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Article

Examining the factors fostering metaverse experience browser acceptance under unified theory of acceptance and use of technology (UTAUT)

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Abstract: Metaverse technology has various uses in communication, education, entertainment, and other aspects of life. Consequently, it necessitates using some interactive mobile applications to enter the virtual world and gain real-time, face-to-face experiences, particularly among students. This research focused on the factors accelerating metaverse technology acceptance particularly, Metaverse Experience Browser application acceptance among the students under the factors proposed by the unified theory of acceptance and use of technology (UTAUT) model. Notably, lack of studies in metaverse browsers and their prevalence during the post pandemic era, indicates a strong literature gap. The researchers gathered data from n = 384 higher education students from the two cities in the United Arab Emirates and applied Structural Equation modelling (SEM) for data analysis. Results revealed that Performance Expectancy (p < 0.003) and Social Influence (p = 0.000) were significant factors affecting the Behavioral Intention of the students to consider Metaverse Experience Browser as an interactive mobile application. On the other hand, behavioural Intention significantly affects (p = 0.000) Effort Expectancy, which shows how fewer efforts and greater accessibility are associated with one's behavioural Intention. Besides, the effect of Behavioral Intention (p = 0.000) on Metaverse Experience Browser acceptance also remained validated. Finally, Effort Expectancy (p = 0.000) also indicated its significant effect on the Metaverse Experience Browser. These results indicated that the factors proposed by UTAUT have greater applicability on the Metaverse Experience Browser as they showed their relevance to its acceptance. The present study concludes that the acceptance of Metaverse Experience Browser as an interactive mobile application is a level ahead in improving students' experiences. Thus, the Metaverse Experience Browser is considered a modified way of creating, sharing, participating, and enjoying the virtual world, indicating its greater usage among students for different purposes, including education and learning.

Keywords: metaverse technology; metaverse experience browser; higher education; UTAUT; interactive mobile application

1. Introduction

The concept of metaverse devices from two terms, "meta" and "universe," appeared first time during the early 1990s in a novel entitled "Snow Crash" in 1992 (Amirulloh & Mulqi, 2022). However, the relevant concept further accelerated and made a prominent place in technology after 2018 when Cline's book "The Ready Player One" was converted into a movie in 2018 and became a center of attention for the public (Cheng et al., 2022). Today, the metaverse has become a part of different aspects of life, including healthcare, business, education, organization proceedings, and others. According to Dwivedi et al. (2022), metaverse technology facilitates the users as it is based on the interactions in the virtual environment that are represented by the image, also known as "avatars," helping to communicate with the virtual

world and real world simultaneously (Suhaizal et al., 2023). The virtual presence, usage, and further advantages need equipment that enables the users to access and use the metaverse technology. For instance, adopting avatars and using them requires equipment such as Virtual Reality (VR), Augmented (AR), and Mixed Reality (MR). This equipment enables the users to enter the metaverse-enabled virtual world, gain 3D watching exposures, and provide sensory experiences such as physical touch (Contreras et al., 2022). According to Aburbeian et al. (2022), this equipment makes the metaverse realms more prominent today as they provide by offering real-world, face-to-face interactions just like the physical world. Bibri and Allam (2022) consider the metaverse technology on the axis of "Simulation vs. Simulation" even available on small remote devices, including mobile phones and tablets. These axes further provide four dimensions: "lifelogging, Mirror Worlds, Augmented Reality, and Virtual Worlds."

Lee et al. (2022) argued that this four-dimensional axis is also used by mobile phone users, particularly for educational purposes. The relevant axis provides the students with learning experiences accompanied by practical working opportunities. Besides, it also creates a unique experience, sense of presence, constructivism, and accessibility among the students. However, to avail these enhanced experiences and improve the learning opportunities through metaverse technology (Samala and Amanda, 2023), students in the United Arab Emirates resort to smart devices mainly accompanied by software and technology to use metaverse technology in the best possible manner (Alawadhi et al., 2022; Ahmed Laghouag et al., 2021; F. Farhi & Mohamed, 2020). Here Alfaisal et al. 2022) cited an example of metaverse mobile applications adoption during the Covid-19 pandemic. As noted, using metaverse technology widely helped bridging the gap between students and teachers in the UAE. With the previous COVID-19 pandemic the situation (Farhi et al., 2021; Farhi et al., 2023), students had to rely heavily on online learning. However, traditional online learning needs more personal interaction than students and teachers have in the classroom. With metaverse technology, Emirati students interacted in virtual classrooms with each other and the teacher, making online learning more interactive and engaging. As a result, today in the post pandemic era, even more applications are introduced to provide better metaverse technology experience to their young users. These applications may involve Metaverse Experience Browser, Roblox, IMVU, Horizon, and others necessary to approach the metaverse and modify the virtual world experiences (Aburbeian et al., 2022). Students who prefer to metaverse technology for learning purposes adopt these applications to continue their academic journey. However, every application has its specification and purpose of use ranging from education, gaming, shopping, entertainment, and others (Aburbeian et al., 2022; Saboune, 2022).

