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Metaverse as an Educational Instrument in Higher Tourism and Hospitality Education: Teaching Staff Perceptions

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Keywords

Metaverse, Higher Tourism and Hospitality Education, Technical Aspects, Academic Experience, Educational Technology.

Abstract

The teaching and learning process in higher education is undergoing significant change as academic interactions between educators, students, and their colleagues alter because of the challenges imposed by rigorous globalization and pandemic consequences. As a result, universities have significant challenges regarding traditional campus-based or online learning approaches. These factors have been widely acknowledged to have a negative impact on students' learning experiences, and as a result, there is a need to focus on technology-enhanced education environments. The idea of improvement, however, necessitates examining the necessary changes and factors that the academics and professionals in charge of education must take into account. This research offers a thorough evaluation of Metaverse as a teaching resource in its respective fields from the viewpoint of the teaching staff. Through a descriptive approach, this research evaluates the technical aspects, prospects, challenges, and educators' perceptions of the Metaverse and its didactic usefulness. The questionnaire was completed by 407 faculty lecturers and professors of varied genders, ages, academic levels, and teaching experience who work in various faculties and higher institutes in Egypt. Their responses were descriptively analyzed, and SPSS statistics were used to confirm the existence of significant disparities in their judgments for the various factors investigated. Gaps by area of study and years of teaching experience in the participants' assessments have been found and explored within the major findings. The study also presented an unambiguous overview of the many facets of using Metaverse technology in tourism and hotel higher education.

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1. Introduction

Technology and value are critical components of effective and meaningful tourism and hospitality education (Elshaer & Huang, 2023). They must be evaluated and developed, particularly when evaluating the future of higher education in the post-COVID-19 era. People have recently been introduced to new opportunities for future education thanks to emerging information technologies. Metaverse is one of today's most promising technologies (Hwang & Chien, 2022), which has caught the interest of educators (Tlili et al., 2022). According to Suh and Ahn (2022), Metaverse is a universe in which virtual and real worlds interact and coevolve, and where social, cultural, and economic activities are carried out to generate value.

The Metaverse can be useful in a variety of learning scenarios. The Metaverse also has several direct positive impacts on students. The Metaverse was helpful during the pandemic because leveraging non-face-to-face activities has made it possible to circumvent physical space and time restrictions (Elshaer, 2022; Suh & Ahn, 2022). It can grant students to virtually attend their courses and access components found in a real classroom. The scalable environment that the Metaverse offers, according to Park and Kim (2021), is crucial for enhancing social meaning. According to Tlili et al. (2022), students in the Metaverse can engage in lectures and interact with their teachers and peers using avatars. Also, it enables students to participate in cross-disciplinary, cross-regional, and immediately shared educational activities employing the avatar (Zhong & Zheng, 2022). Therefore, the potential for immersive learning that results from this may increase the student's motivation to learn. Additionally, Han (2020) investigated the significance of implementing the Metaverse technology in various fields of study, concentrating on the creation of real-world experiments in which the Metaverse system is employed as a tool to address problems. Furthermore, the Metaverse, according to Erturk and Reynolds (2020), has better customization, higher inventiveness, and lower risk to promote student interaction, boost participation and commitment, and offer experiences and activities that would otherwise be unavailable. According to Zhong and Zheng (2022), the Metaverse's entry into the educational space will provide education a more intelligent, digital, and virtualized future. This demonstrates the worth of Metaverse as a service with more enduring educational, material, and social significance.

In contrast to these promising aspects, the deployment of the Metaverse technology for educational purposes is rarely explored. According to Hwang and Chien (2022), the majority of educators and students might not be familiar with the Metaverse's characteristics or its potential application in the field of education. Few studies on the development of the Metaverse have been conducted (Damar, 2021), and the literature since has largely offered insights into how the larger Metaverse -which incorporates VR and AR technologies -is being functioned, while neglecting to explore the factors of the learning environment or the users themselves (Tlili et al., 2022). Additionally, none of these studies can fully explain what the Metaverse is, its elements, and its adoption requirements (Dahan et al., 2022). Simply put, higher tourism and hospitality education institutions (HT&HE) have not yet adopted Metaverse as an educational platform for enhancing the students' motivation and immersion in learning activities (Tlili et al., 2022). In the same line, Teng et al. (2022) assert that there is still a lack of knowledge regarding the factors that influence the educational Metaverse's acceptability and adoption. To address this knowledge gap, this study aims to stimulate the diffusion of Metaverse in higher education by extending the current research on examining the technological aspects, possibilities

for the future, challenges, and views of the teaching staff about their comprehension of the many aspects of the Metaverse and its didactic value.

Building upon the apparent dedication of Egypt to higher education development, this study aims to advance these efforts. Therefore, understanding the Metaverse possibilities and drawbacks in HT&HE is the main aim. While the study's specific objectives include: a) identifying the Metaverse's technological aspects, b) examining the teaching staff's perception that represent the drivers and inhibitors of Metaverse adoption in the HT&HE; and c) measuring gaps by area of teaching (field of tourism studies and hotel management) and academic experience in the respondents' evaluation. As a result, the following research question is presented: Can Metaverse be utilized as a didactic resource for assisting higher education in the field of tourism and hospitality?

