Student Acceptance and Attitudes Towards Augmented Reality and Virtual Reality Technologies in Education: A Framework for Enhancing the Learning Experience

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Abstract:- Augmented Reality (AR) and Virtual Reality (VR) technologies have rapidly revolutionized learning processes by providing immersive digital experiences, interactive environments, simulations, and interactive opportunities These technologies has gained traction in education, and offers learning opportunities enhanced by technology. They offer a wide range of benefits for students and teachers, making learning fun and engaging. The purpose of this study was to investigate the acceptance and perception of AR and VR technologies among students in education and their potential to enhance their learning experiences. Various theoretical frameworks such as the Unified Theory of Acceptance and Use of Technology (UTAUT) and the Technology Acceptance Model (TAM) are considered to understand the adoption of AR and VR technologies in education. There are quality systems and user input The study aims to address gaps in existing research through an enhanced model that includes user experience variables, specific AR and VR variables, and specific usability factors for university students, especially in business. However, the limitations of the study are acknowledged, as the proposed framework is based solely on a literature review. Further research efforts will focus on establishing the validity and reliability of this theoretical framework through primary data collection and quantitative analysis.

I. INTRODUCTION

Through immersive digital experiences, interactive environments, simulation, and engagement, augmented reality (AR) and virtual reality (VR) technologies have changed learning methodologies, The usage of (AR) and (VR) in education has grown in the last couple of years, enabling a wide range of opportunities to benefit from technology-enhanced learning(Sagnier et al., 2020). These technologies have brought about a whole new universe of opportunities and potential for both students and teachers, making learning more interesting and participatory. This study will look at the adoption and perception of augmented reality and virtual reality by students in education and how they can be utilized to improve learning. The successful use of e-learning in higher education is dependent on students' acceptance of this technology(Chahal & Rani, 2022a). AR and VR have the potential to transform the way we teach and learn by integrating students in augmented and virtual reality or layering content over the real world. Technology like AR and VR can be utilized to make the subject being taught more relevant. These technologies can provide a deeper grasp of the topic being taught by allowing students to explore diverse environments and engage with content in a manner that is more real-world-like. Furthermore, these kinds of technologies can be used to introduce cutting-edge ideas and concepts in a more appealing manner, hence boosting student participation and motivation(Al-Ansi et al., 2023)   Information system research has discovered a number of elements that influence its reception across a variety of adoption model(Divatia. A. et al.,2021).

II. LITERATURE REVIEW

➤ *What are Realities:*

The notion of reality and perceptual significance suggests that for something to emerge from an indeterminate contextual situation of 'nothing', this 'nothing' must contain the essence of 'something' if it is emerging so that if we consider that knowing is the basis for any development Being a medium If we consider reality as occupying space, time, matter, energy, information, intelligence, mind, it is 'nothingness' which must inherently in getting these things Logically it follows that 'passivity' is a mixture of microelements in an unknown contextual environment Different groups are likely to emerge In this system of thought, there is no background from which reality and life emerge(Arendse,2013). Consequently, if nothing is the background for all appearances, its counterpart must be the universe or space, and thus space becomes the visible manifestation of the abstract concept of 'passivity'. This raises the question of how these two areas are related and invites further research. Reality is constructed by current facts, and our understanding of reality is defined by us (Dummett,2007)

➤ *AR and VR Learnings:*

In a few studies, augmented reality (AR) and virtual reality (VR) videos were used to enhance language learning. Use of AR videos to supplement students' English. Students express greater satisfaction with learning English as a Foreign

Language (EFL) compared to the video-based learning method(Chen,2020). This provided a detailed and clear understanding of the learning materials facilitated, resulting in significant results in the student's academic achievement there has been an improvement. Samsung VR glasses were used to deliver VR videos aimed at improving students' writing skills. Subsequent studies have shown that students who watched VR videos improved their writing skills. The VR videos allowed students to explore the environment and observe small details, helping to retain them over time and ultimately enhance their writing abilities(Huang et al.2021).The augmented reality (AR) technology captured the interest of the students and encouraged them to actively participate in the learning process.

Modifications of VR/AR/MR sessions and environments may be based on student observations or feedback, including their learning styles, smart technologies, and interpretive web applications. The learning programs or materials in the environment may reflect individual abilities, such as changes in related student needs. A flexible curriculum should meet standards of flexibility, including flexibility, individual components, expansion, and modification (Kurilovas,2016).