The current research specifically focused on the Metaverse Experience Browser among higher education level students in the United Arab Emirates (UAE) (Almarzouqi et al., 2022). Several studies have examined the metaverse for educational purposes in the UAE (Farhi et al., 2021; F. Farhi & Chettah, 2020), however yet no study has focused on any specific application that may facilitate its acceptance among the users. Additionally, during the Covid-19 an increased number of students switched to metaverse technology in the UAE, while this increased usage

is continued and there is a need to examine the motivating factors behind its constant usage. Generally speaking, Covid-19 resulted into closure of educational institutions and difficulties for the students to resume their educational journey, leading to technology adoption for the learning purposes (Papadakis, 2022). Thus, based on these two gaps, this research is focused on examining the role of theoretical factors that are proposed as affecting metaverse experience browser acceptance among the Emirati students. Notably, metaverse is widely adopted in different fields of life (Farhi et al., 2023; Jeljeli et al., 2022), however, its adoption among the students are assumed to highlight its importance among the young generation as their technology acceptance is relatively fast than other age groups. Thus, the objectives of the relevant study are (i) to examine the factors that may contribute to metaverse technology acceptance among Emirati students and, (ii) The metaverse-based application that is accelerating its acceptance among the students on the young students having Metaverse Experience Browser on mobile phones. These objectives will indicate its wider usage and the responsible factors that accelerate its adoption among them. The current paper is divided into five sections, including an introduction, literature review, methods, statistical analysis, and results. Finally, the discussion of results accompanied by conclusions and highlighting the limitations accordingly.

Defining metaverse technology and metaverse experience browser

Metaverse technology refers to a virtual, immersive, and interconnected digital universe where users can interact with a computer-generated environment and other users in real time (Pasha et al., 2021, 2022). It goes beyond classic 2D interfaces and enables individuals to engage with a 3D spatial environment using avatars or digital representations of themselves. The metaverse is characterized by its extensive scope, enabling seamless experiences across different platforms and devices. It encompasses various digital spaces, from virtual worlds and social media to augmented and virtual reality environments. This technology can revolutionize how people interact, communicate, and collaborate digitally. In educational realms, metaverse technology offers a transformative approach to teaching and learning. It provides a dynamic and immersive environment for educational activities, allowing students and educators to engage with content more interactively and experientially (Jeljeli et al., 2022). For instance, in a metaverse-based classroom, students can examine virtual environments that replicate historical settings, conduct virtual experiments in science labs, or engage in collaborative problem-solving activities. This hands-on approach can improve understanding and retention of complex concepts, making learning more engaging and effective. The Metaverse Experience Browser is a critical component of this technology. It serves as the gateway for users to access and navigate the metaverse. Similar to web browsers for the internet, the Metaverse Experience Browser is a software application that allows users to explore and interact with the virtual world. It provides a user-friendly interface for accessing various metaverse environments, connecting with other users, and engaging with digital content. Additionally, it may offer features like search functionalities, customization options, and social networking capabilities within the metaverse. This

browser is pivotal in democratizing access to the metaverse, making it more accessible to a wider audience, including students in educational settings (Farhi, et al., 2022; Farhi et al., 2023).

Furthermore, the Metaverse Experience Browser facilitates the integration of educational content and resources within the metaverse. Educators can create and curate virtual learning environments, incorporate multimedia materials, and design interactive activities. Students can then access these resources through the browser, allowing them to participate in collaborative projects, simulations, and virtual field trips. This immersive learning experience can foster critical thinking, problem-solving skills, and creativity among students. All around, the Metaverse Experience Browser empowers educators and learners to harness the full potential of metaverse technology for innovative and fascinating educational experiences.

2. Review of literature

2.1. Metaverse technology in the United Arab Emirates

Technology adoption in the United Arab Emirates is not a new phenomenon. The country has adopted technology as an integral part of strategic planning and development of the Emirati region. However, technology officially became a part of UAE's strategic plan in 2018 as the government declared their stance of technological development consistent with the sustainable development program (The Government of UAE, 2023). According to Alfaisal et al. (2022), the country has invested heavily in technology and innovation to diversify its economy and reduce its dependence on any single exports. The UAE has also established itself as a hub for technology start-ups and innovation, with initiatives, i.e., Dubai Future Accelerators and Abu Dhabi Global Market Innovation Challenge supporting and funding entrepreneurs and innovators. In this regard, Teng (2022) stated that the United Arab Emirates (UAE) is rapidly emerging as a leading player in the development of Metaverse technology. As Metaverse is a virtual world designed to offer users a fully immersive experience, it has transformed various industries, including gaming, education, healthcare, and entertainment in the UAE (Almarzouqi et al., 2022). One of the leading players in developing the Metaverse in the UAE is the Dubai Future Foundation (DFF), a government entity responsible for driving innovation and technology development in Dubai. The organization has established a dedicated Metaverse team that is focused on developing a virtual world that is both immersive and interactive. The team is working on various projects, including a virtual marketplace that enables users to buy and sell goods and services using digital currencies (The Government of UAE, 2023). Several companies and government entities in the UAE are investing in developing Metaverse technology. Talking specifically about the metaverse technology in the Emirati education, Akour et al. (2022) stated that Metaverse technology has revolutionized the education sector in the United Arab Emirates. With the emergence of virtual, augmented, and mixed reality, students can now be transported to different worlds and scenarios without leaving the classroom. According to Salloum et al. (2023), metaverse technology in education has made learning more engaging and immersive, allowing students to interact with digital objects and environments in a previously impossible way.

As noted by Karekose et al. (2022), learning through online platforms is the need of the day. Covering different aspects theoretically can help to find further insights to provide better learning opportunities to the young students.

