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Examining the Determinants of Continuance Intention toward Mobile Learning Platforms

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Abstract: With the rapid advancement of technology, the location of teaching is no longer limited to the classroom. Mobile learning platforms break the barriers of time, location, and space, allowing teachers and students to achieve their teaching and learning goals through these platforms. It is worth exploring factors influencing the continuous use of mobile learning platforms. This study developed an integrated model from the Achievement Motivation Theory and the Information System Success Model to investigate determinants of users' intention to continue using mobile learning platforms in Taiwan. An online questionnaire was employed to collect empirical data to examine the research hypotheses using structural equation modeling (SEM). Our findings confirmed that (1) system quality, service quality, individual orientation, social orientation, and achievement need positively influenced satisfaction, while information quality did not have a significant effect on satisfaction. (2) perceived privacy and security, trust, entertainment, and mobility positively influenced perceived usefulness; (3) satisfaction and perceived usefulness positively influenced continued intention to use. Practical recommendations were provided to relevant stakeholders in mobile learning applications.

Keywords: Achievement Motivation Theory; continued intention to use; information system success model; mobile learning platforms; privacy and security; questionnaire; SEM

1. Introduction

Traditional chalkboard-style teaching has gradually broken free from its constraints with the advancement of technology and the times. There is no longer a need to sit in a classroom and stare at a blackboard. The emergence of mobile learning platforms has shattered the limitations of space, time, and location, making teaching more flexible. Companies have also attempted to use remote conference apps to replace the need for clocking in and out of work every day. Mobile learning platforms and remote work/conferencing software emerged with the advancement of mobile devices. Latest mobile learning systems include *TalentLMS*, *Adobe Learning Manager*, *360Learning*, and *iSpring LMS,* among others (Pappas, 2025). Due to the impact of the COVID-19 Pandemic, the number of users has grown rapidly (Gumbheer et al., 2022; Li et al., 2022). The satisfaction and continued usage intention of users for mobile learning platforms and conference apps will increase their stickiness, and the variables that influence continued usage intention are worth researching and discussing. However, the successful deployment of mobile learning platforms still depends on various factors; among them, cultural determinants have attracted scholars' attention (Arpaci, 2015; Dalle et al., 2024). For example, Arpaci (2015) compared Canadian and Turkish students and confirmed that cultural factors affected technology adoption in learning technologies. Similarly, Dalle et al.'s (2024) qualitative interview analyses of 12 experts concluded that diverse cultural

backgrounds and learning preferences of users must be considered when integrating these mobile learning platforms into educational environments. Cultural context is also considered essential in designing a context-aware mobile learning platform (Gumbheer et al., 2022). Instructors must communicate technology benefits to local students, as many of these mobile learning systems were often developed overseas.

1.1. Background

With the passage of time, the speed of technological advancement and the widespread use of the Internet are growing at an exponential rate. Teaching, learning, and class meetings can also be made more convenient through online channels. In addition, many industries are facing a transformation in recent years due to continuous outbreaks of epidemics. These external factors have led to changes in people's lifestyles, and the forms of teaching and meetings are no longer limited to on-site and blackboard-based methods. Online teaching and remote work have become one of the hot topics in recent years. According to *Digital 2022: Taiwan* (Kemp, 2022), the number of Internet users in Taiwan has reached 21.72 million, accounting for 91% of the population. However, among all Internet users, 95.8% of people are accustomed to using the Internet through their mobile phones (Kemp, 2022). The latest statistics by the Ministry of Digital Affairs (MODA) (2026) confirmed the continuous diffusion of the Internet to Taiwanese homes. Instant messaging (97.2%) and online video entertainment (91.2%) are the most popular applications, followed by information-seeking (69.6%), online reading (68.5%), online banking (59.8%), and cloud storage (54.8%) (Ministry of Digital Affairs [MODA], 2026).

However, as the number of Internet users increases, the issues of Internet privacy and security are also gradually rising. According to *Digital 2022: Taiwan* (Kemp, 2022), 48.8% of Internet users are unable to distinguish fake news on the Internet, leading to the rampant spread of fake news, fake issues, and fake headlines. Additionally, 33.1% of users believe that the software they commonly use may pose a risk of third-party abuse of their personal information (Kemp, 2022). Both of these figures have increased by 3.3 percentage points compared to last year (Kemp, 2022). Internet users believe that with the advancement of Internet technology, their privacy and personal data security may face greater threats.

According to the Taiwan Network Information Center (2020), the proportion of surveyed people engaged in online learning has increased from 22.05% in 2020 (sample size of 12 years old and above) to 29.24% in 2022 (sample size of 18 years old and above). The popularity may be due to the impact of the pandemic, which has not only caused changes in teaching methods but also changes in people's original work patterns. According to the same survey (Taiwan Network Information Center, 2020), the proportion of people who switched to remote work due to the pandemic has increased from 2.54% in 2020 to 15.91% in 2022. The statistics indicated that the number of people working remotely continues to increase. Although the number of people using remote online teaching is increasing rapidly, in terms of the perceived effectiveness of distance learning, 69.12% of people believe that learning efficiency will decrease.

In comparison, only 26.45% of remote teaching users believe that distance learning can increase their learning efficiency (Taiwan Network Information Center, 2020). Among remote workers, only 22.31% believe that implementing remote work can increase their office efficiency (Taiwan Network Information Center, 2020). Finally, 74.10% of distance learners and 67.48% of remote workers expressed that they do not wish to continue distance learning or remote work after the epidemic (Taiwan Network Information Center, 2020).

