Exploring Factors Influencing Mobile Learning Acceptance Among Educators

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ABSTRACT

Mobile learning (m-learning) is becoming increasingly important in the 21st-century digital education landscape due to its potential to enhance interactivity and flexibility in teaching. This study aims to identify the level of mobile learning acceptance among educators and the influence of age and gender factors on mobile learning acceptance. The study employs quantitative survey research design and involves 133 educators in Perak Tengah. The findings show that mobile learning acceptance among educators is high, with a notable inclination among younger and female educators. Additionally, the study employs the Unified Theory of Acceptance and Use of Technology (UTAUT) model, which comprises constructs such as performance expectancy, effort expectancy, social influence (colleagues), personal innovativeness and quality of service were found to significantly influence educators' behavioral intention to use mobile learning. The findings also indicated that age and gender are significantly related to mobile learning acceptance among educators. The study suggested that learning styles of educators related to age and gender must be incorporated in the development of mobile learning professional training particularly for educators. Such efforts would support a more rapid, effective and inclusive digital education strategies throughout the country.

Keywords: Mobile Learning, UTAUT, Technology Acceptance, Educators, Digital Education.

INTRODUCTION

The rapid development of information and communication technology (ICT) in the era of globalization has significantly reshaped the educational landscape, demanding teaching approaches that are more innovative, flexible, and student-centered. Within this framework, mobile learning (m-learning) has emerged as an approach that leverages mobile devices such as smartphones, tablets, and laptops to enable teaching and learning to take place anytime and anywhere. This approach not only enhances interactivity between educators and students but also accelerates and diversifies access to learning materials. In Malaysia, the government's commitment through the Malaysia Education Blueprint (PPPM) 2013–2025, the Digital Education Policy, and the Digital Educational Learning Initiative Malaysia (DELIMa) has elevated digital education transformation as a key agenda to cultivate a generation equipped with 21st-century skills. Nevertheless, the implementation of m-learning in schools continues to face several constraints, particularly regarding educator acceptance. Challenges identified include limited technological literacy, infrastructural constraints, technostress, and the digital divide, all of which hinder comprehensive technology integration in classrooms.

Educator acceptance of m-learning is a critical prerequisite for ensuring effective implementation. Prior studies

indicate that m-learning can increase student motivation, strengthen interaction, and contribute to better academic achievement (Liu et al., 2020; Al-Fraihat et al., 2020). However, in the Malaysian context, educator acceptance remains low, especially among educators (Khalid & Samad, 2021). These constraints stem from limited training exposure, moderate educator readiness, and concerns about the effectiveness of technology use in instruction (Qazi et al., 2023). Demographic factors also play a role: younger educators tend to explore new technologies more readily than older educators, who often feel less confident using digital devices (Rebollo & de Oliveira, 2024). In addition, Bala (2024) reported that female educators exhibit higher levels of confidence than male educators, particularly at intermediate and advanced skill levels. Nevertheless, rigorous studies that thoroughly examine the factors influencing technology acceptance among educators remain limited. Therefore, this study is conducted to identify the level of m-learning acceptance in teaching among educators and to determine the factors that influence such acceptance.

The findings of this study can contribute to strengthening educator training strategies, providing appropriate technological infrastructure, and informing more precise education policy planning. Practically, the study is significant because it has the potential to provide empirical evidence useful to various stakeholders in education. For educators, the findings can help assess technological readiness, identify gaps in digital skills, and plan targeted professional development interventions. For school administrators, the results can guide the design of focused training, the provision of adequate technical support, and the enhancement of schools' digital infrastructure. Furthermore, for policymakers such as State Education Departments (JPN) and District Education Offices (PPD), the study can inform the formulation of digital education policies and guidelines that are realistic and aligned with educators' actual needs. Successful, system-wide integration of m-learning can ultimately support the Ministry of Education Malaysia's aspirations to realize a 21st-century digital education agenda and to cultivate a generation of technologically literate, creative, and innovative students.