2.2. Performance expectancy and social influence

A person's performance expectation is their level of assurance that the system they are utilizing will be advantageous to them. In other words, it refers to the extent to which individuals can complete activities with the aid of technology. It reflects the effectiveness of mobile learning services in students' performance expectations (Zhang et al., 2022). Students' belief that mobile learning would improve their grades is quantified by performance expectancy. Making the use of mobile learning more appealing by raising customers' expectations for its performance (Xu et al., 2022). Wu and Gao (2022) consider "social influence" as how much an individual's peers affect their behavior inside the system. As it pertains to mobile learning, social influence is defined as the amount to which students feel they should use relevant mobile learning services (those provided by teachers, family, friends, etc.). As mentioned above, the previous study demonstrates that social influence significantly affects participants' behavioral intentions (Alawadhi et al., 2022). Research has shown that social influence facilitated the initial stage of mobile app adoption for educational and other different purposes. Those around them can have an impact on how eager a participant is willing to try out new apps on their mobile device. Therefore, it is clear that social influence plays a significant role in determining participants' subsequent behavioral intentions (Hutson, 2022).

Effort expectations refer to how straightforward the new system will be for the user to operate. The ease with which a student interacts with technology is reflected in their "effort expectations," and their inclination to utilize mobile learning services is the effort expectancy (Hennig-Thurau & Ognibeni, 2022). According to Lee et al. (2022), expectation is crucial in the learner's intention to adopt mobile learning technology due to the specialized knowledge and abilities required to operate the technology. A student's social requirements positively affect their expected level of effort, as revealed by the survey of learners' willingness to use mobile learning.

In the context of mobile learning services, "efforts expectancy" describes students' perspectives on the benefits they will reap from implementing these tools (Mistretta, 2022). The phrase "effort expectancy" describes the degree to which citizens believe technology will be simple to learn and implement. Researchers Venkatesh et al. found that the belief in one's ability to succeed correlated positively with the desire to utilize a behavior and the belief in one's ability to succeed. Students are more likely to use user-friendly mobile learning applications, as their perceived utility influences the likelihood of using the system (Ge, 2022).

2.3. Behavioral intention to adopt mobile applications

Some technologies and applications, whether used voluntarily or involuntarily, need users to have a specific behavioral goal (Almarzouqi et al., 2022). Jeon (2021) cited an example of mobile learning, as it indicates how confident students are that this approach will lead to improved academic outcomes. To improve students'

behavioral intentions to accept and use mobile learning, it is necessary first to strengthen their view that it is beneficial. The theory of reasoned action and the Technology Acceptance Model have both been influential in developing this concept. Similar research in Ghana utilizing the Technology Acceptance Model indicated that performance expectation was a substantial predictor of people's willingness to use mobile phones to provide tutorials (Sun et al., 2022).

Particularly, the unified theory of acceptance and use of technology (UTAUT) postulated a causative link between behavioral intentions and actual behavior (Rahmah et al., 2022). As proven by recent studies, the intention to utilize mobile learning services is positively correlated with the intent to promote mobile technology, in particular applications, for a variety of reasons (Cheng et al., 2022).

2.4. Metaverse applications in education and learning

Today, significant people in the field of cutting-edge technology are paying attention to the concept of the Metaverse and its potential implications for the academic world (Dewi et al., 2022). Metaverse technology is increasingly used in various virtual contexts, including games, education, and community initiatives (Mistretta, 2022). The educational sector benefits greatly from the use of Metaverse. In 2020, the pandemic prevented international students from enrolling in schools anywhere. However, students miss important details in 2D learning platforms (Akour et al., 2022). The Metaverse is a virtual educational space in which students can explore complex topics with the aid of high-resolution pictures. The Metaverse has the potential to revolutionize education and foster the growth of educational communities. Envision learning about the cosmos on a spaceship instead of in a classroom (Chen, 2022).

Due to the pandemic and its limits on in-person gatherings, schools were compelled to use e-learning platforms and other digital means of communication. It is possible to speculate about how the future. With its anticipated capacity to broadcast data in real-time and facilitate real-time interactions in the virtual world, Metaverse might alter and enhance how lectures are presented (Mistretta, 2022).

3. The Unified theory of acceptance and use of technology (UTAUT)

The unified theory of acceptance and use of technology (UTAUT) proven reliability and validity in various settings allowed us to use it for this study (Ng et al., 2021). The relevant theoretical background provides support to the overall concept and model proposed in this research. The UTAUT is an outcome of a consolidation of previous models of tech adoption (Franco et al., 2022). The UTAUT is a synthesis of several theories and models, including the Technology Acceptance Model (TAM), the Theory of Reason Action (TRA), the Motivational Model, the Theory of Planned Behavior (TPB), the merged TPB and Technology Acceptance Model, personal computer (PC) utilization, innovation diffusion theory (IDT), and social cognitive theory (SCT) (Almarzouqi et al., 2022). To better explain user behavior adoption of new technologies, researchers have attempted to integrate these concepts into a more detailed model called the UTAUT (Lee & Kim, 2022). The UTAUT proposed four primary constructs that are thought to directly influence both the behavioral intention

to use and the actual behavior: performance expectancy, effort expectancy, social influence, and facilitating variables. Various demographic and contextual variables affected these four concepts, including gender, age, experience, and the degree to which their utilization is voluntary (ÖzdemiR et al., 2022). Researchers have used the UTAUT model in many domains to learn more about the factors influencing the adoption of new technologies and ideas (López-Belmonte et al., 2022). These studies have mainly described and witnessed online technology as facilitating the students at maximum (Karekose et al., 2023; Levidas et al., 2023).

