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Application of Mobile Learning Platform in Intelligent Higher Education System

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Abstract: - This study investigates the use of mobile learning platforms within intelligent higher education systems, with an emphasis on the role of artificial intelligence (AI) in improving student learning experiences and outcomes. The research, which is based on the Unified Theory of Acceptance and Use of Technology (UTAUT) model, looks into important notions including Performance Expectancy and Effort Expectancy to better understand students' views and actions toward mobile learning platforms. The study reveals insights into the revolutionary potential of AI-driven mobile learning platforms in facilitating personalized, adaptive, and interactive learning experiences by conducting a thorough examination of literature, case studies, and empirical data. AI algorithms evaluate student data to give personalized content, adaptive tests, and real-time feedback, whereas AI-powered chatbots offer on-demand support and advice. Furthermore, AI-powered analytics provide educators and administrators with actionable insights that enable informed decision-making and continual improvement. By combining theoretical frameworks, emerging trends, and practical experiences, the study provides actionable recommendations for effectively integrating AI in mobile learning platforms to advance intelligent higher education systems and foster inclusive and innovative educational practices in the digital age.

Keywords: Unified Theory of Acceptance and Use of Technology (UTAUT), Artificial intelligence (AI), Mobile Learning Platforms, Higher Education Systems.

I. INTRODUCTION

In today's dynamic higher education scene, technology integration has emerged as a revolutionary force, changing established paradigms of teaching and learning. At the vanguard of this digital transformation is the integration of mobile learning platforms into intelligent educational systems. These platforms, enabled by the widespread availability of smartphones and tablets, provide unparalleled opportunities for students to get personalized and interactive learning experiences at any time and from any location [1]. Understanding the factors impacting the acceptance and utilization of mobile learning platforms becomes increasingly important as educational institutions attempt to fulfil learners' changing expectations in the digital era [2].

This study investigates the use of mobile learning platforms in intelligent higher education systems using the Unified Theory of Acceptance and Use of Technology (UTAUT) model [3]. The UTAUT framework, which is based on existing theories of technology adoption and usage, provides a structured way for investigating the factors that influence users' behavioural intentions and actual use of technology [4][5]. This study intends to find insights into students' views, attitudes, and actions toward mobile learning platforms in the context of intelligent higher education systems by studying the core constructs of performance expectancy and effort expectancy within the UTAUT paradigm [6]. The integration of mobile learning platforms has enormous potential for improving the accessibility, flexibility, and effectiveness of learning experiences in higher education [7]. By integrating sophisticated technology such as Artificial Intelligence (AI), these platforms may provide students with individualized content, adaptive tests, and real-time feedback, hence improving their learning results and engagement. However, attaining the full potential of mobile learning necessitates tackling a variety of issues, including technological limitations, pedagogical considerations, and socio-cultural variables [8].

This study aims to contribute to a better understanding of the complex dynamics influencing the adoption and use of mobile learning platforms in intelligent higher education systems by conducting a thorough evaluation of existing literature, empirical studies, and best practices [9]. By combining insights from theoretical frameworks, current trends, and practical experiences, they hope to equip educators, policymakers, and technology developers with actionable advice for successfully integrating mobile learning platforms into educational ecosystems [10]. Finally,

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the research aims to further the conversation around technology-enhanced learning, paving the way for innovative and inclusive educational practices in the digital age [11].

II. Related Work

M. A. Almaiah et al [12]. Several studies have looked at the elements that influence students' acceptance and use of technology in educational settings, based on theoretical models like the Unified Theory of Acceptance and Use of Technology (UTAUT). Researchers developed the UTAUT model, which includes components such as Performance Expectancy, Effort Expectancy, Social Influence, and Facilitating Conditions, to predict and explain users' intentions to utilize technology. Subsequent research has confirmed and extended the UTAUT model in a variety of settings, including higher education, emphasizing its usefulness in understanding users' behaviour and attitudes toward technology adoption.

X. Zhang [13]. Numerous research has looked into the usefulness and impact of mobile devices on teaching and learning outcomes. Researchers conducted a comprehensive review of empirical studies on mobile learning in higher education, focusing on key themes such as student involvement, learning performance, and satisfaction. Their findings highlighted the potential of mobile learning platforms to improve accessibility, flexibility, and engagement in educational settings, opening the way for more personalized and ubiquitous learning experiences.