LITERATURE REVIEW

The use of ICT in education has become the backbone of 21st-century pedagogical transformation, with the effectiveness of teaching and learning (T&L) increasingly dependent on educators' competence in strategically integrating technology. Through digital tools such as computers, smartphones, and online learning applications, ICT enables educators to implement more dynamic, learner-centered instructional approaches (Azman et al., 2023). Game-based learning and gamification can enhance students' interest, creativity, and critical thinking (Shaharuddin & Yusof, 2024). At the same time, ICT fosters essential digital literacy skills so that students can compete in a global environment (Ibrahim & Tan, 2022). Nevertheless, the effectiveness of ICT integration remains tied to educators' readiness, the adequacy of professional training, and their confidence in applying technology effectively (Fu, 2013).

In Malaysia, ICT integration has been widely implemented through curricula that support 21st-century learning, including collaborative and project-based learning (KPM, 2023). However, challenges such as the digital divide, insufficient technological infrastructure, and varying levels of educators' digital competencies continue to hinder implementation (Munusamy & Jamaludin, 2022). Therefore, the effectiveness of technology integration, particularly in the form of mobile learning, needs to be assessed more deeply to ensure that educators are truly ready to leverage it.

Mobile learning is one of the most prominent educational innovations of the past decade. Its flexible, dynamic, and contextual nature allows educators and students to access content anytime and anywhere (Sharples et al., 2016). Authentic, context-based learning enables the provision of materials that are more relevant to students' daily lives, thereby increasing their engagement (Grant, 2019). In addition, m-learning supports collaborative and personalized learning, where students can learn at their own pace while educators track progress in real time through digital platforms (Chee et al., 2022). However, effective implementation of m-learning requires high levels of educators' digital literacy as well as sufficient technical support and professional training (Ismail et al., 2023).

Prior studies show that m-learning can enhance student motivation and academic performance. Liu et al. (2020)

reported that m-learning not only increases student interest but also contributes to better academic achievement. Al-Fraihat et al. (2020) emphasized that the flexibility of m-learning facilitates access to learning materials, thereby enriching the learning experience. However, Chai et al. (2021) highlighted that inadequate infrastructure and technical support remain major implementation challenges. From the educator perspective, Dahri et al. (2023) found that mobile self-efficacy is a key determinant of m-learning acceptance; educators with higher technological proficiency are more prepared to integrate it into T&L. Even so, the digital literacy gap between educators remains pronounced, resulting in uneven m-learning implementation nationwide.

From a demographic standpoint, age and gender also influence technology acceptance. Younger educators are typically more open to new technologies because they are more accustomed to digital devices, whereas older educators tend to be more cautious and less confident in trying new approaches (Rebollo & de Oliveira, 2024). Bala (2024) further reported that female educators exhibit higher confidence than male educators at intermediate and advanced skill levels. Osman et al. (2023) likewise found that female students are more open to technology than male students, although that study focused on the polytechnic context. Collectively, these factors reveal a technology-acceptance gap that should be addressed through targeted training and sustained support.

Theoretically, this study adopts the Unified Theory of Acceptance and Use of Technology (UTAUT) framework by Venkatesh et al. (2003). The model brings together six key constructs (see Fig. 1), which have proven effective in predicting technological acceptance. Accordingly, this study examines social influence from peer perspective, as educators often refer to colleagues when adopting technology. In addition, age and gender are used as moderator variables to assess the extent to which these two factors shape the relationships between the core UTAUT constructs and educators' acceptance of m-learning.