The unified theory of acceptance and use of technology (UTAUT) is used and verified in the fields of education, learning, e-commerce, e-government, electronic health/mobile health, mobile banking, mobile payment/e-payment, and tourism (Almarzouqi et al., 2022). Thus, based on the cited literature and UTAUT this study proposed four primary hypotheses that are also graphically illustrated in the **Figure 1** below:

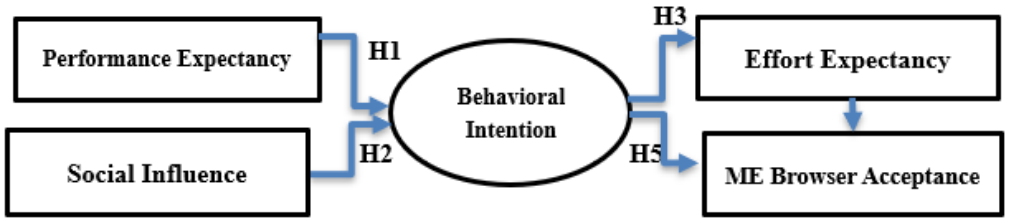

Figure 1. Conceptual model of current research.

H1: Performance expectancy has a significantly effect on behavioral intention among the Emirati students.

H2: Social Influence has a significantly effect on behavioral intention among the Emirati students.

H3: Behavioral intention has a significantly effect on effort expectancy among the Emirati students.

H4: Behavioral intention has a significantly effect on ME browser acceptance among the Emirati students.

H5: Effort expectancy significantly affects the ME browser acceptance among the Emirati students.

4. Methods

4.1. Study design and data gathering

This research comprises the case study design as the main emphasis is on the directional research hypotheses proposed under the empirical literature and tested in a physical setting (Hays, 2003). The survey method was applied, and the researchers used closed-ended questionnaires for data quantification purposes. The respondents were the students having direct experience with the phenomenon under study (Jeljali et al., 2018). Notably, the respondents provided with informed consent. The researchers also ensure data confidentiality and inform them that they can withdraw from survey filling process anytime they want without any further obligations as the

basic research ethics (Petousi & Sifaki, 2020). The survey questionnaire was designed on a five-point Likert scale and based on some previous studies examining the technology adoption in different contexts. **Table 1** summarizes the sources of the survey questionnaires. Furthermore, the data-gathering period was from September 2022 to November 2022. The researchers resorted to physical visits to the selected institutions and online methods, specifically the Google forms sent through emails and personal messaging applications. During the physical visit, the researcher first took formal permission from the institutional head and further approached the students. For the online survey filling purposes, the researcher first sent emails and text messages to the prospective respondents. Once they approved their participation, the survey was shared with them.

Table 1. Sources of survey questionnaire items and scales.

S/R.	Constructs	Source
1.	Performance Expectancy	(Salloum and Aburayya, 2023)
2.	Social Influence	(Lee et al., 2022)
3.	Behavioral Intention	(Almarzouqi et al., 2022).
4.	Effort Expectancy	(Sun et al., 2022)
5.	ME Browser Acceptance	(Al Arabiya, 2022)

4.2. Sampling technique and response rate

As the study was focused on higher education students, the researchers selected the four public sector universities from two cities in the United Ab Emirates, including Al-Ain and Sharjah. The total population of current study was based on 295,000 individuals currently enrolled in different public sector universities (WAM, 2023). However, as per the study requirements, a particular sample size was selected based on two criteria. First, the Krejci and Morgan's formula of sample selection was applied (Etikan, 2017). Under the relevant criteria the researchers finalized a sample of n = 384 individuals. Besides, the convenience sampling approach was used for the data gathering as Metaverse Experience Browser was a critical selection criterion for this study. Respondents were selected based on their easy availability and accessibility to the researcher rather than using a random or systematic method. This could cause potential biases as the sample may not represent the larger population. The clear, concise criteria were considered to counteract this concern. There was no limitation regarding the criteria based on the respondents' gender, age, major, or other aspects. Further, clear reporting criteria were also employed as the researcher was transparent about their sampling method to inform the readers about the potential limitations of the current study. To further affirm the selected sample size, the research applied G* Power analysis technique to determine the ideal sample size for this research. The relevant analysis revealed the study with two predictors variables should be based on a minimum sample size of n = 74 respondents with the total effect size of f^2 = 0.015 and df = 13. Thus, it is concluded that the selected sample size was ideal. **Figure 2** indicates the sample size distribution through G*Power analysis. As the relevant figure indicates the higher statistical power (y axis), the sample size distribution indicates less probability of making sample size

distribution error (Pasha et al., 2021). After gathering the data, the researchers carefully evaluated the questionnaires, delisted n = 7 as incompletely filled by the respondents and finalized n = 377 for further consideration with a total response rate of 98.1%.

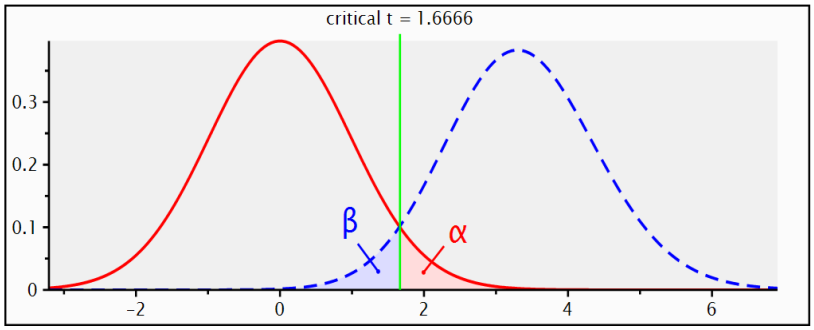

Figure 2. Central and non-central sample distributions.

4.3. Data analysis methods

After finalizing the questionnaires, the researchers coded and manipulated the collected data for statistical analysis (Jeljeli et al., 2022). The researchers used Statistical Package for Social Sciences and Amos 23 for the analysis. This study uses both descriptive and inferential statistics requiring both software tools as important in conducting the selected analysis (Ali et al., 2021).