This study is organized as follows: the study's literature review are presented in the next part, which also develops the body of literature that served as the foundation for this study. The materials and methods are then explained. Lastly, the limitations and suggestions for more research are included with the discussion and implications.

2. Literature Review

In recent years, "Metaverse" has become an internet trend on the Internet. Although the notion was initially associated with science fiction, technological advances have allowed it to materialize, albeit not entirely. In general, it refers to virtual world networking where users engage with shared settings and digital items (Fokides, 2023). It is described by Ball (2021) as a massively expanded and ubiquitous network of real-time-generated virtual worlds in 3D that an almost infinite number of users may experience synchronously and permanently with a unique feeling of presence. As seen in Figure 1, using two axes (intimate vs. external and simulation vs. augmentation), Kye et al. (2021) distinguished four categories of Metaverse technologies: virtual reality (VR), augmented reality (AR), lifelogging, and mirror worlds. It appears that opinions differ on what constitutes the Metaverse. However, due to the need for very engaging and immersive experiences, users typically link it with 3D virtual worlds and the usage of AR and VR headsets (Doug, 2020).

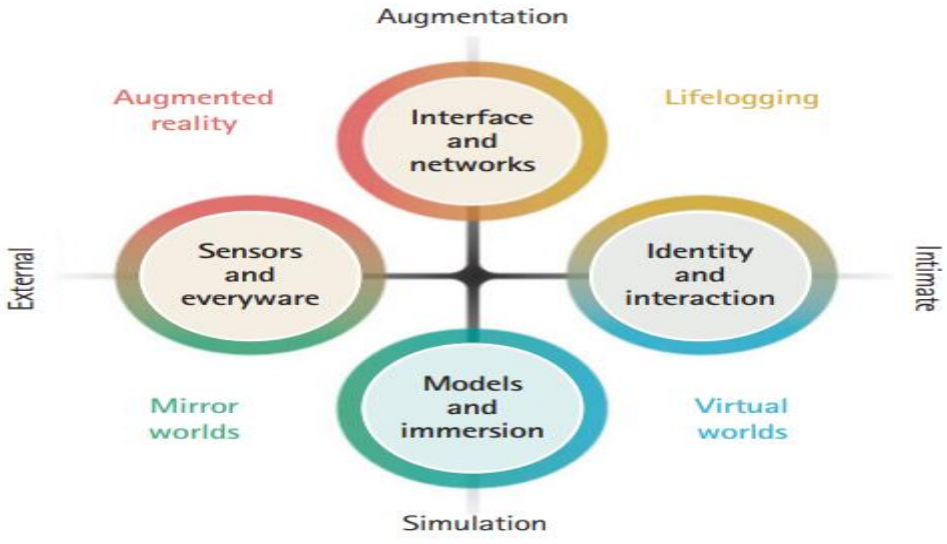

Figure 1. Types of technology used in the Metaverse

Figure 1 depicts how students may be engaged in Metaverse environments in ways that are not possible in regular classroom settings due to their interactive and immersive nature (Lee & Park, 2021). Students may interact and explore with complicated subjects in a fun and engaging way, helping them better learn and remember information. Furthermore, Metaverse provides the capacity to construct personalized learning experiences (Han & Noh, 2021).

According to Onu et al. (2023), the development of Metaverse tools and technology has significantly improved faculty teaching staff's capacity to give their students more engaging learning experiences, which has been shown to increase student motivation. This has been an enormous advantage to education since it has enabled educators to better help students, both technologically and pedagogically. According to Akour et al. (2022), users in educational Metaverse environments can also work together on projects, exchange ideas and opinions, access global resources, and communicate virtually. Virtual classrooms and labs, training simulations are some examples of the educational applications for this kind of virtual environment (Kye et al., 2021).

Research on the Metaverse's educational potential has shown both good and bad features (Akour et al., 2022; Park & Kim, 2022). Although educational Metaverse holds great promise for establishing novel and dynamic learning environments, attention is necessary to guarantee the safety and security of both students and teaching staff (Qiu et al., 2023). In the context of HT&HE, the Metaverse can support the vocational training and education. Zhang et al. (2022) claim that the Metaverse allows individuals to utilize 3D headsets to participate in training classes and communicate with others through avatars from different locations. In this way, the Metaverse is expected to provide a viable solution for career training and education (Elshaer & Marzouk, 2019). In a virtual environment, it helps students obtain both general and specialized knowledge by enabling them to watch the procedure from a distance. On the one hand, it facilitates the easy transition between educational and work environments for teaching staff as well as learners. On the other hand, rather than making time-consuming and costly visits to the work environment, it may continually place students in a vocational training environment where they can practice and develop their skills (Parmaxi, 2020). However, additional issues pertaining to the integration and use of technology arise when several ethical technology concerns are combined with the difficulties facing the educational Metaverse (Tlili et al., 2022). An excessively tiny smartphone interface, for instance, may limit the number of learners who use it concurrently, decreasing intergroup communication skills (Estudante & Dietrich, 2020). Also, there may be a breach of the learners' privacy, which may have a bad effect on their day-to-day existence. Furthermore, the efforts and creativity of teaching staff as well as students are susceptible to plagiarism (Kye et al., 2021). Additionally, recent years have seen a large number of Metaverse applications reported globally, particularly by computer gaming and social media businesses (e.g., Facebook). This might lead to students being addicted to these kinds of devices (Wiederhold, 2022).