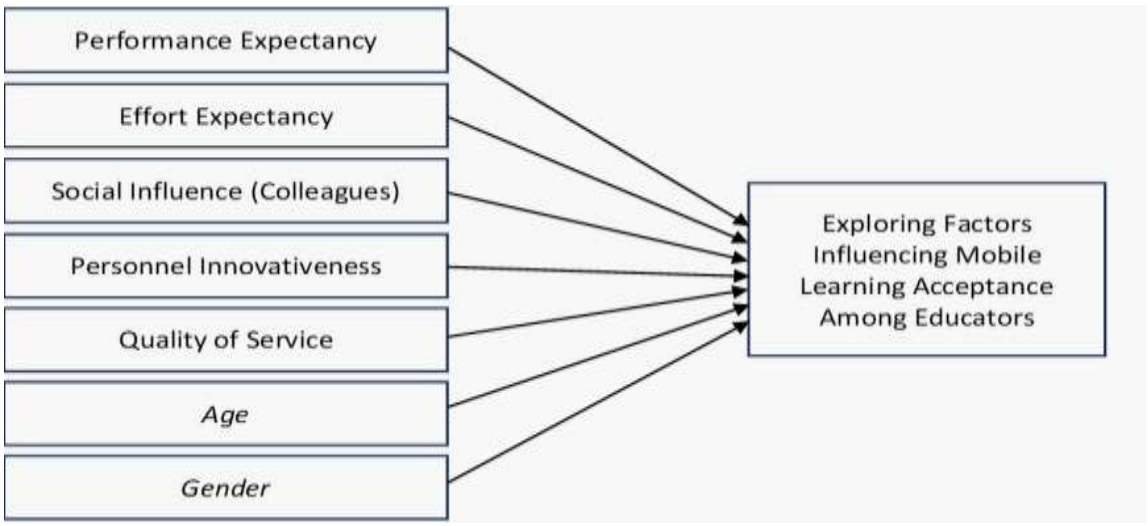


Fig. 1: Conceptual Framework

Although the literature on mobile learning has expanded, significant research gaps remain. First, most studies focus on students in higher education institutions (Roni & Drahman, 2023; Al-Qatawneh et al., 2022), whereas studies involving secondary school educators, particularly in the Malaysian context are still limited. Second, research that specifically examines the influence of age and gender on educators' acceptance of mobile learning is also scarce, even though educators are the primary agents ensuring the effectiveness of technology integration in teaching and learning. Third, issues such as technostress, infrastructure constraints, and insufficient professional training are frequently reported in prior studies (Alshamaila et al., 2023; Khalid & Samad, 2021), yet empirical evidence directly linking these factors to educators' acceptance remains limited.

METHODOLOGY

This study employs a quantitative approach with a survey design grounded in the positive paradigm. This approach was chosen because it is suitable for objectively identifying relationships between variables through

the collection of numerical data that can be measured and analyzed using statistical techniques. In line with the principles of positivism which emphasize valid, measurable data that can be generalized (Wahyuni, 2012), this framework enables the researcher to scientifically assess the level of mobile learning (m-learning) acceptance among educators and to identify significant factors that influence educators' acceptance of m-learning in instruction.

RESULT

This section presents the study's findings, including respondents' demographic profiles, their use of mobile learning devices and applications, the overall level of mobile learning acceptance, and how acceptance varies by age and gender. It also highlights the key factors that influence educators' acceptance of mobile learning.