➢ *Theoretical Framework:*
The Unified Theory of Acceptance and Use of Technology (UTAUT) The unified theory of acceptance and use of technology (UTAUT), a framework that incorporates determinants from various factors (Khechine et al., 2016), With influencing and behavioral intention to use or adopt AI and VR learning., a framework that incorporates determinants from various factors (Khechine et al., 2016), With influencing and behavioral intention to use or adopt AI and VR learning.

The Technology Acceptance Model (TAM) is a conceptual framework developed by Fred D. Davis in 1986. Derived from the process of rational reasoning, the Davis model posits that technology adoption is influenced primarily by psychological processes and preferences whether they

meet the needs of users or for greater technical advantage. TAM is used to examine and evaluate the factors affecting individuals' decisions to adopt or reject information technology. Users will regard a technology to be simple to use if they have a favorable assessment of its attributes when they utilize it. They must, on the other hand, determine a technology to be difficult before they will perceive it to be valuable. The impact of stimulation on perceived usefulness can vary depending on the application that is being used (Sagnier et al., 2020b).

It should be noted that the optimal amount of stimulation can also be determined by depending on the user's choices and requirements. There are a number of factors that influence the acceptability of e-learning programs by college students. Behavioral intention is critical in understanding and forecasting human behavior, particularly in the realm of modern technology and digital platforms. It is influenced by elements such as performance expectation, effort expectation, and social influence, and it is critical in the acceptance and utilization of cutting-edge technologies. Behavioral intention is an underlying concept that serves as a moderator since it forecasts usage while being impacted by performance expectancy, effort expectancy, and social influence(Khechine et al., 2016)

These include Social Presence (SE), Perceived Usefulness (PU), Perceived Enjoyment (PEOU), user attitude, Intelligence Quotient (IQ), System Quality (SYSQ), and user objectives. All of these factors have a direct impact on the user's overall experience while using the e-learning program, The acceptability of e-learning programs by college students is influenced by SE, PU, PEOU, user attitude, IQ, SYSQ, and user objectives(Huang, 2023).

In order to fill the various gaps in the research on user acceptability of AR and VR, we proposed an enhanced model that combines user experience variables, AR and VR-specific variables, and user-specific factors for higher education students(management).
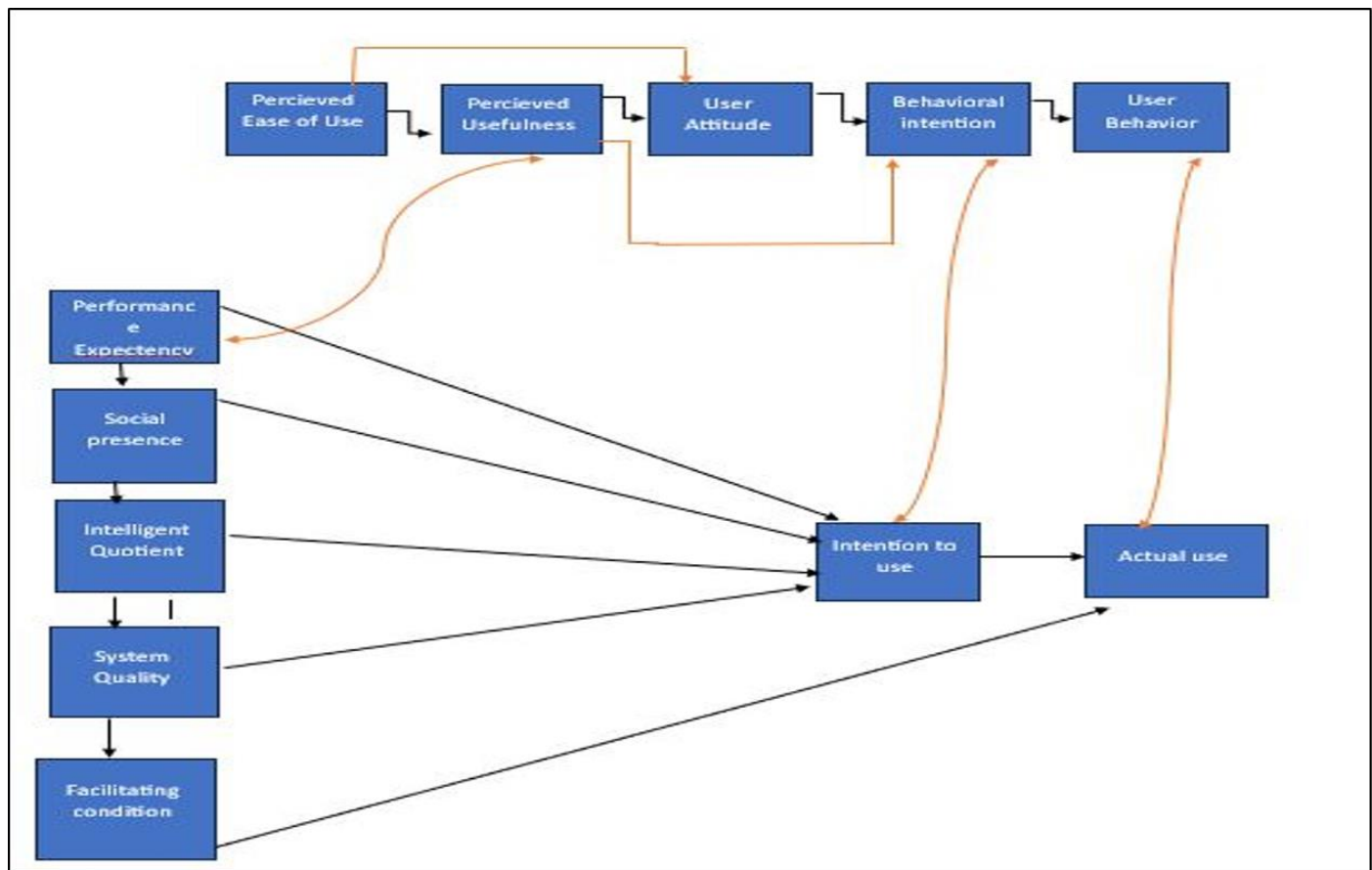
Fig 1 A (Extended Model TAM and UTAUT)