1.2. Research Motivation

With the spread of the epidemic leading to changes in people's lifestyles, Taiwanese society has been facing challenges of innovation and transformation. More and more schools are implementing distance learning to maintain the interests of students and teachers (Li et al., 2022). Under the health and quarantine policy, various mobile learning platforms and online conference apps are gradually becoming popular during the COVID-19 Pandemic (Li et al., 2022). The use of digital learning can also help improve the user's living environment (Weng, 2016). Our study was motivated to explore determinants of users' adoption of mobile learning platforms.

Extant literature concludes that factors influencing users' intention to continue using mobile learning platforms are mostly related to technology acceptance models, perceived usefulness, perceived ease of use, and other variables (Chang et al., 2011; Sun, 2021). Our study combined the Information System Success Model with users' achievement motivation to explore whether students' achievement motivation could affect their intention to continue using a mobile learning platform. Our study similarly examined the relationship between achievement motivation and information system success model variables (Shih, 2017). Yet, our study emphasized the roles of individual orientation, social orientation, and achievement, and thoroughly examined the impact of users' achievement motivation in mobile learning platforms on satisfaction. In addition, since many users use personal

data, device cameras, and other related auxiliary devices when using mobile learning platforms, our study also incorporated privacy, security, and trust concerns in our theoretical framework. Finally, the inclusion of entertainment and mobility helped assess how these two variables could affect users' perceived usefulness of using mobile learning platforms. Our study was based on similar studies (Chen, 2021; Huang, T.C., 2021; Sun, Y.K., 2019; Wei, 2017) to develop an integrated framework of users' information system success model, achievement motivation, perceived privacy and security, entertainment, mobility, satisfaction, perceived usefulness, and intention to continue using mobile learning platforms.

1.3. Research Objectives

As users increasingly become aware of the importance of their own privacy and security, measures to protect users' personal data can affect users' satisfaction and intention to continue using a mobile learning system. Our study explored variables that affect users' satisfaction, perceived usefulness, and intention to continue using mobile learning platforms, after deriving from propositions of the Information System Success Model, achievement motivation, and learning motivation frameworks. Our online survey of past mobile learning platform users aims to accomplish the following research objectives. First of all, we explored the main determinants of users' adoption of mobile learning platforms. Secondly, we investigated the impact of users' information system success model (such as information quality, system quality, and service quality), achievement motivation (such as individual orientation, social orientation, and achievement needs), and learning motivation (such as privacy and security, trust, entertainment, and mobility) on satisfaction, perceived usefulness, and continued intention to use mobile learning platforms. Thirdly, we concluded our paper with practical data-driven and evidence-based recommendations for educators, system operators, and managers in mobile learning systems.

2. Literature Review and Theoretical Foundations

The following literature review sections provide theory-based narratives to support our study variables related to the intention to continue using a mobile learning platform. We reviewed existing research to justify the proposed relationships between information quality, system quality, service quality, individual orientation, social orientation, achievement needs, privacy and security, trust, entertainment, mobility, satisfaction, and perceived usefulness. We selected our study from three theoretical foundations; that is, the Information System Success Model (Section 2.1), Motivation for Achievement (Section 2.2), and Perceived Privacy and Security (Section 2.3).

2.1. Information System Success Model

The updated DeLone and McLean Information Systems (henceforth, D&M IS) Success Model (2003) proposed six core dimensions (i.e., information quality, system quality, service quality, use, user satisfaction, and net benefits) pertinent to evaluating the success of electronic commerce information systems. Essential to the successful implementation of mobile learning platforms, our study adopted three key antecedents from the D&M IS Success Model (i.e., information quality, system quality, and service quality) as the principal independent variables and investigated their effects on user satisfaction.

2.1.1. Information Quality

Information quality measures the degree of perfection of the information in a learning system. For users, the more complete and accurate information a system provides, the higher the degree of information quality (DeLone & McLean, 1992). Shih (2017) proposed that information quality can have a positive impact on user satisfaction with the *JoinNet* learning platform. Chen (2019) found that information quality had a significant positive impact on user satisfaction. Wei (2017) also suggested that information quality, system quality, and service quality had a significant impact on user satisfaction. Chen (2021) stated that the higher the recognition of information quality, system quality, and service quality of the LINE Pay information system by consumers, the higher their satisfaction with its use. Yueh (2019) proposed that the information quality of the main financial information system of the military could positively influence user satisfaction.

2.1.2. System Quality

System quality was defined as the characteristics of a system in terms of usability, flexibility, reliability, effectiveness, and learnability, and is considered one of the important factors in evaluating the success of an information system (DeLone & McLean, 1992). Choi et al. (2013) proposed that system quality had a positive impact on user satisfaction. Chen (2021) suggested that there was a significant positive relationship between

system quality and user satisfaction. Wu (2014) pointed out that, if the level of information system is low, users would be more unwilling to use the system, which in turn affects their satisfaction with the system.

2.1.3. Service Quality

Service quality was mainly developed (DeLone & McLean, 2003) from a 1992 paper by the same authors. Service quality was defined as the quality of support and services provided in the system, including system availability, response time, responsiveness, reliability, security, and personalization. Service quality also has a significant impact on user satisfaction, intention to use, and trust (DeLone & McLean, 2003). Chiu et al. (2016) proposed that the level of service quality of a system had a positive impact on users' intention to use and satisfaction. Tsai (2015) suggested that the customer service quality of the system affected users' perceived usefulness and user satisfaction. Lo (2021) proposed that service quality had an impact on perceived usefulness and perceived ease of use, thereby affecting the level of user satisfaction. Yueh (2019) also suggested that the information quality of the main financial information system of the military can positively influence user satisfaction.