4.4. Common method bias

The researchers examined the common method bias in this study to determine any potential inflated relationship between the study variables. As noted by Çizel et al. (2020), Common Method Bias (CMB) is important to scrutinize as it may produce a strong covariation above the actual relationships between the survey questionnaire items. The Common Method Bias (CMB) was examined by employing Herman's Single Factor Analysis. The results showed 17.5% of CMB that was lower than the maximum value of 50.0% (MacKenzie & Podsakoff, 2012). Thus, it is assumed that the Common Method Bias (CMB) is controlled in this study.

5. Results and discussion

5.1. Respondents' demographics

The researchers first analyzed the demographics of the study respondents. As summarized in **Table 2**, most respondents were males (91.8%), while 8.2% were females (M = 0.082, SD = 0.275). Regarding the age grounds, 77.1% of respondents were 31- to 40-year-olds. Followed by 13.7% of respondents ranging from 20 to 30 years, and 6.3% were 41 to 50 years old. Finally, 2.6% of respondents were 51 years old or above. The calculation of qualification level indicated that 53.0% of respondents were graduates. 26.5% of respondents were postgraduates, 24.9% were undergraduates, and 3.2% of respondents had diplomas or certifications. Finally, 67.3% of study respondents were from Al-Ain city, and 32.7% were from Sharjah.

Table 2. Demographics of study respondents.

Constructs	Variables	*N*	*%*
Gender	Male	346	91.8%
	Female	31	8.2%
Age	20-30 years old	52	13.7%
	31 to 40 years old	291	77.1%
	41 to 50 years old	24	6.36%
	51 years or above	10	2.6%
Education	Undergraduate	94	24.9%
	Graduate	200	53.0%
	Postgraduate	100	26.5%
	Diploma/ Certification	12	3.2%
City	Sharjah	123	32.7%
	Al-Ain	254	67.3%

5.2. Multicollinearity analysis

To examine the multicollinearity between the predictor variables, the researchers conducted the Variance Inflation Factor (VIF) analysis (See **Table 3**) (O'brien, 2007). The focus was examining any potential correlation (Jeljeli, Farhi, Setoutah, et al., 2022) between the two constructs (Basurco-Reyes et al., 2022), Performance Expectancy, and Social Influence. Findings revealed that the tolerance value is at 0.003 while the Variance inflation Factor (VIF) is at 3.286, under the cutoff value of 5.0. Thus, there is no multicollinearity between the relevant constructs.

Table 3. Variance Inflation Factor (VIF).

Model	Sign	VIF	Status
Performance Expectancy	0.003	3.286	Under the minimum cutoff value 5.0
Social Influence	0.003	3.286	Under the minimum cutoff value 5.0

5.3. Inner moder analysis

The researchers conducted the Structural Equation Modelling (SEM) based on two criterion approaches (Taha et al., 2022). First, the researchers examined the measurement model and then the structural model (Cheung and Wang, 2017). In this regard, Outer Loading values were calculated and found as most of them exceeding the cutoff value of 0.5, while the Average Variance Value (AVE) is also exceeding the cutoff value of 0.5 (range 0.908 to 0.976) (Anwar Pasha et al., 2023), indicating that the convergent validity/internal correlations between the constructs are affirmed (Jeljeli et al., 2022). Further, as the second step in measurement model analysis, the researchers examined the construct reliability by calculating two criteria, i.e., Cronbach alpha and composite reliability (Pasha et al., 2021). Results revealed that the values from both Cronbach Alpha and Composite Reliability exceed the cutoff value of 0.7 (0.813–0.917) (0.815–0.90) (Farhi & Chettah, 2020; Setoutah and Jeljeli,

2020), respectively. Thus, findings revealed that both convergent validity and constructed reliability are affirmed in the current research (See **Table 4**).

Table 4. Loadings (OL), Average Variance Extracted (AVE)m Cronbach Alpha (CA), Composite Reliability (CRR).

Constructs	Items	Loading OL	5	CA ≥ 0.70	CR ≥ 0.70
Performance Expectancy	PER1	0.529	0.962	0.826	0.920
	PER2	0.962			
	PER3	0.961			
	PER4	0.963			
Social Influence	INF1	0.963	0.960	0.917	0.915
	INF2	0.181			
	INF3	0.957			
Behavioral Intention	INT1	0.974	0.976	0.900	0.950
	INT2	0.978			
	INT3	0.976			
	INT4	0.026			
	INT5	0.977			
Effort Expectancy	EFT1	0.970	0.952	0.813	0.911
	EFT2	0.979			
	EFT3	0.163			
	EFT4	0.908			
ME Browser Acceptance	MEA1	0.909	0.908	0.896	0.815
	MEA2	0.906			
	MEA3	0.910			
	MEA4	0.282			

Concerning the divergent validity, the researchers used the Fornel-Larcker criterion and the Heterotrait-Monotrait Ratio. According to Jeljeli et al. (2022), divergent validity is an important criterion in Structural Equation Modelling (SEM) to check the difference regarding correlation among the study constructs. First, regarding the Fornel-Larcker criterion, the sum of AVE values ranges from 0.952 to 0.824, that are not only greater than the correlation values (**Table 4**) but also have no relationship with each other (Pasha et al., 2021). Besides, the second criterion, Hetreotrait-Monotrait ratio indicated an HTMT value of 0.035, that is lower than the alpha value of 0.85 as suggested by Voorhees (2016). Thus, results indicated that the discriminant validity is also affirmed (See **Table 5** for details).