This is a conceptual model Extended technology acceptance (TAM) applied to social networking media acceptance uses information systems theory to explain how users perceive and use technology TAM includes variables such as perceived usefulness, perceived ease of use, and attitudes toward individual intentions to use a technological tool while UTAUT seeks to elucidate users' intention to use information systems (IS) and their subsequent usage behavior. These theories suggest that four key factors (performance expectancy, effort expectancy, social influence, and facilitating environment) directly influence intention to use and behavior (Venkatesh et al., 2003). With this social presence, intelligent quotient, system quality have been added with respect to AR and VR learning.

III. FACTORS USED TO MODIFY UTAUT MODEL

➢ *Social Presence:*

Adding social presence to AR-based learning platforms enables students to communicate with each other orally and in writing, and facilitates discussion of problem-solving strategies in online learning Research has been carried out in this space this using AR tools (Shrestha et al.2022). The aim of the study is to provide researchers and practitioners with new evidence and theoretical foundations for developing enhanced AR platforms that meet the needs of online management students.

➢ *Intelligent Quotient:*

The effectiveness and efficiency of AR in education and training has been demonstrated in K-12 and high school subjects, including mathematics, geometry, physics, biology, chemistry, astronomy, including history, geography, engineering (robotic and non-robotic) and other academic disciplines (Papanastasiou et al.2018). AR provides students with an engaging, stimulating and interesting learning experience (Furió et al., 2013; Muschio et al., 2015).

➢ *System Quality:*

The use of AR and VR technologies in education is becoming increasingly common. These technologies enable students to interact with their surroundings in more immersive ways, leading to greater engagement and understanding of concepts (Zhang et al., 2022). As the cost of AR and VR hardware decreases, these technologies are expected to become even more accessible in the future. Augmented reality (AR) and virtual reality (VR) technologies are transforming the educational landscape, providing students with new ways to interact with three-dimensional objects, explore their environments, and enhance their understanding of concepts further (Du et al., 2020). Additionally, AR and VR can facilitate the creation of interactive simulations, allowing students to explore complex concepts in a safe and fun environment (Al-Ansi et al.2023).

IV. CONCLUSION

The research presented has limitations, mainly because the proposed framework is based solely on a literature review. The paper introduces a conceptual framework aimed at examining user acceptance of AR and VR learning in the education of management students. Consequently, future research efforts will need to focus on establishing the validity and reliability of this theoretical framework, with primary data and quantitative study.

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