2.1.4. Satisfaction

User satisfaction refers to the attitude and perception of users towards an information system, including aspects such as usability, performance, reliability, responsiveness, security, and personalization. User satisfaction has a significant impact on user willingness to use, reuse, and loyalty (DeLone & McLean, 1992). Huang, T.C. (2021) proposed that for users, if the transaction service of a mobile payment could be completed quickly and conveniently, users would be satisfied with its operation, subsequently enhancing their intention to continue using the technology. The higher the level of consumer satisfaction with LINE Pay, the higher their willingness to continue using it, indicating that improving customer satisfaction can increase the rate of continued purchases and spread positive word-of-mouth (Chen, 2021). Huang, C.H. (2021) studied user satisfaction with smart home access control systems using the Information System Success Model and found a significant positive correlation between user satisfaction and intention to continue using.

2.2. Motivation for Achievement

McClelland et al. (1953) introduced the Achievement Motivation Theory, emphasizing individuals' intrinsic psychological need to pursue success and excellence. Building upon this foundation, Elliot and Harackiewicz (1996) further examined the effects of individual orientation and social orientation achievement goals on intrinsic motivation, highlighting the differential motivational mechanisms underlying self-regulation and performance outcomes. Moreover, McClelland et al. (1976) conceptualized the need for achievement as a relatively stable personality trait, defined as an individual's enduring drive to attain excellence, overcome challenges, and meet high standards of performance. Drawing upon these theoretical perspectives, our study adopted three core dimensions of achievement motivation: individual orientation, social orientation, and achievement needs, as key research constructs to examine their effects on satisfaction.

2.2.1. Individual-Oriented Achievement Motivation

Salili et al. (2001) argued that individual orientation for achievement is more like a personal subject's motivation for achievement goals based on personal subjective consciousness. Li and Lerner (2013) studied the relationship between individual-oriented achievement motivation and academic achievement from middle to high school, and they found that individual orientation achievement motivation is positively correlated with higher academic achievement. In other words, when the individual's achievement orientation motivation is higher, the student's effort level could also become higher, thereby improving academic achievement. van Yperen and Orehek (2013) studied the definition and distinction between individual- and social-oriented achievement motivation, as well as the impact of different achievement motivations on academic performance. Their findings showed that intrinsic, extrinsic, self-oriented, and other-oriented aspects of individual and social-oriented achievement motivation had different effects on academic performance (van Yperen & Orehek, 2013). Lin (2021) proposed that the higher the degree of individual-oriented achievement orientation in the process of pursuing achievement, the higher the level of effort displayed. Hsu (2018) postulated that when the individual's tendency to set self-pursuit goals is higher, the ability and results of performance would also be higher. Based on these studies, our study postulated that achievement motivation was a spontaneous need behavior that drove individuals to strive towards specific goals in things they consider meaningful.

2.2.2. Social-Oriented Achievement Motivation

The importance of social needs is also mentioned in the famous psychologist Maslow's (1943) hierarchy of needs theory, including the needs for care, belonging, and social identity. These needs were built on the foundation of social orientation and achievement motivation. Overall, social-oriented achievement motivation is an important concept that involves students' motivation and purpose for learning, their views and values about learning, and their identity and relationship with themselves and society. Many studies have shown a significant positive correlation between social-oriented achievement motivation and students' learning achievement and academic performance. Therefore, it is important to focus on cultivating students' social-oriented achievement motivation in educational practice, promoting students' learning motivation and learning strategies, and enhancing students' enthusiasm and motivation for learning to improve learning achievement.

2.2.3. Achievement Needs

Murray (1964) explained achievement motivation from the perspective of "needs". Achievement motivation is a need or desire for individuals to overcome difficulties, complete tasks quickly, and surpass others (Murray, 1964). Individuals with higher achievement needs are more likely to show motivation to overcome difficulties and complete difficult tasks quickly and perfectly. McClelland et al. (1976) argued that if individuals had previously achieved success in achievement situations, they would be more actively seeking achievement. On the other hand, if individuals had experienced failure in past achievement situations, it led to fear, shame, and motivation to avoid failure in their hearts. Derived from Murray's (1964) Achievement Motivation Theory, we postulated that achievement motivation can be enhanced through learning.

2.3. Perceived Privacy and Security

Perceived risk was initially proposed by psychologist Bauer (1967), who argued that consumers cannot determine whether their purchasing behavior is correct and may generate unexpected results, subsequently making consumers unhappy. Therefore, whenever consumers have inherent uncertainty in the consumption process, this uncertainty is considered as risk. Factors that could affect perceived risk include perceived severity and perceived control. However, most studies have shown that compared to perceived risk, many users and consumers value benefits more. As long as the benefits of self-disclosure outweigh the risk impact, users will choose to disclose personal information. Sun (2019) found that the more trust users had in the payment system, the more it promoted users to continue using mobile payments.

2.4. Trust

Bhattacharya and Sen (2003) conceptualized that trust is made up of three dimensions: trust in the other party's ability, trust in the other party's honesty, and trust in the other party's care. Sun (2019) argued that the more trust users had in a mobile payment system, the more users would continue using it. Through trust networks in insurance and financial technology products or services, consumers were more willing to consume, increasing their willingness to purchase insurance (Chen, Y.Y., 2020). Trust directly affected the purchase intention and continued use intention of existing users (Chen, 2009). The higher the level of trust users had in a company or product, the higher their intention to continue using it (Geyskens et al., 1999; Morgan & Hunt, 1994).

2.5. Entertainment

Venkatesh (2000) concluded that perceived enjoyment was one of the factors that led individuals to voluntarily accept technology, meaning that individuals would accept information technology services because they experienced pleasure when using technology. Entertainment is the subjective feeling of happiness, joy, and excitement that individuals experience when stimulated (Lieberman, 2014). When users perceive that the content on a device is rich and interesting, it can stimulate their desire for exploration (Weng, 2016). Vorderer et al. (2004) proposed that, as a core concept of entertainment, "enjoyment" could influence media entertainment. Their study also found that enjoyment is an important entertainment factor, as it could affect people's emotional experiences, cognitive processes, and behavioral responses, and it was related to individual traits, cultural backgrounds, and media characteristics (Vorderer et al., 2004).