Regarding the Metaverse's potential for revolutionary change in education, education is one of the first application areas where AR and VR-supported learning has produced remarkable results in terms of training, retention, and performance (Chan et al., 2021). In a virtual environment that integrates gaming elements, students may learn in a more engaging, amusing, and participative way while improving their creativity, immediate memorization, and collective and individual intelligence (Wijayanto et al., 2023).

Since this Metaverse may now be used for education thanks to its progress, it is vital to thoroughly study it to raise the quality of education delivered through the Metaverse. Metaverse-based education is uncommon, particularly in Egypt, despite its value in increasing students' knowledge and motivation to study. This study thus seeks to identify the potential of infusing Metaverse technology in education from the perspective of the teaching staff in tourism and hotels faculties and higher institutes.

3. Materials and Methods

The purpose of this research is to investigate and analyze the responses obtained from a selected cohort of faculty members within the academic domains of tourism studies and hotel management, drawn from universities and higher education institutes. The focus of study pertains specifically to the administration of a questionnaire designed to assess the didactic applications of the Metaverse within the context of tourism and hospitality classrooms. The questionnaire considers a number of independent or descriptive factors as well as evaluative variables – see Figure 2. The descriptive variables function to define the participants' academic profile. A non-probability convenience sampling method was used to choose the participants.

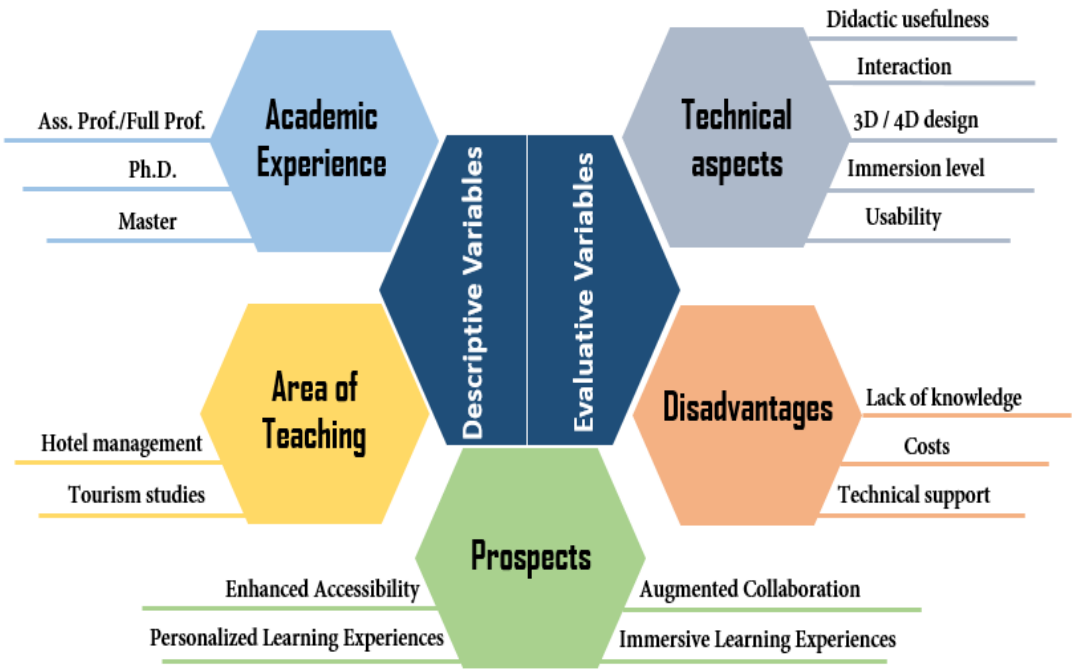

Figure 2. Descriptive and evaluative factors.

Five-hundred questionnaires were given out to teaching staff from higher education institutions that offer hospitality and tourism-related degrees. A total of 407 teaching staff members from 13 tourism and hospitality faculties and higher education institutes took part in the survey and completed the questionnaire freely and anonymously. Given the likelihood that university educators represent a relatively privileged social sector, the findings of this study cannot be generalized to the majority of societies of higher education (other educational disciplines), but rather to university teaching staff in the fields of Tourism Studies and Hotel Management in more developing countries. Table 1 depicts the distribution of respondents based on the values of the various demographic and personal factors.

The fields of tourism studies and hotel management are fairly represented in the sample, providing a solid balance. When separated by field of knowledge (departments; hotel management and tourism studies), the goodness-of-fit test verifies that the distribution is homogenous (Chi-square = 0.6850, P= 0.300).

The goodness-of-fit test indicates that the participant gender distribution is roughly homogenous (Chi-square = 0.0641, P = 0.061). The majority of respondents are concentrated in the center age bands, particularly in the 35–44 age range, while the youngest and oldest age groups make up only a fraction of the participants. In terms of academic level, the Ph.D. degree category—which includes over half of the participants—has the largest percentage, followed by the Master's degree category. Additionally, the sample's distribution is not homogenous for this variable (Chi-square = 7.528, P<0.001). The distribution of respondents based on teaching experience is more equal and may be presumed to be homogenous (Chi-square = 2.7142, P=0.401).

Table 1. Demographic variables (N = 407).