Respondent Demographics

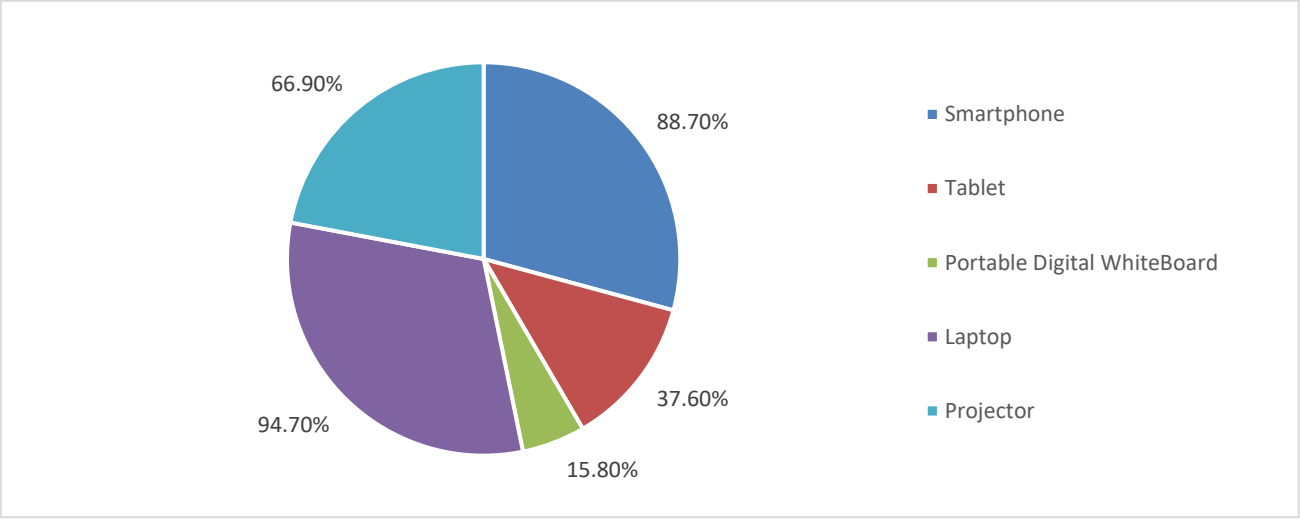
This study involved most were female, and the largest age group was 41–50 years. All participants had at least a bachelor's degree, with 72.9% holding bachelor's degrees and 27.1% holding master's degrees. The sample was predominantly Malay, and many had extensive teaching experience, with 30.8% teaching for 16–20 years and 23.3% for over 21 years. Refer Table 1. In classroom practice, refer Fig. 2, laptops were the most widely used device, followed by smartphones and projectors, while tablets and portable digital whiteboards were less common.

Table 1: Demographic Profile

Variable	**Frequency (*n*)**	**Percentage (%)**
Gender		
Male	40	30.1
Female	93	69.9
Age		
20 - 30 years	19	14.3
31 - 40 years	38	28.6
41- 50 years	61	45.9
51 years and above	15	11.3
Highest Education Level		
Diploma	0	0
Bachelor's degree	97	72.9
Master's degree	36	27.1
PhD	0	0
Ethnicity		
Malay	126	94.7
Chinese	1	0.8

Indian	1	0.8
Bumiputera Sabah and Sarawak	5	3.8
Teaching Experience		
1 - 5 years	23	17.3
6 - 10 years	13	9.8
11 - 15 years	25	18.8
16 - 20 years	41	30.8
21 years and above	31	23.3

Fig. 2: Type Of Mobile Devices Used for Teaching



Mobile device usage was generally high: 60.2% used them frequently, 18% used them 3–4 times per week, 15% used them 1–2 times per week, and only 6.8% used them monthly or less, with none reporting no use at all. For applications, educators mainly relied on LMS platforms, messaging apps like WhatsApp or Telegram, and interactive tools. Overall, the results show strong technological literacy, heavy reliance on laptops and smartphones, and widespread use of digital learning tools, highlighting educators' readiness to integrate technology into teaching and learning.