2.6. Mobility

Mobility refers to the convenience of being able to provide personalized and additional services without time and space limitations, which will become a very attractive aspect of using mobile commerce (Clarke III, 2008). Mobility is an external limiting factor in a mobile environment because the guarantee of instant and ubiquitous message transmission and information circulation may not be realized in reality (Baek et al., 2011). Chang (2020) observed that users value the cloud invoice app on mobile devices that can improve user intention through checking prize redemption, consumption records, and vehicle invoices. Chien (2013) stated that mobility was not affected by time, location, or space interference, and users prefer those with higher mobility unless there are emergencies or special circumstances.

2.7. Research Framework

Our study derived from variables from the Information System Success Model (i.e., system quality, information quality, and service quality) and achievement motivation (i.e., individual orientation, social orientation, and achievement needs). The proposed framework also included other important variables such as perceived privacy and security, trust, entertainment, and mobility as antecedents to perceived usefulness. Our model also investigated their impact on perceived usefulness, satisfaction, and continued usage intention (as seen in Figure 1).

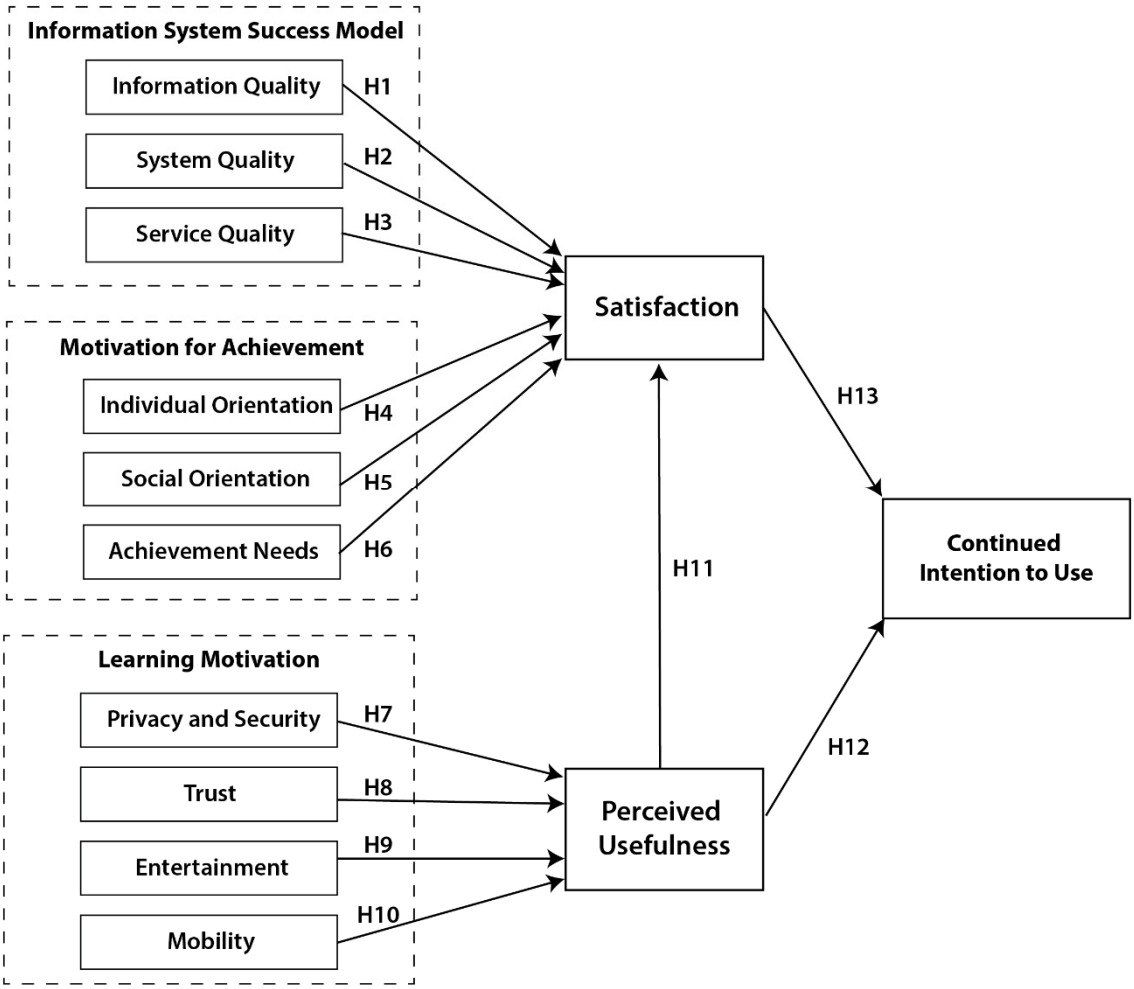

Figure 1. Research Framework.

Based on the above theoretical framework, we proposed the following hypotheses supported by past literature. For example, DeLone and McLean (2003) proposed the Information System Success Model (ISSM), postulating that information quality, system quality, and service quality have a direct impact on user satisfaction. Wei (2017) also found that these three variables significantly influence user satisfaction. Chen (2021) stated that the higher the level of recognition of information quality, system quality, and service quality in the LINE Pay

information system, the higher the user satisfaction. Information quality, system quality, and service quality have a positive impact on user satisfaction (Shih, 2017). The following hypotheses (H1 to H3) were proposed:

H1: *Information quality has a positive impact on satisfaction.*

H2: *System quality has a positive impact on satisfaction.*

H3: *Service quality has a positive impact on satisfaction.*

Yeh (2013) also proposed that when scholars had a high level of learning motivation, it positively influenced the content value and technological value of the learning platform. Lin (2021) found that the higher the degree of self-orientation in the pursuit of achievement, the higher the level of effort displayed. Achievement motivation had a positive relationship with job satisfaction, and continuous learning to achieve can enhance job satisfaction (Hsu, 2015). On the other hand, social-oriented achievement motivation refers to the influence of an individual's goals, behavior, and evaluation by their environment and group. In contrast, individual-oriented achievement motivation refers to the individual's desire to surpass their own internal standards, values, and strive for their own potential, fully utilize their abilities, and pursue self-breakthroughs (Yu & Yang, 1987). We proposed H4 to H6 below:

H4: *Individual orientation has a positive impact on user satisfaction.*

H5: *Social orientation has a positive impact on user satisfaction*.