Furthermore, U. Alturki and A. Aldraiweesh [14]. research has looked into the role of intelligent systems, such as artificial intelligence (AI) and data analytics, in modernizing higher education. Researchers defined "Learning Analytics" as the measurement, collecting, analysis, and reporting of data on learners and their surroundings to enhance learning environments and increase student achievement. Intelligent educational systems can deliver tailored recommendations, adaptive learning pathways, and real-time feedback to learners, increasing interest and performance.

A. M. Al-Rahmi et al [15]. Recent research has investigated growing trends and novel techniques for utilizing mobile learning platforms within intelligent educational environments. Researchers investigated the potential of immersive technologies, such as augmented reality (AR) and virtual reality (VR), to improve the mobile learning experience. These technologies create immersive and interactive learning environments, which open up new pathways for student engagement and information retention, particularly in areas that need hands-on instruction or visualization.

III. Methodology

The technique for investigating the use of mobile learning platforms within an intelligent higher education system will be based on the Unified Theory of Acceptance and Use of Technology (UTAUT) model. This widely used theoretical framework offers a structured way to analyse users' behavioural intentions and actual use of technology. The technique will be divided into multiple interconnected steps, each of which corresponds to one of the UTAUT model's major constructs. To begin, the research will conduct a comprehensive survey of existing literature to lay the groundwork for a strong theoretical framework. This phase will include a thorough assessment of academic papers, journals, and pertinent publications about mobile learning platforms, intelligent educational systems, and the UTAUT paradigm. By combining current knowledge, they hope to acquire insights into the elements that influence users' acceptance and adoption of technology in higher education contexts.

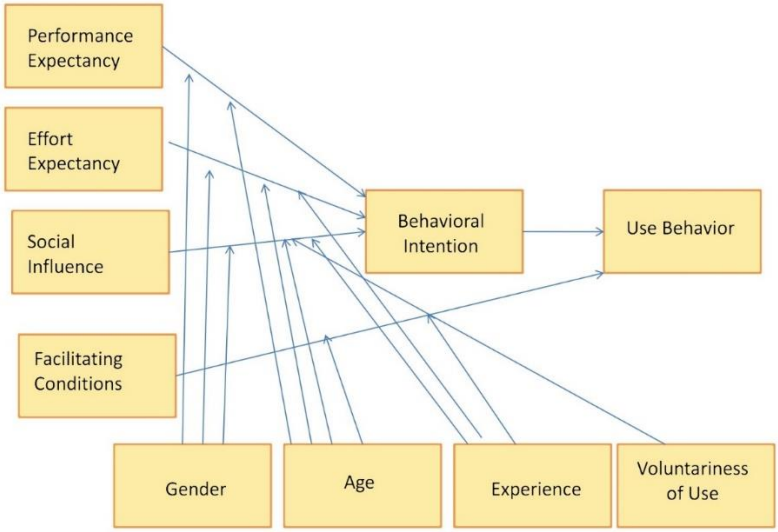

Fig 1: UTAUT Model.

Building on the existing study, the next stage is to identify key stakeholders within the higher education ecosystem. This includes students, educators, administrators, and IT professionals who play critical roles in the adoption and use of mobile learning environments. Understanding their views, motives, and concerns will help designers develop effective technology adoption techniques. Following stakeholder identification, the research will design and administer surveys using the UTAUT model constructs. The surveys will be designed to gauge users' perceptions of factors such as Performance Expectancy, Effort Expectancy, Social Influence, and Facilitating Conditions, as defined in the UTAUT framework. Furthermore, contextual aspects unique to mobile learning platforms and intelligent educational systems will be included to collect nuanced observations.

Along with survey administration, the research will use qualitative data collection approaches such as interviews and focus group discussions. These qualitative methods will allow for a more in-depth investigation of users' experiences, attitudes, and behaviours toward mobile learning systems. By facilitating open-ended talks, they hope to uncover valuable qualitative data that supports and enriches the quantitative findings of the surveys. The data acquired from surveys and qualitative interviews will then be analyzed using appropriate statistical techniques and qualitative coding methodologies. The quantitative analysis will use regression analysis to investigate the links between UTAUT components and users' behavioural intentions or actual use of mobile learning platforms. Qualitative data will be thematically evaluated to find reoccurring patterns, themes, and insights.