Descriptive Variable	Values	% of the Sample
Department (area of knowledge)	Hotel Management	51.36%
	Tourism Studies	48.64%
Gender	Female	48.90%
	Male	51.10%
Age	25 to 34 years old	11.30%
	≥34 to 44 years old	48.64%
	≥44 to 54 years old	36.60%
	≥54 years old	3.46%
Academic level	Master	22.85%
	Ph.D.	62.89%
	Ass. Prof./ Full Prof.	14.26%
Teaching experience	≤5 years	13%
	≥ 5 to 10 years	17.74
	≥10 to 15 years	18.91%
	≥15 to 20 years	17.93%
	≥20 to 25 years	17.19%
	>25 years	15.23%

Using a Likert scale ranging from 1 to 5 (strongly disagree to strongly agree), the measurement items assesses how respondents perceive 25 distinct aspects/facets of Metaverse and its educational application in higher education. The 25 questionnaire items are made up of four evaluative aspects (technical aspects of Metaverse, identification and evaluating challenges of adopting/using Metaverse, Metaverse prospects as an educational resource, and overall educational assessment of academic performance, knowledge, course progress, student acceptance and skills of teaching members in the use of Metaverse) modified from Vergara et al. (2021). Table 2 lists the measures of the evaluative aspects. The questionnaire's internal reliability was confirmed using Cronbach's alpha value, which was calculated for each aspect and is

also presented in Table 2. All of the evaluative aspects are more than 0.7, suggesting that all of the scales have appropriate levels of consistency (Hair et al., 2017).

Table 2. Evaluative aspects.

Evaluative Aspects	Cronbach's Alpha	Measures
Technical aspects of Metaverse	0.8410	3D/4D modeling software Usability level of Interaction level of Immersion Realism Didactic usefulness
Challenges of adopting/using Metaverse	0.8724	Costs Educational values deviations Shortage of Technical Time management Lack of knowledge Addiction Privacy Ethics Health Issues
Metaverse prospects	0.7916	Multilingual interaction Augmented reality Mixed reality Immersive reality
Educational source	0.7055	Academic performance Knowledge Student acceptance Course progress Student motivation

Inferential and correlation analysis are combined with a descriptive section to analyze the results. Firstly, an analysis is conducted on the descriptive data of each dependent variable as well as the overall statistics of the various questionnaire measures. Next, the Spearman's r correlation coefficient was used to determine each item's and factor score's discrimination coefficient. Also, the multifactor ANOVA (henceforth, MANOVA) tests are performed to determine if there are any significant variations in the mean replies varied by each of the evaluative features crossed with each department (knowledge area, academic Level, and teaching experience). Finally, Bartlett's test is employed to find significant changes between standard deviations. All tests are run with a probability threshold of 0.05.

4. Results

4.1. Descriptive Results

Table 3 displays the statistical mean and standard deviation for each aspect and item. The Metaverse receives mean scores that are good or extremely high from the respondents for its technical features, particularly its didactic usefulness. In reality, the technical aspects measure has the highest total mean value. It also has the lowest variation, indicating that the responses provided by the respondents are more widely agreed upon than they are on other aspects. While all of the examined items in "Metaverse prospect" have intermediate-high assessments, ranging from 3 to 4. In terms of Metaverse's overall evaluation as an educational resource, respondents have a low-intermediate self-evaluation of their knowledge of adopting Metaverse and their academic performance in light of their use of Metaverse in this regard, despite their belief that Metaverse can make progress in their courses, gain students' acceptance, and motivate them to learn.

Table 3. Aspects' measures' Means and Standard deviations.

Evaluative Aspects	Measures	Mean	S.D.	Overall Mean	Overall S.D.
Technical aspects	3D/4D modeling software	4.02	0.87	4.10	0.90
	Usability	3.98	0.96		
	Level of Interaction	4.19	0.82		
	Level of Immersion	4.23	0.89		
	Realism	4.05	1.01		
	Didactic usefulness	4.17	0.90		
Challenges of adopting/using Metaverse	Costs	3.85	1.12	3.75	1.04
	Educational values deviations	4.01	1.10		
	Shortage of Technical	3.88	0.86		
	Time management	3.78	1.20		
	Lack of knowledge	3.95	0.94		
	Addiction	3.79	0.89		
	Privacy	3.52	0.93		
	Ethics	3.58	1.18		
	Health Issues	3.42	1.15		
Metaverse prospects	Multilingual interaction	4.03	0.93	4.07	0.93
	Augmented reality	4.06	0.88		
	Mixed reality	4.06	0.91		
	Immersive reality	4.15	1.01		
Educational source	Academic performance	2.73	1.07	3.79	0.96
	Knowledge	3.55	1.12		
	Student acceptance	4.11	0.89		
	Course progress	4.29	0.77		
	Student motivation	4.27	0.95		

4.2. Differences Analysis

4.2.1 Area of Knowledge

Figure 3 depicts the frequency of responses to all Metaverse aspects' measures when separated by area of knowledge. Hotel management teaching staff members outperform tourism studies teaching staff members on technical and prospect aspects of adopting Metaverse in education, with the exception of the challenges and educational source aspects, whereby the latter group performs better.