H6: *Achievement needs have a positive impact on user satisfaction*.

Liu (2022) found that consumers who were concerned about the security and privacy issues of online transactions on the Internet could affect their willingness to use electronic payments. The aspect of product knowledge had a significant impact on the perceived risk of using apps. In other words, when people become aware of the risks, this may lead to more app usage (Hour, 2015). Chiang (2019) empirically confirmed that the higher the perceived risk, the lower the value of using smart medical and health care services. Tseng (2022) also found that if a consumer or user did not protect their privacy, their purchase intention decreased. Similarly, Chen (2021) stated that if consumers had a higher perceived risk level of using LINE Pay, they could develop a sense of distrust towards LINE Pay. H7 was proposed to examine the above relationship.

H7: *Privacy and security have a positive impact on perceived usefulness*.

Sun (2019) found that the more trust users had in a payment system, the more likely they would continue using mobile payments. When consumers had more trust in the insurance and financial technology products or services through a trusted network, they were more willing to purchase insurance (Chen, Y.Y., 2020). Trust could directly affect the purchase intention and continued use intention of existing users (Chen, 2009). Existing research has shown that the higher the level of trust users have in a company or product, the higher their intention to continue using it (Geyskens et al., 1999; Morgan & Hunt, 1994). H8 was proposed below:

H8: *Trust has a positive impact on perceived usefulness*.

Weng (2016) stated that, when digital learning on the device was perceived as rich and interesting, this could stimulate users' desire for exploration to enhance users' attitudes towards use. A higher level of perceived enjoyment led to a significant positive impact on their behavioral intention to use the *Google Classroom* teaching platform (Wu, 2017). Increased perceived enjoyment raised users' performance expectations and effort expectations, leading to users' internet browsing (Lee, 2017). Upon learning how to use a teaching platform, users' behavioral intention towards the learning platform increased if they felt pleasure and satisfaction during the learning process (Chen, C.J., 2020). H9 was proposed below:

H9: *Entertainment has a positive impact on perceived usefulness*.

If the perceived mobility were higher, it could lead to a positive impact on the user's experience of using mobile applications in the city (Shu, 2017). In other words, the higher the level of perceived mobility, the higher the overall level of perception (Shu, 2017). Chien (2013) proposed that mobility was not limited by location, time,

or space, and a sense of convenience could make users feel less stressed in usage. Because mobility was not affected by the operating hours and location of physical stores, willingness to use could be enhanced. When the convenience of using mobile English learning was higher, the user's intention to continue using mobile English learning would become higher (Chang et al., 2011). H10 was proposed below:

H10: *Mobility has a positive impact on perceived usefulness*.

Davis (1989) proposed the Technology Acceptance Model (henceforth, TAM) to theorize the relationships between system use, satisfaction with the system, and work efficiency. Huang, T.C. (2021) used TAM to explore the willingness to use mobile payments and found a positive relationship between perceived usefulness and satisfaction with mobile payments. If mobile payments were perceived to be helpful and could improve efficiency in transaction payments, users believed that using mobile payments could make the transaction process more convenient and smoother, ultimately increasing their satisfaction with mobile payments. Sun (2021) found that the satisfaction of using *Microsoft Teams* for learning is mainly influenced by whether students like and feel identified with using the system. If students liked *Teams* and found it more convenient and worthwhile to use, they would be more satisfied. Our study hypothesizes the following H11:

H11: *Perceived usefulness has a positive impact on user satisfaction.*

The higher the satisfaction of users with a system, the more positive impact it will have on their intention to continue using it (Huang, T.C., 2021). Huang, T.C. (2021) proposed that mobile payment services could provide quick and convenient payment transactions, increase user satisfaction, and enhance their intention to continue using. The higher the satisfaction and recognition of consumers with LINE Pay, the higher their intention to continue using it, indicating that improving customer satisfaction can increase the rate of continued purchases and spread positive word-of-mouth (Chen, 2021). Huang, C.H. (2021) studied the satisfaction of users with smart home access control systems and found a significant positive correlation between user satisfaction and intention to continue using. Echoing Huang, C.H. (2021), Hsiao (2019) similarly found that the higher the satisfaction with the LINE community shopping mall, the higher the intention of users to continue using it. Our study hypothesizes the following H12:

H12: *Satisfaction has a positive impact on continued intention to use*.

Hu (2015) proposed that the higher the perceived usefulness of IoT products by users, the higher the impact on their intention to continue using them. Whether users subjectively perceived IoT products as useful or helpful directly affected whether they would continue using them. Huang, T.C. (2021) found that if users believed that mobile payment helped improve the efficiency of their transaction payments, it could affect their intention to continue using it. If users found cloud services helpful for the future through actual use, their intention to continue using them could be increased. H13 was proposed below:

H13: *Perceived usefulness has a positive impact on continued intention to use.*

3. Research Method

The method section was made up of sections on data collection, reliability analysis, and a discriminant validity test.