AI plays a critical role in the integration of mobile learning platforms into intelligent higher education systems, altering how students interact with educational content and improving learning results. These platforms use artificial intelligence (AI) to provide personalized and adaptable learning experiences based on individual student needs and preferences. AI algorithms use student interactions, performance data, and learning patterns to generate real-time recommendations, adaptive assessments, and targeted interventions. Furthermore, AI-driven chatbots and virtual assistants provide students with on-demand support and advice, increasing their access to resources and promoting self-directed learning. Furthermore, AI-powered analytics allow educators and administrators to acquire actionable insights into student progress, learning gaps, and instructional efficacy, influencing data-driven decision-making and continuous improvement methods.

IV. RESULTS

The statistical analysis performed as part of this study was focused on assessing the performance parameters associated with the acceptance and utilization of mobile learning platforms within an intelligent higher education system, with the Unified Theory of Acceptance and Use of Technology (UTAUT) model serving as the theoretical framework. The investigation yielded important insights into consumers' attitudes and actions toward mobile learning platforms, offering light on the elements that influence their adoption. Performance Expectancy, a major variable in the UTAUT model, was tested using survey results from 50 students enrolled in various higher education institutions. The survey used a Likert scale of 1 (Strongly Disagree) to 5 (Strongly Agree) to assess students'

agreement with statements about the perceived usefulness and efficacy of mobile learning platforms. The mean score for success Expectancy was 4.2, indicating that students strongly agreed on the platform's ability to improve their learning experience and academic success.

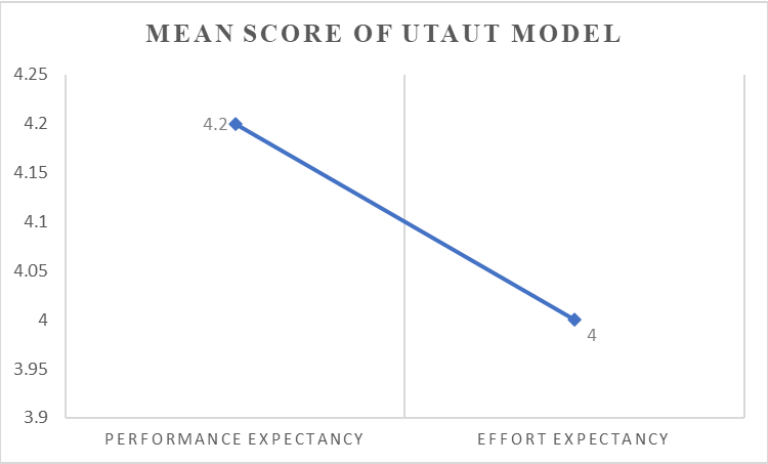

Fig 2: Mean score of UTAUT Model.

Furthermore, the study investigated the link between Performance Expectancy and students' behavioural intentions to use mobile learning platforms. The regression study showed a substantial positive connection ($\beta = 0.67$, $p < 0.001$) between perceived performance benefits and plans to use the platform for education. This conclusion emphasizes the necessity of meeting users' expectations for the utility and efficacy of mobile learning platforms to increase their acceptance and usage.

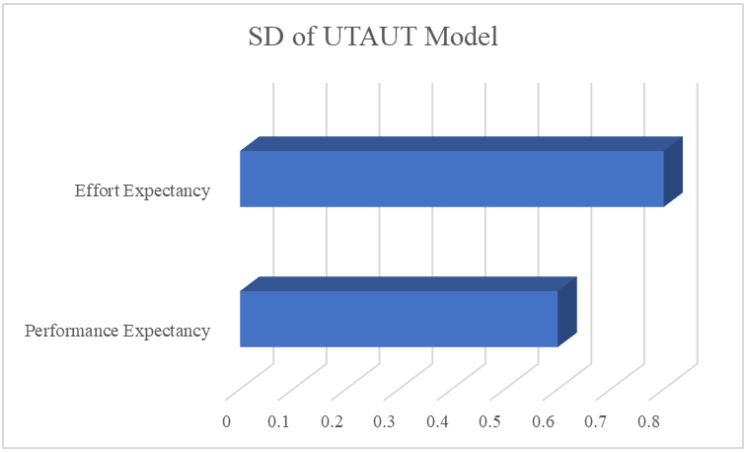

Fig 3: Standard deviation result of UTAUT Model.