Finally, the researchers conducted the goodness of fit analysis (F. Farhi et al., 2021) to examine whether and to what extent the observed data fit well with the expected data outcomes (Jeljeli et al., 2022). Thus, the researchers examined the goodness of fit and removed the items lower than 0.5 for the further analysis purposes (PER1, INF2, INT44, EFT3, and MEA4) (See **Figure 3**). Results revealed the chi-square value of $x^2 = 2231.7$ (df = 5) and probability value at 000. Besides, the Non-Fit Index value was at 0.568, Tucker-Lewis's index (TLI value at 0.898), and

the Index of Model Fit (FMIN) value remained at 0.593. Finally, the Standardized Root Mean Square Residual (SRMR) value remained at 0.739, which was lower than the cutoff value of 0.85 as Mérigot (Mérigot et al., 2010) suggested. Therefore, the results indicated the obtained values according to the expected data.

Table 5. Correlation analysis of the constructs (divergent validity).

	PER	INF	INT	EFT	MEA
PER	**0.925**				
INF	0.918	**0.921**			
INT	0.906	0.907	**0.952**		
EFT	0.917	0.915	0.935	**0.904**	
MEA	0.800	0.798	0.853	0.719	**0.824**

Note: PER is Performance Expectancy, INF is Social Influence, INT is Behavioral Intention, EFT is Effort Expectancy, MEA is Metaverse Experience Acceptance.

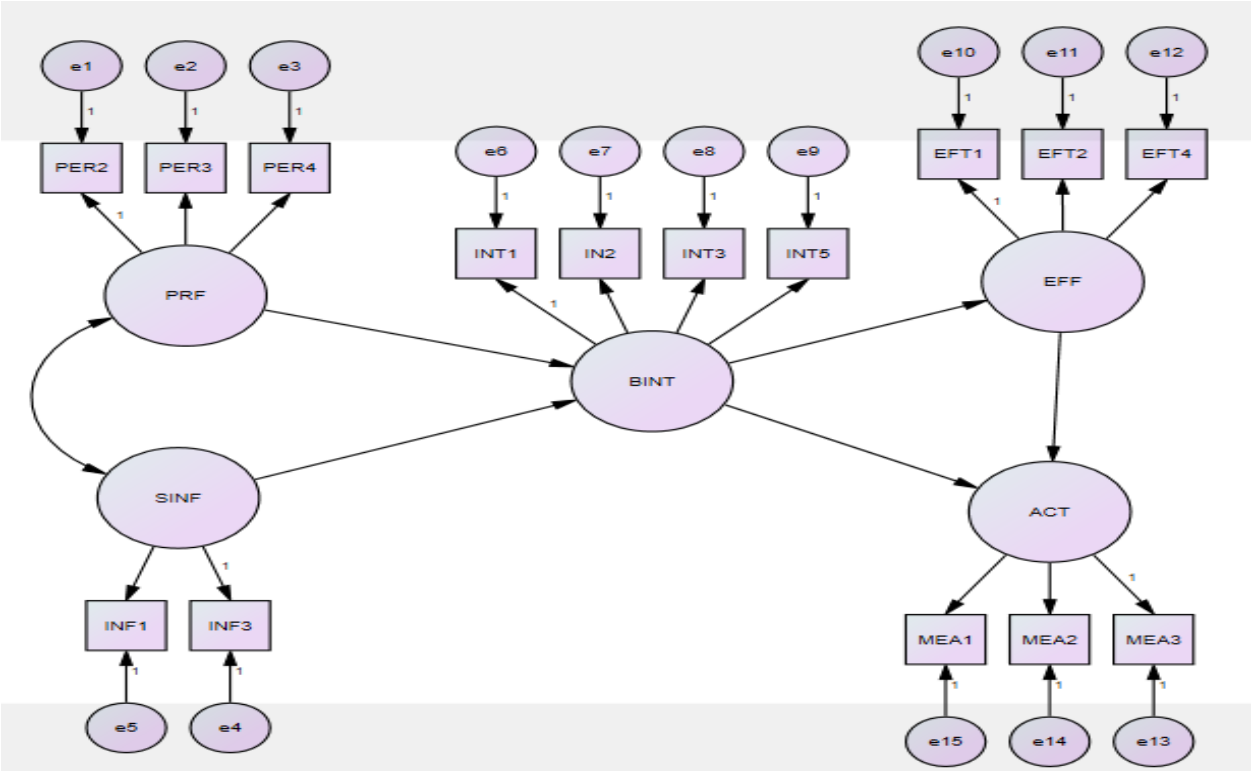

Figure 3. Goodness of fit/model fit.

5.4. Outer model analysis

The researchers examined the predictive value of the exogenous variables by conducting the Coefficients of Determination R^2 analysis (Nakagawa et al., 2018). The relevant analysis helps to examine the extent to which the exogenous variables affect the dependent variable (See **Table 6**) (Ariani et al., 2022). This revealed a 62.9% variance in the Metaverse Experience Browser Acceptance. 52.8% variance in Effort Expectancy and 50.9% in Behavioral Intention. Overall, the predictive power of the exogenous variables is strong in this research.

Table 6. R^2 variance of the latent variables.