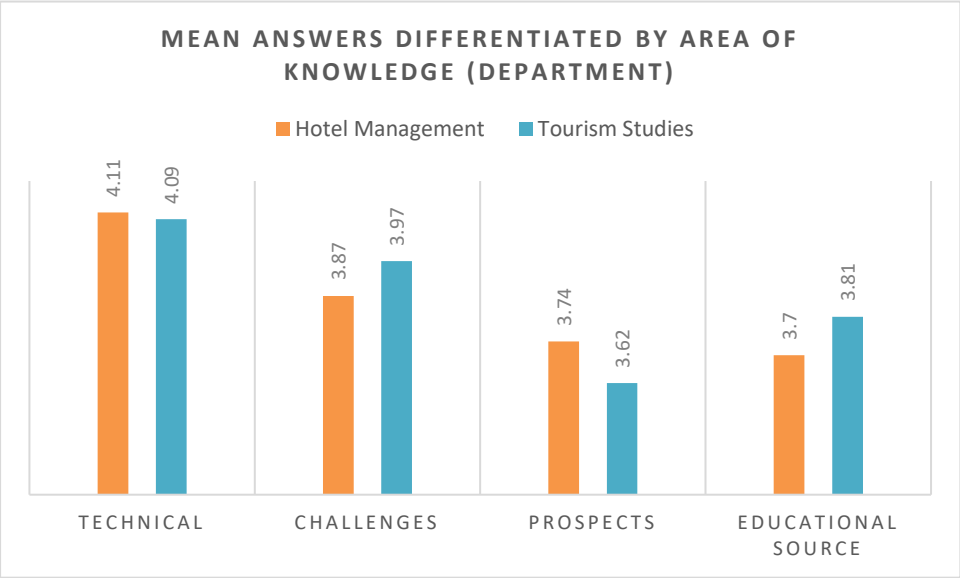

Figure 3. Adoption of the Metaverse as perceived by knowledge area.

The notable differentiation between them revolves around the degree of likelihood concerning their utilization of the Metaverse within their area of knowledge (department) [P= 0.001 (Hotel Management = 3.74; Tourism Studies = 3.62]. This suggests that the use of Metaverse technology in hotel management department education may be more suitable given the course nature/design and the desired learning objectives of programs/courses. Their chances of adopting Metaverse are comparatively better than those of their peers in the tourism studies department, which might be explained by the practical aspect that is more widespread in their profession and need requires greater accessibility for their students (Elshaer & Marzouk, 2019). The t-test confirms these discrepancies and indicates a statistically noteworthy distinction between the two areas of knowledge under investigation (Table 4).

Table 4. Mean and t-test statistics (area of knowledge).

Metaverse Aspects	Hotel Management	Tourism Studies	*t*-test	*p*-Value
Technical aspect	4.11	4.09	6.1308	0.401
Challenges	3.87	3.97	0.5120	0.810
Prospects	3.74	3.62	0.0508	0.001*
Educational source	3.70	3.81	0.0208	0.732
* $p < 0.05$.				

4.2.2 Academic Level

Figure 4 depicts the frequency of responses to all Metaverse aspects' measures when separated by "the academic level". The distribution of the highest scores (4.11–4.66) is more concentrated among PhD holders and less so among associate professors and full professors. In the hotel management department, PhDs holders have the highest average response (4.36), followed by Masters (4.34) and, finally, Asst. Prof./ Full Prof (4.31). This pattern appears in tourism studies department, where the average response rate for PhDs holders is the highest average response (4.44), followed by that of Masters (4.24) and, finally, Asst. Prof./ Full Prof (3.89).

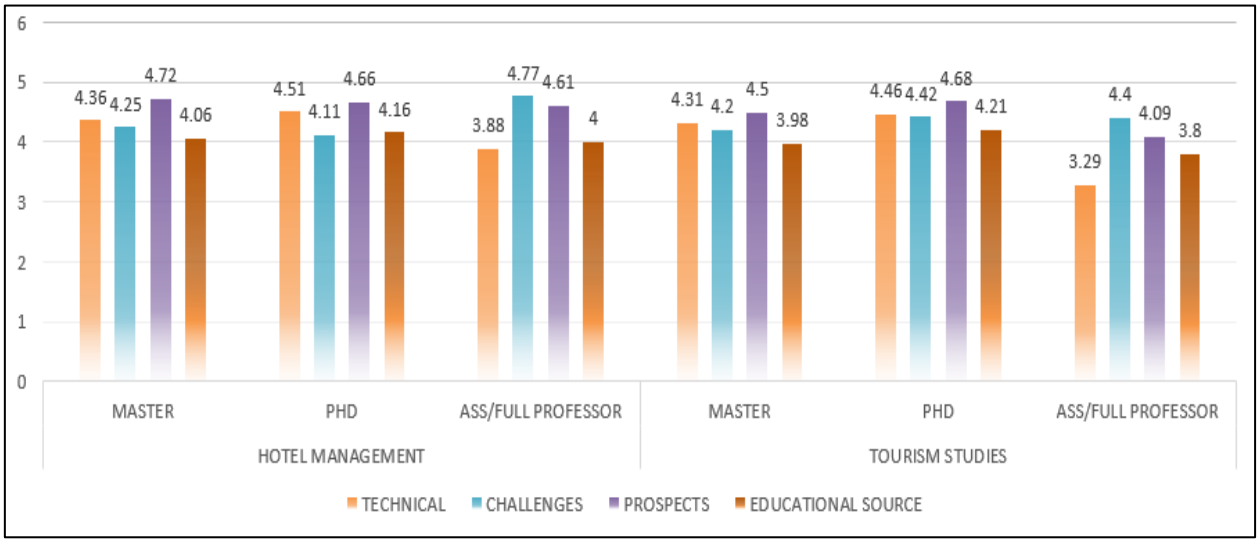

Figure 4. Adoption of the Metaverse as perceived by academic level.