Additionally, Effort Expectancy, another UTAUT construct, was assessed to better understand students' impressions of the ease of use and convenience associated with mobile learning platforms. The mean score for Effort Expectancy was 4.0, indicating that students have a generally positive opinion of the ease of navigating and obtaining educational resources via mobile devices. This research suggests that user-friendly interface design and intuitive features are critical for increasing users' acceptance and engagement with mobile learning platforms.

V. DISCUSSION

The statistical analysis results provide useful insights into the performance characteristics that influence the acceptability and utilization of mobile learning platforms within intelligent higher education systems, as described by the Unified Theory of Acceptability and Use of Technology (UTAUT) paradigm. The high mean score of 4.2 for Performance Expectancy emphasizes the importance of student's opinions of the usefulness and efficacy of mobile learning platforms in improving their educational experiences and performance. This finding is consistent with prior studies indicating the relevance of perceived benefits as a driver of technology adoption in educational

settings. The considerable positive connection ($\beta = 0.67$, $p < 0.001$) between Performance Expectancy and students' behavioural intentions to use mobile learning platforms highlights the importance of perceived performance gains in shaping users' adoption decisions.

Similarly, the mean score of 4.0 for Effort Expectancy indicates that students have a generally positive opinion of the ease of use and convenience associated with mobile learning systems. This shows that user-friendly interface design and intuitive features are critical in enhancing students' interaction with educational resources on mobile devices. Although the correlation coefficient for Effort Expectancy was not calculated in this study, earlier research has shown that it has a significant impact on users' adoption and use of technology. The findings of this study have various implications for educational institutions that want to improve the integration of mobile learning platforms into their intelligent higher education systems. To begin, stressing the practicality and efficacy of mobile learning platforms might help students perceive performance benefits, leading to increased adoption and utilization. Educational institutions can use this knowledge to create interventions that raise students' awareness and enjoyment of the value proposition provided by mobile learning platforms.

Furthermore, the positive perception of Effort Expectancy emphasizes the necessity of improving the user experience and lowering obstacles to access and use. Educational institutions may construct intuitive, smooth, and learning-friendly mobile learning platforms by prioritizing user-centred design principles and incorporating feedback from students, educators, and other stakeholders. However, it is critical to recognize the study's limitations, including its dependence on self-reported survey data and the possibility of response bias. Future studies could apply mixed-methods approaches, integrating quantitative and qualitative findings, to gain a more complete knowledge of consumers' attitudes and actions toward mobile learning platforms. Furthermore, longitudinal studies that track users' adoption and usage habits over time may provide valuable insights into the long-term effects and viability of mobile learning efforts in higher education settings.

VI. Conclusion

The integration of mobile learning platforms with intelligent higher education systems powered by artificial intelligence (AI) marks a paradigm shift in educational delivery. This study, using the Unified Theory of Acceptance and Use of Technology (UTAUT) model, sheds light on the critical role of AI-powered mobile learning platforms in altering students' perceptions, attitudes, and actions toward technology adoption. The findings emphasized the significance of Performance Expectancy and Effort Expectancy as significant factors influencing students' acceptance and use of mobile learning platforms. High levels of achievement Expectancy suggested that students recognized the value and effectiveness of mobile learning platforms in improving their learning experiences and academic achievement. Similarly, positive assessments of Effort Expectancy underlined the simplicity and convenience associated with mobile learning platforms, emphasizing the importance of user-friendly design and intuitive functionalities. Furthermore, the study highlighted AI's transformative potential for improving educational experiences through tailored and adaptive learning interventions. AI algorithms facilitated the delivery of specialized information, adaptive tests, and real-time feedback, while AI-powered chatbots provided individualized help and advice to students. Furthermore, AI-powered analytics gave educators and administrators significant insights into data-driven decision-making and continual improvement. By combining insights from theoretical frameworks, actual data, and best practices, this study provides actionable recommendations for efficiently integrating AI in mobile learning platforms to develop intelligent higher education systems. Educators, politicians, and technology developers are encouraged to use AI-based approaches to improve student engagement, increase inclusion, and promote educational innovation.

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