Fig. 3: Frequency of Using Mobile Devices

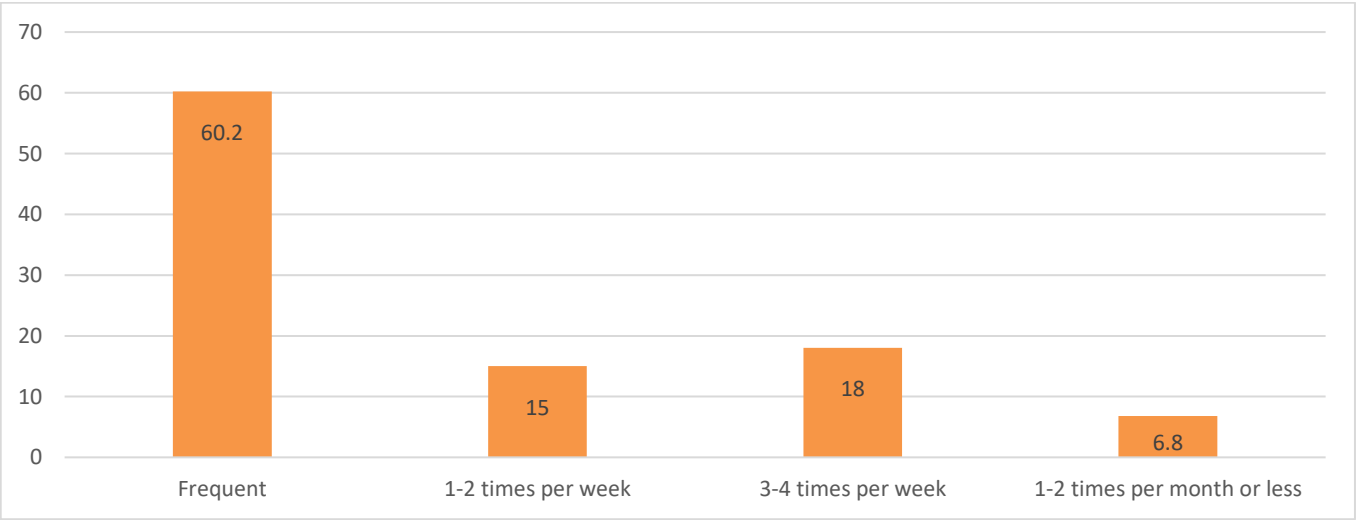
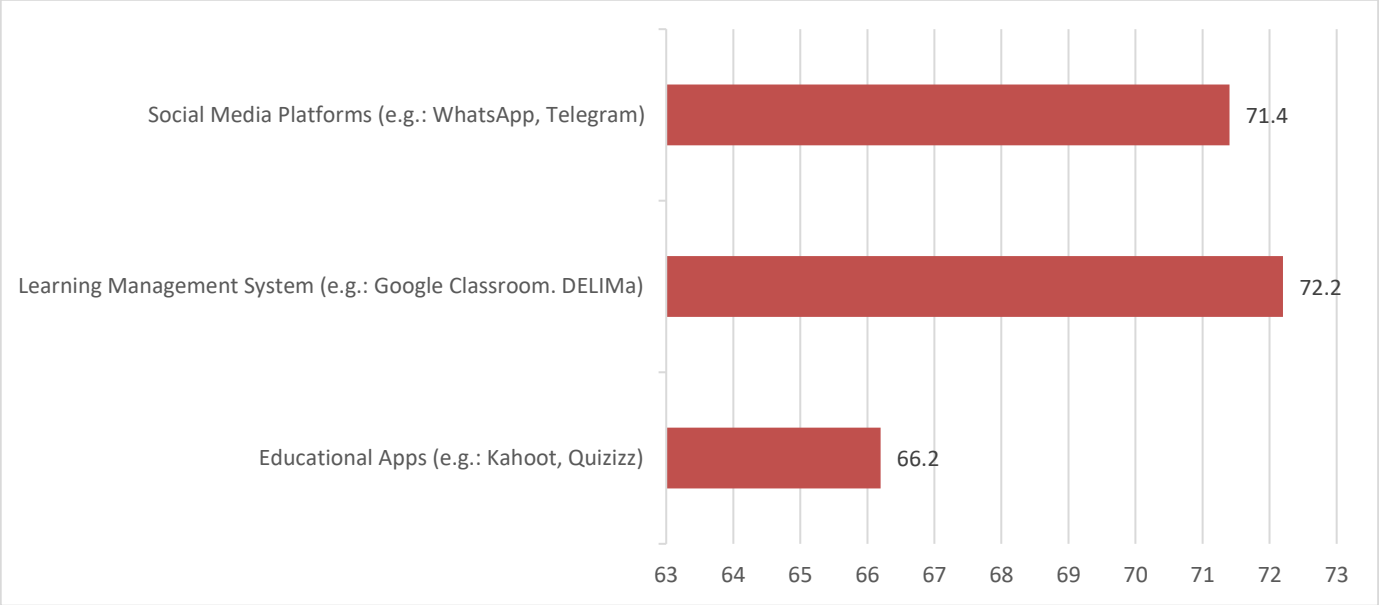