The mean responses of Asst. Prof./Full Prof, Masters, and PhDs on the scales of technical aspects and challenges of adopting Metaverse in the two domains of knowledge (hotel management and tourism studies) analyzed does not differ significantly, according to the results of the MANOVA test (Table 5). Multivariate Analysis of Variance (MANOVA) is an extension of the standard analysis of variation (ANOVA).

According to Keselman et al. (1998), MANOVA is a statistical approach that may be used to situations involving two or more dependent variables, such as technical issues, obstacles, opportunities, and educational sources in the setting of the Metaverse. The major goal is to determine if there are statistically significant variations between the means of these variables for three or more independent variables, as demonstrated above by academic level groupings (Asst. Prof./Full Prof, PhDs, and master's degree holders).

PhDs provide the best evaluation of Metaverse's technical aspects and the lowest appraisal of its issues among hotel management teaching staff. Similarly, in tourism studies, PhDs provide the best assessment of the technical elements and chances of adopting Metaverse, as well as the lowest assessment of its obstacles. Furthermore, the authors anticipated that the Asst. Prof./Full Prof. - the oldest participants, and so the findings for the descriptive variable of academic level would reflect their age variable. However, this didn't happen and their perceptions of the technical features and chances of adopting Metaverse were rather positive.

Table 5. Mean responses and MANOVA test depending on academic level.

Evaluative Aspects	Asst. Prof./ Full Prof		Ph.D.		Master		MANOVA	*p*-Value
	Hotel Management	Tourism Studies	Hotel Management	Tourism Studies	Hotel Management	Tourism Studies		
Technical aspects	4.02	4.03	4.40	4.28	4.23	4.19	0.8014	0.2461
Challenges	3.70	3.75	3.66	3.55	3.96	3.58	0.6455	0.0312
Prospects	3.52	3.50	3.75	3.70	3.56	4.02	0.2741	0.5041
Educational source	3.60	3.44	3.59	3.66	3.47	3.62	0.4102	0.4132
* $p < 0.05$.								

4.2.3 Teaching Experience

The descriptive variable of "teaching experience" has demonstrated to be discriminative in terms of technical aspects, challenges of adopting/using Metaverse, and Metaverse use as an educational resource.

Figure 5 depicts the frequency of responses to the aforementioned evaluative aspects grouped by years of teaching experience. In technical terms, respondents with 16 to 20 years of experience had the largest proportion of answers 5, while those with 11 to 15 years had a higher proportion of answers 4. The answers equivalent to intermediate or low values (1, 2, or 3) are likewise more common among those with notable high experience, with the exception of value 1, which is only seen among respondents with fewer than 5 years of experience. Respondents with between 16 and 20 years of "teaching experience" have the highest mean for this evaluative aspects (4.62), which is followed by those with between 11 and 15 years (4.37), those with less than 5 years (4.08), those between 6 and 10 years (4.02), those between 21 and 25 years (3.96), and those with more than 26 years of teaching experience.(3.68)

Respondents with over 26 years of experience had the largest percentage of responses with a value of 5 and the lowest percentage of answers with a value of 1 when it comes to the challenge of adopting/using Metaverse. Respondents with more than 26 years of experience and those between 21 and 25 years of teaching experience reported the most challenges in adopting/using Metaverse (4.00 and 3.92, respectively). Those with 16 to 20 years of expertise consider this challenges less (2.45 on average).

In terms of the Metaverse's assessment as a teaching resource, across all teaching experience levels, the majority of responses fall between 3 and 5, indicating that respondents typically agree with the advantages of Metaverse. It is interesting to observe that the majority of responses from respondents with 11 to 15 years of expertise focus on numbers 3 and 5. The majority of responses from those with less than five years of experience center on the value 3. Participants who have over 26 years of experience, on average, score their evaluation lowest (2.00), followed by those who have between 21 and 25 years (2.23) and those who have between 16 and 20 years (2.17). The statistical results of the MANOVA test (Table 6) indicate that years of "teaching experience" significantly differs in the responses given to the technical aspects and challenges of utilizing Metaverse as an educational tool.

Table 6. Mean and MANOVA when categorized by teaching experience.

	≤5 years	6 to 10 years	11 to 15 years	16 to 20 years	21 to 25 years	>26 years	MANOVA	p-Value
Technical Aspects	4.08	4.02	4.37	4.62	3.96	3.68	6.3654	0.000*
Challenges of adopting/using Metaverse	3.00	3.82	3.62	2.45	3.92	4.00	3.2405	0.0001
Metaverse as an educational resource	3.06	3.50	3.77	2.17	2.23	2.00	1.4812	0.250