Constructs	R^2 Value	Strength
Behavioral Intention	0.509	Strong
ME Browser Acceptance	0.629	Strong
Effort Expectancy	0.528	Strong

The researchers finally examined the relationships between study variables (Jeljeli et al., 2022) as indicated in the conceptual model and hypotheses (Mazouz et al., 2019). First, the effect of Performance Expectancy on Behavioral Intention was tested using path analysis. Results showed the relevant proposition was significant and accepted (t = 2.984, p < 0.0003). The effect of Social Influence on Behavioral Intention also indicated strong significance with a p-value of pM 0.000 (t = 40.071). Regarding the H2 of the study, the researchers tested the effect of Behavioral Intention on Effort Expectancy, which also remained significant and accepted (t = 80.972, p < 0.000). Additionally, the effect of Behavioral Intention on the Metaverse Experience Browser (ME) Acceptance also indicated stronger significance value p < 0.000 and t-value −18.747. Finally, the effect of Effort Expectancy on the Metaverse Experience Browser (ME) Acceptance remained significant (p < 0.000, t = 33.761). Overall, the path analysis indicates the affirmation of all the study hypotheses. The gathered data is also based on the broader acceptance of Metaverse Experience Browser (ME) as caused by performance expectancy, social influence leading to behavioral intention, and effort (See **Table 7** and **Figure 3**).

Table 7. Effect size (f^2).

Independent variable	Dependent variable	R^2 Included	R^2 Excluded	f^2	Effect size
Performance Expectancy	Behavioral Intention	0.543	0.428	1.363	Large
Social Influence	Behavioral Intention	0.588	0.492	6.362	Large
Behavioral Intention	Effort Expectancy	0.624	0.527	3.654	Large
Behavioral Intention	Effort Expectancy	0.691	0.573	1.026	Large

Further, the effect size of the predictor variables was examined to determine the strength of their effects on the dependent variables. The effect size of Performance Expectancy on Behavioral Intention was 1.363, and effect of Social Influence on Behavioral Intention is 6.362. Further, the effect size of Behavioral Intention on Effort Expectancy is 3.654, and effect size of Behavioral Intention on Effort Expectancy is 1.026. Overall, the effect size of all the pretors remained under the criteria given by Kraft (2020), indicating a large effect size in the current study.

Finally, the path analysis is conducted, as shown in **Table 8**. The relevant analysis is accompanied by path coefficients, t-values, and significance. Values. As shown, all the hypotheses are accepted and the proposed effects of independent variables on the endogenous variables are supported.

Table 8. Results of hypotheses testing.

Hypotheses	***β***	***t***	***P***	**Decision**
Performance Expectancy → Behavioral Intention	0.052	2.984	0.003	Accepted
Social Influence → Behavioral Intention	0.857	49.071	0.000	Accepted
Behavioral Intention → Effort Expectancy	0.940	80.972	0.000	Accepted
Behavioral Intention → ME Browser Acceptance	−1.134	−18.747	0.000	Accepted
Effort Expectancy → ME Browser Acceptance	2.113	33.761	0.000	Accepted

This research examined the factors affecting Metaverse Experience Browser Acceptance among higher education students (Aksar et al., 2022) in the United Arab Emirates. The primary constructs are adopted from different studies conducted in different settings and scenarios. However, these studies mutually focused on the adoption of metaverse technology for educational purposes, particularly in medical education (Almarzouqi et al., 2022), convergence (Jeon, 2021), professional training éducation (López-Belmonte et al., 2022), and other. The current research also focused on the metaverse in education. However, there was no restriction regarding study discipline and applicability. As metaverse technology in education has ever increased after Covid-19 (Almarzouqi et al., 2022), this study witnessed how students from different academic disciplines prefer using the specific mobile application (Metaverse Experience Browser) as accompanied by different features (performance expectancy, social influence, behavioral intention, and effort expectancy). Talking specifically about the responses and overall support for the proposed model, the respondents agreed with the beneficial and effective nature of the proposed factors attributed to the Metaverse Experience Browser application. First, regarding performance expectancy, 80.5% of respondents agreed that they expect mobile applications to meet their needs. These applications are expected (79.2%) to reach the most suitable search results enabling the respondents (83.7%) to actively choose and select the mobile browser they consider fulfilling their usage needs and expectations. 80.8% agreed that meeting their performance expectation further helped them adopt the mobile applications' positive behavior in general. These results were consistent with Zhang et al.'s argumentations (Zhang et al., 2022) as performance expectancy indicates their overall attitude toward a technology that further determines their acceptance behavior. Particularly, the Metaverse Experience Browser adoption direct or indirectly depends on its performance, which shapes the users' attitudes (Xu et al., 2022).

The impact of social influence on users' behavior also remained supportive. According to most of the respondents (76.3%), they frequently consider their peers and friends sharing opinions about different mobile applications. According to the respondents (84.8%), the opinion from others further increases their curiosity to try the suggested mobile applications. Finally, 86.2% of respondents agree with the effect of social influence as leading them to adopt and try a mobile application showing consistency with the propositions made by Alawadhi et al. (2022). As argued, social influence is considered an important component of the decision-making and adoption process. Observation, public opinion, word of mouth, and others are important to influence one's adoption and usage intentions and behavior.

Concerning behavioral intentions, the respondents indicated its strong influence on effort expectancy, further leading to Metaverse Experience Browser acceptance among them. For instance, 83.7% of respondents agreed that they consider mobile applications that require less effort and are more user-friendly. These respondents (81.6%) further indicated that the relevant mobile applications remain more considerable to them as they provide them with ease of access. They also indicated the use of mobile applications as more personalized, adding more relevance to their usage. These results are consistent with the argumentation by Mistretta (2022). As noted, mobile applications widely rely on the effort and time the users may have to spend on them. The more simplistic an application is, the more users will prefer it with the expectation of perceived benefits. Finally, the respondents strongly agreed with the effect of effort expectancy on the Metaverse Experience Browser acceptance (Aljumah et al., 2022).