3.1. Data Collection

We surveyed users who have previously used mobile learning platforms. When designing the questionnaire to examine popular learning systems at that time, such as *Microsoft Teams*, *Elearn*, *Moke Shi*, and *World Learning Network*. An online survey had lower production costs, quick and convenient distribution and collection of questionnaires, no restrictions on time, location, or space, and was convenient for respondents to fill out. We distributed the questionnaires through the Google online questionnaire platform, as well as forums, discussion boards, message boards, and other channels to facilitate the recruitment of interviewees with prior experience in using mobile learning platforms. A total of 700 questionnaires were distributed, with 608 valid questionnaires returned, resulting in an effective response rate of 86.9%. The questionnaire consisted of two parts. The first part included demographic questions, and the second part examined users' satisfaction, perceived usefulness, and

intention to continue using mobile learning platforms. The content of the second part used a series of seven-point Likert scales.

3.2. Reliability and Validity Tests

Reliability analysis assessed the consistency, stability, and equivalence of the items within a questionnaire, in order to understand the quality of the questionnaire. Cronbach's α value was employed as a reliability measure to ensure that Cronbach's α must be greater than 0.7 to warrant a reliable instrument. The reliability coefficient of each dimension (as shown in Table 1) confirmed that the instrument was reliable.

Table 1. Reliability and validity tests.

	Cronbach's Alpha	Composite Reliability	AVE
Information Quality	0.864	0.917	0.787
System Quality	0.821	0.893	0.737
Service Quality	0.875	0.923	0.800
Individual Orientation	0.841	0.904	0.759
Social Orientation	0.810	0.888	0.725
Achievement Needs	0.837	0.902	0.755
Privacy and Security	0.864	0.917	0.787
Trust	0.899	0.937	0.832
Entertainment	0.870	0.920	0.793
Mobility	0.876	0.924	0.902
Satisfaction	0.860	0.915	0.782
Perceived Usefulness	0.832	0.899	0.784
Continued Intention to Use	0.823	0.894	0.738

Validity measures the accuracy of a tool, examining whether the measurement tool can correctly and effectively measure the nature and characteristics of the questionnaire. We adopted both convergent validity and construct validity to assess the validity of the instrument. Convergent validity evaluated whether both factor loading and average variance extracted (AVE) are greater than 0.5 (Fornell & Larcker, 1981). The AVE values of each variable in this study are all greater than 0.5 (as shown in Table 1 above), and the values of factor loading are all between 0.79 and 0.91 (all greater than 0.5). After testing against the two standards, the questionnaires met the testing standards to warrant good convergent validity.

Additionally, discriminant validity was used by comparing the square root of AVE with the correlation coefficient on the diagonal of the same construct. If the AVE values were all greater than the correlation coefficient on the diagonal, it meant that the questionnaires had met the criteria of high discriminant validity. As shown in Table 2, the AVE values were all greater than the correlation coefficient on the diagonal, supporting good discriminant validity.

Table 2. Discriminant validity.

	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]
[1] Information Quality	0.887												
[2] System Quality	0.758	0.858											
[3] Service Quality	0.591	0.711	0.895										
[4] Individual Orientation	0.724	0.715	0.523	0.871									
[5] Social Orientation	0.664	0.723	0.570	0.634	0.851								
[6] Achievement Needs	0.683	0.713	0.653	0.715	0.686	0.869							
[7] Privacy and Security	0.590	0.680	0.653	0.556	0.605	0.690	0.887						
[8] Trust	0.715	0.739	0.635	0.676	0.706	0.748	0.731	0.912					
[9] Entertainment	0.652	0.687	0.640	0.678	0.670	0.812	0.671	0.769	0.891				
[10] Mobility	0.646	0.658	0.459	0.684	0.684	0.639	0.503	0.668	0.624	0.895			
[11] Satisfaction	0.723	0.730	0.603	0.715	0.728	0.745	0.651	0.746	0.739	0.677	0.865		
[12] Perceived Usefulness	0.718	0.761	0.651	0.721	0.759	0.779	0.663	0.769	0.737	0.722	0.805	0.884	
[13] Continued Intention to Use	0.646	0.692	0.596	0.626	0.701	0.731	0.616	0.719	0.699	0.638	0.755	0.734	0.859

4. Findings and Data Analysis

This study used *SmartPLS* 4.0 and *SPSS* 29 as the main analysis tools to report descriptive statistical analysis and structural equation modeling analysis.

4.1. Descriptive Analysis

Demographic statistics on participants' gender, age, marital status, education level, and occupation were reported. Similarly, participants' usage frequency, usage period, information source, usage motivation, and usage purpose were also examined. The number of male and female respondents was roughly equal. The age distribution of the respondents was mainly concentrated in the 36–50 and 26–35 age groups. The highest education level was mostly university, accounting for 64.8% of the total, followed by high school/vocational school at 18.9%. The most commonly studied courses were related to information, accounting for 41.6% of the total. The main purposes of using mobile learning platforms are to enhance professional knowledge (27.1%), learn new course content (24.2%), and take courses offered by companies/schools (25.3%).

4.2. Structural Equation Modeling Analysis

Structural equation modeling analyzed the degree of influence between all variables in the framework through path analysis. *SmartPLS 4.0* software was used to examine whether the variables' influence on the hypotheses of this study's framework is significant. Among all 13 hypotheses, H1 (information quality affects satisfaction; $t = 0.959 < 1.96$) was not supported, while the results of the remaining 12 hypotheses were supported (as shown in Figure 2). The path coefficients (β values), *t*-values, and the summarized results of each research hypothesis are shown in Table 3. The results for H2 to H13 are supported based on the testing criteria of this study (with t-values greater than 1.96). The significance levels are notated with * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