Fig. 4: Mobile Learning Tools or Applications Used in Teaching



Significant Factors Influencing Educators' Acceptance

Referring to Table 2, the results indicate that educators exhibit a very high level of acceptance of mobile learning. This is reflected in the overall mean across the factors examined, which falls in the "very high" range. The most dominant factor is performance expectancy, suggesting that educators believe using mobile learning enhances instructional effectiveness and students' achievement. Service quality and effort expectancy also recorded very high means, indicating that educators find mobile learning systems easy to use, reliable, and practically supportive of their needs. Meanwhile, peer influence and personal innovativeness show that collegial support and individual innovativeness likewise play roles in encouraging educators to use mobile learning in schools. In short, all factors registered very high mean scores, demonstrating strong and positive educator acceptance of mobile learning. These findings signal that educational technologies such as mobile learning can be scaled more broadly, provided these key factors continue to receive attention.

Table 2: Significant Factors Influencing Educators' Acceptance

Factors	**Mean (M)**	**Standard Deviation (SD)**	**Interpretation**
Performance Expectancy	4.61	0.52	Very high
Quality of Service	4.57	0.53	Very high
Effort Expectancy	4.31	0.67	Very high
Social Influence (Colleagues)	4.22	0.77	Very high
Personnel Innovativeness	4.00	0.78	Very high
Overall	**4.43**	**0.62**	**Very high**

Level of Acceptance in Teaching among Educators

As shown in Table 3, all items recorded mean scores close to 4.50 with relatively low standard deviations, ranging from 0.50 to 0.56. This indicates a consistent and robust level of acceptance among respondents. The item with the highest mean was "I will recommend others to use mobile learning", suggesting educators' readiness to act as change agents by advocating the use of technology to their colleagues.

In addition, the items "I will enjoy using mobile learning" and "I plan to use mobile learning in my teaching" recorded, respectively. These results reflect educators' positive intentions and emotions toward adopting this approach. Emotional support and planned use of technology in instruction are key aspects emphasized by Venkatesh et al. (2003), where behavioral intention is a principal indicator of technology acceptance. The item with the lowest mean was "I expect to use mobile learning more frequently"; however, it still falls within the "very high" category. This suggests that although there is slight variation in the anticipated frequency of use, most educators still show a strong inclination toward increased usage.

Overall, the mean score was 4.50 with a standard deviation of 0.54, categorized as very high. These findings indicate that educators have a very high level of acceptance of mobile learning in their teaching.

Table 3: Acceptance of Mobile Learning

No.	**Item**	**Mean (M)**	**Standard Deviation (SD)**	**Interpretation**
1.	I will recommend others to use mobile learning.	4.53	0.54	Very high
2.	I plan to use mobile learning in my teaching.	4.49	0.50	Very high
3.	I will enjoy using mobile learning.	4.51	0.55	Very high
4.	I intend to increase my use of mobile services in the future.	4.49	0.56	Very high
5.	I expect to use mobile learning more frequently.	4.47	0.56	Very high
Overall		**4.50**	**0.54**	**Very high**

Age Differences in Mobile Learning Acceptance

The results showed no significant differences between the age group. Since p exceeds the 0.05 significance level, the null hypothesis fails to be rejected, indicating that age does not influence educators' acceptance of mobile learning. These findings suggest that acceptance of mobile learning is high and consistent across all educator age groups, countering the traditional perception that older educators are less inclined to use technology. The findings of this study contrast with several prior studies.

However, the present study indicates no significant differences in mobile learning acceptance by age among educators. This implies that all age groups exhibit comparable levels of acceptance of mobile learning. Accordingly, training, encouragement, and technological support can be designed and implemented comprehensively for all age categories, without requiring highly specific adjustments by age group.

Table 4: Age Differences in Mobile Learning Acceptance

Item	**Age**	**Frequency (f)**	**M±SP**	**F value**	**P-value**
Mobile Learning Acceptance	20 - 30 years	19	4.52±0.40	0.22	0.88
	31 - 40 years	38	4.52±0.48		
	41- 50 years	61	4.47±0.53		
	51 years and above	15	4.57±0.46		

Gender Differences in Mobile Learning Acceptance

There is a significant difference between mobile learning acceptance and educator gender; however, the

statistical analysis shows no significant difference between male and female educators. The mean score for male educators is 4.60, while for female educators it is 4.46, which exceeds the 0.05 significance level. This indicates that the mean difference is not strong enough to be considered statistically significant.