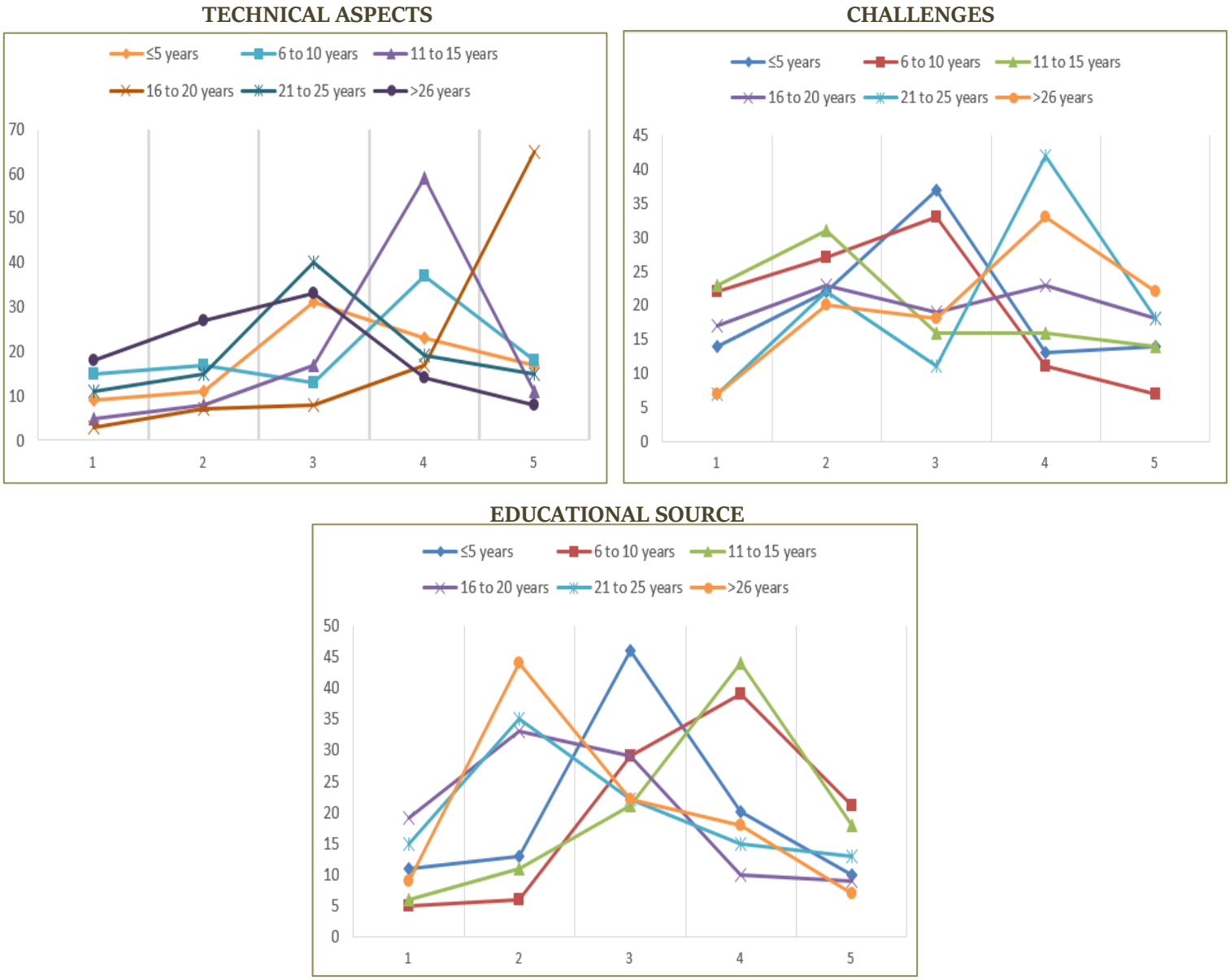

Figure 5. Technical aspects of the Metaverse as perceived by years of teaching experience.

The Metaverse has been the focus of attention for educationists with various teaching experiences. The integration of virtual and real classroom environments can foster novel opportunities for problem-based, cooperative, and collaborative learning, making Metaverse an effective tool for tourism and hospitality education. Additionally, Metaverse may be utilized to assist students learn languages since it opens up new opportunities for language acquisition and facilitates communication amongst students speaking various languages in virtual environments.

4.3 Metaverse as an educational resource

The Metaverse's primary technological characteristics might provide the educational setting a variety of advantages in terms of the academic performance, gained Knowledge, course progress, and student motivation. Using an open ended question, Table 7 summarizes the primary technological attributes of the Metaverse together with their effects on education.

Table 7 Prospects of Metaverse in the educational setting

		Technological Aspects	Educational setting
Metaverse as an educational resource	Academic performance	▪ Improving convenience and effectively highlighting information. ▪ Augmented the actual environment to make them 3D and lifelike. ▪ 3D simulation	▪ Engaging interactions ▪ Visualise invisible components. ▪ Deep knowledge of challenging topics.
	Student motivation	▪ Social media allows people to constructively share their daily lives and opinions. ▪ Game-based interactive learning.	▪ Convey and use knowledge in a suitable manner. ▪ Customizing teaching approaches.
	Knowledge	▪ Combining networking technology and GPS. ▪ Integration of the physical and virtual worlds.	▪ Internet video conferencing and collaboration capabilities to teach classes in real time.
	Student acceptance	▪ Computer visuals, particularly in a 3D-implemented virtual world.	▪ Environment-based virtual simulation. ▪ Immersive experiences of times and spaces.
	Course progress	▪ Online classes ▪ Monitor learner skills	▪ Vocational skills ▪ Problem-based learning

Based on Table 7 and the promise of the Metaverse for education, the Metaverse is becoming more and more popular as a substitute for the drawbacks of the current 2D online and remote learning models. Because of the intricate integration of several technologies, it can offer a unique experience value compared to the present internet era. Moreover, the Metaverse allows for the creation of new experiences that are not limited by place or time. So, with Metaverse, students may explore a virtual area with AI characters, interact with other players, and accomplish learning goals in higher tourism and hospitality education. As seen in Figure 6, for example, a virtual kitchen is set up so that students may practice preparing and serving meals while acting as an avatar.