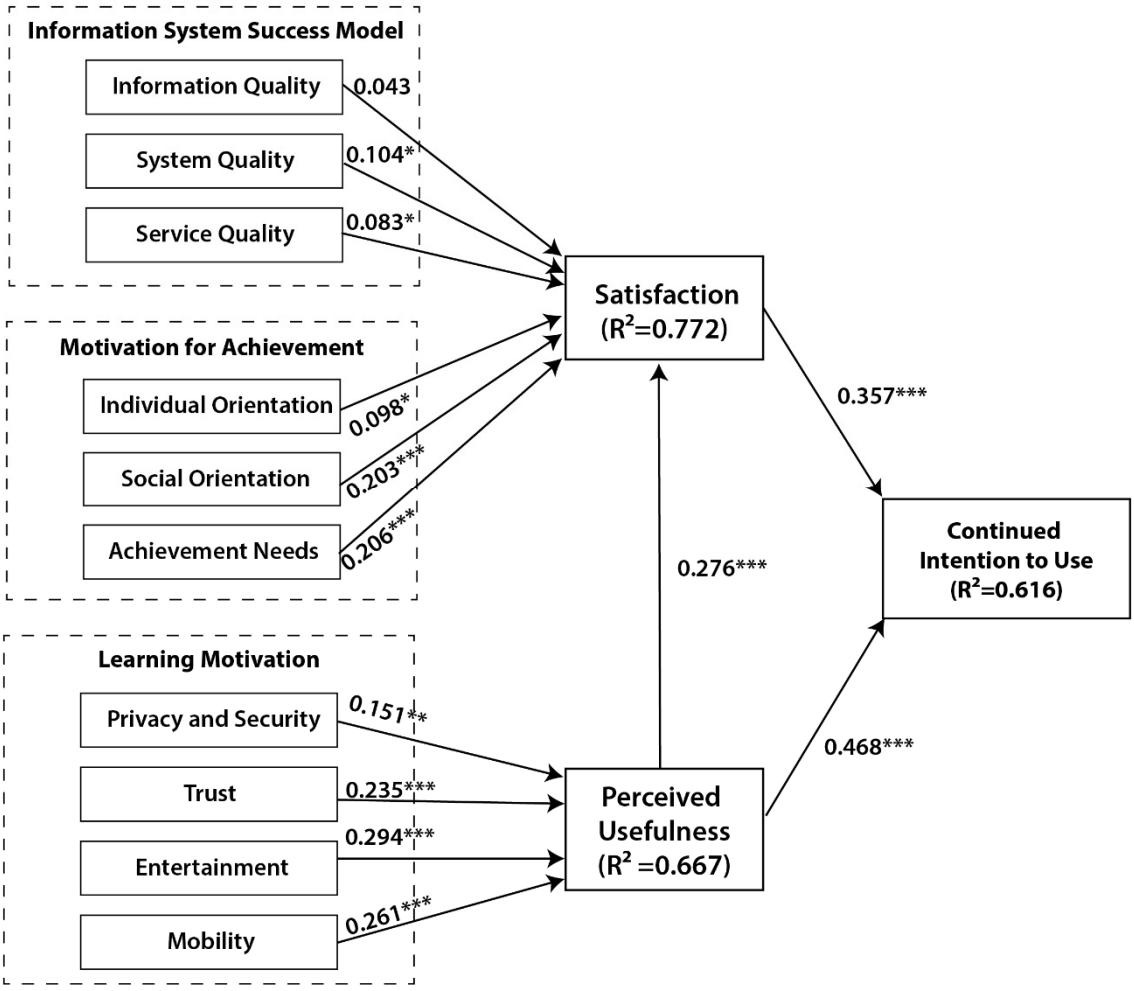

Figure 2. Path coefficient diagram.

Table 3. Hypothesis testing of SEM research findings.

H	Association	Path Coefficient	*t*-Value	*t* Critical Value	Measurement Result
H1	Information Quality → Satisfaction	0.043	0.959	<1.96	Not Established
H2	System Quality → Satisfaction	0.104 *	2.320	>1.96	Established
H3	Service Quality → Satisfaction	0.083 *	2.465	>1.96	Established
H4	Individual Orientation → Satisfaction	0.098 *	2.499	>1.96	Established
H5	Social Orientation → Satisfaction	0.203 ***	4.712	>1.96	Established
H6	Achievement Needs → Satisfaction	0.206 ***	4.981	>1.96	Established
H7	Privacy and Security → Perceived Usefulness	0.151 **	2.861	>1.96	Established
H8	Trust → Perceived Usefulness	0.235 ***	3.830	>1.96	Established
H9	Entertainment → Perceived Usefulness	0.294 ***	5.168	>1.96	Established
H10	Mobility → Perceived Usefulness	0.261 ***	7.144	>1.96	Established
H11	Perceived usefulness → Satisfaction	0.276 ***	5.834	>1.96	Established
H12	Satisfaction → Continued Intention to Use	0.357 ***	6.343	>1.96	Established
H13	Perceived Usefulness → Continued Intention to Use	0.468 ***	9.181	>1.96	Established

Note: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

5. Conclusions and Recommendations

The final section of our paper included a summary of key findings and practical recommendations to ensure the successful implementation of mobile learning platforms within an educational environment.

5.1. Summary of Key Findings

Unexpectedly, information quality did not have a significant impact on the satisfaction of the mobile learning platform users. Our empirical findings were inconsistent with the results reported by DeLone and McLean (2003), which identified a significant relationship between information quality and user satisfaction within the information systems success framework. We speculated that the contradictory finding may be due to the fact that when users studied through the mobile learning platform more, they would perceive that the information quality of the platform is relatively low. Many contemporary mobile learning platforms have slightly complex and cumbersome interfaces, resulting in a cluttered presentation of platform information. This situation could have a negative impact on users' perceptions, leading to this unexpected finding.

Additionally, some mobile platforms were known to lack subsequent maintenance and updates, resulting in outdated information presented on the platform. These problems could have created a gap between materials, tasks, content, and the knowledge learned in modern times. Due to these various reasons, users could perceive that the positive impact of information quality on the satisfaction of the mobile learning platform is statistically non-significant.