Overall, the results suggest that mobile learning acceptance is consistent across genders; therefore, training strategies and technological support can be designed in a general manner without differentiating by gender. This reinforces an inclusive approach to implementing educational technologies in secondary schools.

Table 5: Gender Differences in Mobile Learning Acceptance

Gender	Frequency (n)	Mean (M)	Standard Deviation (SD)	df	P-value
Male	40	4.60	0.48	131	0.120
Female	93	4.46	0.49		

CONCLUSION

As a conclusion, this study shows that educators demonstrate very high acceptance of mobile learning, anchored most strongly in performance expectancy and reinforced by expectations of secure, reliable, and fast services (service quality) and straightforward, low-effort use (effort expectancy). Social influence from colleagues and educators' personal innovativeness also matters, pointing to the power of peer mentoring, educator champions, and collaborative communities of practice. Notably, acceptance is consistently high across age groups and genders in this sample, underscoring that inclusive, system-wide rollouts rather than segmented programs are both feasible and warranted. Practically, we recommend: (i) framing professional development around demonstrable gains in instructional effectiveness; (ii) investing in secure, high-bandwidth, stable platforms with simple UX and responsive support; (iii) formalizing peer-led coaching and micro-credentials to sustain grassroots momentum; and (iv) embedding clear data-privacy and safety guardrails. Strategically, the Ministry and districts can scale m-learning as core infrastructure budgeted, measured, and iterated while future research adopts longitudinal and experimental designs to link acceptance with classroom outcomes and to test moderating factors such as technostress and infrastructure quality. With these moves, mobile learning can shift from "promising" to "pervasive," delivering flexible, high-impact teaching and learning for every classroom.

DISCUSSION

The study paints a clear and encouraging picture; educators are not merely tolerant of mobile learning; they are enthusiastic adopters. Acceptance sits firmly in the "very high" band, with behavioral intention items also very high. This strong signal is anchored by performance expectancy, meaning educators believe m-learning tangibly improves teaching effectiveness and student outcomes. Service quality and effort expectancy round out a pragmatic story: when platforms are safe, fast, reliable, and easy to use, educators lean in. In short, perceived usefulness + usable, trustworthy systems = adoption momentum.

The UTAUT lens explains this coherence well. High performance expectancy aligns with educators' reports that m-learning helps them teach better and faster, while high effort expectancy reflects intuitive, low-friction interfaces (e.g., LMSs and familiar apps), which reduce cognitive and technical load. Social influence from colleagues and personal innovativeness provide the cultural and dispositional "spark" that normalizes experimentation and helps practices stick. Informal peer coaching, where colleagues support and mentor one another, can be a decisive accelerator in sustaining technology adoption.

Two demographic findings sharpen the contribution. First, acceptance did not differ by age, countering the stereotype that older educators are reluctant tech users. Second, acceptance did not differ by gender, despite modest, mean differences. Together, these results suggest that, at least in this setting design quality, ease of use, and collegial norms matter more than who the educator is. That is a policy relevant pivot: invest in product level usability and school level culture, not age or gender segmented rollouts.

Three practical steps emerge: (i) strengthen service quality - focus on secure, fast, and reliable platforms with simple navigation; (ii) promote peer-led learning - use mentoring, communities of practice, and short sharing sessions to build confidence; (iii) simplify teaching workflows - offer ready-to-use templates, content banks, and quick feedback tools to make technology integration easier.

Conceptually, the findings shift attention from "Will educators use it?" to "What makes it easy to keep using?" High acceptance across all groups suggests digital teaching practices have become more normalized after the pandemic. While the study is limited to one region and uses self-reported data, it points to the importance of usefulness, usability, and supportive school culture in scaling mobile learning effectively.

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