudes towards their use of interactive eBooks for teaching. The incoherent results could be due to samples that are digital natives and familiar with web-based applications. Similar to the original study conducted by Davis (1989), the users lose the perceived ease of use of the system after gaining adequate knowledge and experience. Consequently, perceived ease of use is no longer a key factor in determining attitudes towards eBooks. Furthermore, the impact of perceived usefulness on attitude is nonsignificant, which contradicts the findings of other studies (Chang et al., 2012; Hsu & Chang, 2013; Farzana et al., 2021). Vijayan and Oo (2022) suggest enhancing the responsiveness, dependability, interactivity, and quality of interactive eBooks as measures to

improve teacher trainees' attitudes. Additionally, more practice in preparing teaching aids will improve teacher trainees' attitudes towards the use of technology.

Several shortcomings of the study require acknowledgement. Firstly, the study's relatively small sample size underscores the need for a more robust investigation with a larger sample size. Furthermore, teacher trainees of this study created eBooks as teaching resources for their microteaching sessions. Therefore, this study's findings are limited to teacher training settings. Furthermore, the study concentrates on the direct relationships between the variables; thus, future research could explore additional relevant factors and investigate the mediation and moderation effects among the variables. Nevertheless, despite these limitations, this research has established a firm foundation for examining teacher trainees' adoption of interactive eBooks as a digital teaching resource.

Given the abovementioned limitations, this study recommends a larger sample size for future research. Furthermore, the current study could incorporate an extended TAM model, which includes other crucial constructs in training and technology-integrated teaching. In addition, qualitative research can provide valuable insight alongside quantitative methodologies to understand the study problem. Future work could focus on qualitative research approaches to understand the process of creating interactive eBooks for teaching. Research that uses Design and Development Research (DDR) and the Analyse, Design, Develop, Implement, and Evaluate (ADDIE) framework and explores related factors associated with creating eBooks is particularly advantageous.

The findings of this study propose several recommendations for stakeholders to take advantage of technology in providing quality teacher training programs. First, it is critical to train teacher trainees in creating interactive eBooks and practice teaching during microteaching sessions. Microteaching sessions using digital resources help students cultivate a positive attitude towards technology-integrated teaching and improve their digital skills. Secondly, eBooks are considered a sustainable resource for providing quality education; therefore, it is imperative that teacher educators and teacher training institutions actively participate in the creation of digital teaching resources. Similar to tangible teaching resources commonly found in teacher training institutions, efforts to develop and use digital resources as open sources will improve teacher trainees' attitudes, perceived ease of use, and usefulness when considering eBooks as teaching and learning materials. Lastly, to boost teacher trainees' intention to use digital resources in teaching and boost their self-efficacy, we recommend initiating collaborative efforts with partner schools that offer engaging platforms, fostering collaboration between preservice and in-service teachers towards digital skill development. Such efforts promote knowledge exchange through mentoring relationships, innovation, and creativity in preparing effective and sustainable digital resources, as well as the professional development of teachers.

Conclusion

The primary objective of this study was to examine the extent to which teacher trainees have embraced the use of interactive eBooks as teaching material. Before the data-gathering phase, the teacher trainees participated in workshops on creating eBooks for microteaching. The research utilised the modified Technology Acceptance Model (TAM) to examine the impact of attitude on the behavioural intention to use and perceived self-efficacy of teacher trainees using interactive eBooks for instructional purposes. The results confirmed that the perceived usefulness of interactive eBooks determines perceived ease of use, and perceived ease of use impacts enjoyment in teaching using eBooks. The results of this study have made a valuable contribution to the existing body of literature regarding technology training for prospective teachers, particularly in developing digital educational materials for instructional purposes. The study also highlights the significance of preparing digital resources for teaching and practice teaching during microteaching sessions, as opposed to conventional teaching sessions where teacher trainees showcase their talents using physical teaching materials. The study findings provide valuable insights for teacher educators, specifically focusing on integrating technology into instructional practices.

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Appendix

Technology Acceptance: Interactive eBooks for Teaching

Response options: 5-point Likert scale with options ranging from strongly disagree (1) to strongly agree (5).

Item no.	Items
PU1	I think interactive eBooks facilitate my teaching efficiency.
PU2	Using interactive eBooks in teaching will make my class interesting.
PU3	I think teachers should try to create eBooks for teaching.
PEOU1	It doesn't take much time to learn how to create eBooks.
PEOU2	I think the functions in web-based applications are easy to develop eBooks.
PEOU3	Learning to create interactive eBooks requires less effort.
ATT1	Interactive eBooks help students to learn difficult content.
ATT2	Teaching using interactive digital content is interesting in classroom teaching.
ATT5	Teachers should attempt to digitalise textbook content.
ENJ1	I enjoy creating interactive eBooks.
ENJ2	I enjoy the interactive features that could be embedded in interactive eBooks.
ENJ4	I think interactive eBook enhance the joy of teaching and learning.
PSE2	I believe I can design eBooks for my classroom teaching.
PSE3	I believe I can confidently use interactive content and multimedia, such as eBook in my teaching.
PSE4	I can digitalise the content and develop interactive eBooks for my classroom teaching.
PSE5	I am confident in developing eBooks that engages students.
PSE6	I am competent is using appropriate digital resources in teaching.
BI2	I will definitely consider using eBooks in my teaching practice.
BI5	I promote the use of interactive eBooks among my peers and teachers.