The other three predictor variables, such as quality of the system, quality of service, and perceived usefulness, all had a positive impact on the satisfaction of the mobile learning platform. These empirical findings were consistent with DeLone and McLean (2003); that is, the higher the level of stability and ease of use they perceive with audio, textual, and visual functions of the platform, the more satisfied they are. When users sought assistance through the customer service channel, if customer service responded with professional knowledge and quick feedback time, helping users solve problems, users would perceive the mobile learning platform and their content as beneficial. All of these could positively impact the level of user satisfaction.

The individual orientation, social orientation, and achievement needs all had positive impacts on the satisfaction of the mobile learning platform. The empirical findings were consistent with previous research (Elliot & Harackiewicz, 1996; McClelland et al., 1976), which demonstrated the significant role of achievement-related motivational constructs in influencing individual satisfaction outcomes. In other words, users could autonomously choose learning courses based on personal preferences and values, while also considering external motivational factors. The level of achievement felt during the learning process also determined achievement goals based on the need for achievement. To enhance user satisfaction, mobile learning platforms need to provide diverse course options, personalized course recommendations, and learning experiences based on the user's learning preferences and habits.

Privacy, security, and trust were found to have a positive impact on the perceived usefulness of mobile learning platforms. This empirical finding was consistent with Bauer (1967) and Morgan and Hunt (1994), both of whom identified significant relationships among the key constructs examined in our study. Users perceived mobile learning platforms to be useful and satisfied only after clear privacy protection statements and measures were provided, resulting in a higher platform usage rate and loyalty. When users also trusted the information,

systems, and overall services more, they are more likely to feel satisfied with the learning environment, course quality, and learning mode. In addition, privacy and security were also important even from a legal and ethical perspective. For mobile learning platforms, ensuring the protection of users' personal privacy data is one of the key factors for their legitimate operation and long-term development.

Furthermore, entertainment and mobility have a positive impact on the perceived usefulness of mobile learning platforms. The empirical findings were consistent with findings of Vorderer et al. (2004) and Clarke III (2008). The learning process through the use of mobile learning platforms can become more enjoyable, either because of the personalized teaching content provided by teachers or the interactivity of the platform itself, subsequently increasing users' curiosity and perceived usefulness of the new technology. As to mobility as a key feature of mobile learning platforms, users can conveniently use the platform for learning without being restricted by time and location. In other words, when users are able to learn anytime and anywhere through mobile learning platforms, where pre-uploaded videos and materials are included to overcome online network stability and teaching time limitations.

Satisfaction and perceived usefulness can also determine users' opinions on the information content, learning outcomes, operational services, and overall functionality of the mobile learning platform. Users can enhance their learning efficiency and improve their learning experience, leading to positive usefulness perceptions. Users' subjective perceptions of a mobile learning platform could determine whether they can provide substantial help and value. User satisfaction and their willingness to use the system were closely related, making it an important concept in system design for mobile learning system developers. The higher the perceived usefulness, led to a higher the intention of users to continue using the mobile learning platform. Evaluating users' satisfaction and perceived usefulness of the mobile learning platform will be crucial in understanding their intention to continue using the platform. Additionally, improving user satisfaction and perceived usefulness can promote continued usage of the mobile learning platform and enhance learning outcomes.

5.2. Practical Recommendations

In the context of educational applications, we provide the following practical recommendations for mobile learning platform users and system developers. In order to improve student satisfaction and intention to continue using a mobile learning platform, system developers should ensure that the system is regularly maintained and updated to improve information quality. Information on mobile learning platforms should be accurate, useful, complete, and in line with the current trends and progress in modern teaching. Additionally, the interface should be user-friendly and smooth, allowing students to find the information they need easily and teachers to upload the required teaching materials easily. In addition, teachers must provide real-time feedback and support on the mobile learning platform, because these are also crucial in influencing students' satisfaction and intention to continue using it. Developers should aim to help students quickly obtain the necessary, complete, accurate information to improve information quality and satisfaction.

Perceived usefulness and satisfaction affected students' intention to continue using. Therefore, maintaining the quality and information of the system can enhance their willingness to use mobile learning devices, demonstrating that students consider system quality as one of the important factors. Our study confirmed that mobile learning platforms should present information more comprehensively, such as introducing a system model for customized courses that encompassed course progress, grading criteria, and assignment submission. Additionally, making the interface smoother and more intuitive can improve users' experience with the mobile learning platform after enhancing the quality and synchronization of voice and video connections. Therefore, we recommend that mobile learning platforms prioritize students' sensory feedback as the first reference standard for platform maintenance and development, further enhancing users' satisfaction and intention to continue using the platform.

Concerns about privacy and security had a positive impact on perceived usefulness among student users of mobile learning platforms. When using mobile learning platform apps, reducing users' privacy risks can be accomplished by requesting authorized permissions. Therefore, we recommend that developers enhance students' risk protection levels by pre-educating users about the risks and precautions of video cameras to restrict screen recording programs. Additionally, we also recommend that teaching materials, such as written documents and videos, should be protected as instructors' intellectual property because of their research, organization, and filtering. This student-centric approach can enhance students' assurance of privacy and security and increase their perceived usefulness of the mobile learning platform.

Author Contributions

C.-S.K. and J.-C.H. contributed 70% of the article content (including idea conceptualization, literature review, data collection, statistical analysis, and formatting of the paper). In comparison, Y.K. contributed 30% of the article content (including rewriting, proofreading, graphic design, and reference compiling). All authors have read and agreed to the published version of the manuscript.

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Conflicts of Interest

The authors declare no conflict of interest.

Use of AI and AI-Assisted Technologies

No AI tools were used to write this manuscript.

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