According to the respondents (83.6%), the Metaverse Experience Browser is based on fewer efforts to enter the metaverse world. The respondents also agreed (81.3%) that they have positive behavior towards Metaverse Experience Browser as it allows them to gain different metaverse experiences. The respondents (82.4%) further indicated that using Metaverse Experience Browser also helped them join online learning workshops with their peers. According to 83.7% of respondents, Metaverse Experience Browser also help them to participate in online teamwork and collaborations. As a result, the Metaverse Experience Browser is comparatively preferable to the study respondents (82.1%), leading them (82.8%) to have a positive opinion and positive behavior (85.2%) about the metaverse technology. According to Chen (2022), metaverse technology provides students with immersive educational experiences. However, the case is beyond just simple education. Collaboration, teamwork, avatars for virtual presence, face-to-face real-time experiences, and others are additional features attributed to the metaverse technology (Akour et al., 2022) and further leading to the specialized browser acceptance (Aburbeian et al., 2022).

6. Theoretical implications

This study is based on the UTAUT, indicating its application on the Metaverse Experience Browser acceptance among students in the United Arab Emirates. Although the relevant theory is adopted by different studies across the globe in their relation to education, the focus remained on the overall metaverse technology (Lee and Kim, 2022). This study is focused on the Metaverse Experience Browser as associated with the UTAUT, indicating its applicability with interactive mobile applications. The conceptual model adopted the four prominent concepts from the UTAUT: performance expectancy, social influence, behavioural intention, and effort expectancy as factors behind Metaverse Experience Browser acceptance (Farhi, Jeljeli, & Belarbi, 2022). The relevant model is manipulated by the researchers under the existing literature that further helped in the conceptualization of current research. The selection of the UTAUT in this study is justified by its interactive and global approach highlighting technology, especially Metaverse Experience Browser. The analysis in this research proposed a unified model associated with the Metaverse Experience Browser under UTAUT. Therefore, it is reasonable for the studies

regarding metaverse technology to use UTAUT to examine the acceptance factors in other aspects of life (Jeljeli et al., 2022).

Practical implications

This research study provides strong practical implications for readers, students, and policymakers. The research suggests that stakeholders and educators should create user-friendly metaverse applications catering to educational needs. This customization can significantly enhance acceptance and effectiveness. It is important to recognize that younger generations adapt quickly to new technology. This implies that educational institutions should prioritize integrating metaverse technology to cater to the preferences and behaviors of young learners.

The study emphasizes the need for educational institutions and policymakers to invest in technological resources and support initiatives to improve student access to metaverse experiences. This can be particularly crucial in times of educational disruption or crises. Educational policies and decision-making processes at both institutional and governmental levels can benefit from the insights provided by the research. Policymakers can use this information to guide investments in educational technology and initiatives to enhance student access to metaverse experiences. The findings provide a foundation for future research in educational technology. This research can guide further exploration into the design and implementation of metaverse applications for educational purposes. The research study underscores the importance of building technological resilience within educational systems to adapt to unforeseen challenges. This involves preparing for disruptions, such as those caused by the COVID-19 pandemic, by leveraging technology for continued learning. Therefore, the research study offers valuable insights for educators, developers, policymakers, and institutions in the UAE and potentially in similar contexts worldwide. It highlights the potential of metaverse technology to enhance educational experiences, particularly in times of rapid technological change and educational disruption.

7. Conclusion

Thus, metaverse technology is booming, especially after the Covid-19 pandemic (Farhi et al., 2023; Farhi, Jeljeli, & Hamdi, 2022); it has gained much more success. Since its evolution is befitting almost every aspect of life, education is no exception. Talking particularly about the role and importance of metaverse technology for students, students worldwide and from the United Arab Emirates are adopting it on a wider scale. This research also witnesses the metaverse technology, particularly the application “Metaverse Experience Browser,” as fulfilling the expectations regarding its performance. Based on the study findings, it was found that students accept Metaverse Experience browser based on certain factors proposed by the UTUAT. The results indicated the role of social influence as an effective factor in shaping the students’ behavioral intention, leading them to adopt Metaverse Experience Browser as it also fulfils their effort expectations. Findings remained relevant with the assumptions by UTUAT assuming certain factors foster acceptance behavior among students. The present study concludes that the acceptance of

Metaverse Experience Browser as an interactive mobile application is a level ahead in improving their educational experiences. The Metaverse Experience Browser is considered a modified way of creating, sharing, participating, and enjoying the virtual world, indicating its greater usage among students for different purposes, including education and learning.

Study limitations and recommendations for future studies

This study has some primary limitations and recommendations for future researchers. First, this research has adopted only four variables from the UTAUT predicting the Metaverse Experience Browser acceptance. At the same time, the relevant theory also contains some other factors i.e., facilitating conditions, age, voluntariness to use, that could broaden the scope of this research. Second, this study is based on the sample selected from Sharjah and Al-Ain city that further questions the generalizability of results in other regions. The third limitation involves using a convenience sampling approach with some primary limitations that narrow the scope of the current research. Finally, the third limitation involves using a single method, quantitative approach, to gather and analyze the data. Future researchers can cover these limitations by enhancing the scope and approach of their studies. For example, examining the acceptance of multiple applications for metaverse experience can overcome the limitation of current study. Besides, conducting a large-scale study, covering different geographical locations can also add more value and insights to the studies concerning metaverse applications' acceptance among students. Using other different sampling methods and study designs, such as mixed methods, can also expand the scope of future studies in similar dimensions. Finally, conducting mixed-method studies on the relevant topic can be further helpful in obtaining the detailed insights.

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