Figure 6. Food and beverage class (created using Zepeto).

4.4 Potential of adopting/using Metaverse in the HT&HE

In higher education, the idea of the Metaverse has drawn more attention recently because of its potential advantages, which include raising student motivation and engagement levels and providing immersive educational environments that mirror real-world situations. The Metaverse gives students additional chances to work and engage with others while also experiencing, exploring, learning, and teaching in a new environment. In certain situations, students can even practice or learn things that they cannot encounter in the actual world. In this study, respondents agreed on five trends in this subject, which are given in Table 8. According to the study's respondents, Metaverse technology provides a real-virtual environment that facilitates learning and information-sharing possibilities between learners and educators, hence improving student communication and problem-solving abilities. Additionally, teachers may use cutting-edge teaching strategies by utilizing the Metaverse's VR and AR technology to create dynamic and interesting learning environments.

Table 8. Potential of Metaverse

Prospects	
Tools	**Trends**
(VR, AR, XR, MR, etc.)	Real-virtual environment Collaborative learning/knowledge sharing Improving vocational skills Virtual communication Problem-based learning Innovative teaching/ learning methods

Therefore, within the context of HT&HE, The Metaverse can make it possible for students to discover different locations and scenarios in a realistic and immersive setting by facilitating virtual tours and simulations of different vocational courses.

4.5 Challenges of adopting/using Metaverse

The Metaverse offers a platform for students with interests and hobbies to congregate and converse, hence enabling "social connection" among students. However, because of a lack of funding, technological assistance, and understanding, these social interactions in the Metaverse are weaker than those in the real world.

Moreover, privacy violations and ethical issues must be taken into account while engaging in social activities in the Metaverse, where a variety of data that was not created through in-person interactions is instantly gathered and analyzed. According to the respondents' perspectives, Figure 7 lists the difficulties in adopting and using Metaverse.

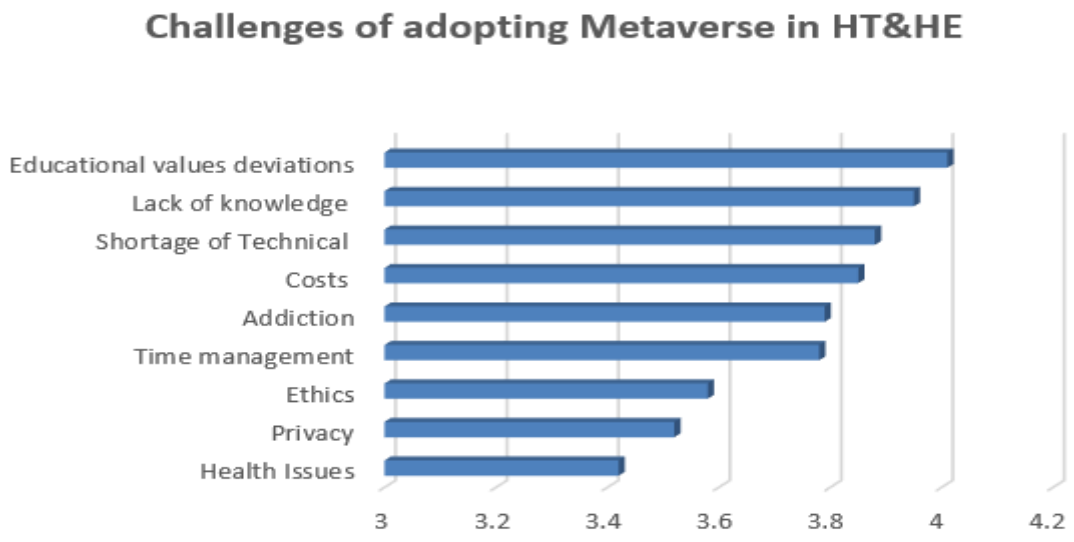

Figure 7. Challenges of adopting/using Metaverse in higher tourism and hospitality education

5. Discussion

This study offers a thorough evaluation of Metaverse as a teaching resource from the viewpoint of the teaching staff at the tourism studies department and hotel management department based on four evaluative aspects (technical aspects of Metaverse, identification and evaluating challenges of adopting/using Metaverse, Metaverse prospects as an educational resource, and overall educational prospects of Metaverse). All of these aspects obtain high or extremely high mean scores with phenomenal answer homogeneity since they are the items with the least standard deviations. This case is abundantly with regard to the technical challenges and prospects of adopting Metaverse in the higher tourism and hospitality education.

In terms of the Metaverse's technical features (benefits), participants emphasize the benefits of Metaverse technology as a resource for strengthening degrees of realism, immersions, involvement, and didactic usefulness. The evidence supports this finding in multiple articles that describe the benefits of utilizing Metaverse, both for students' learning results and in specific dimensions of their affectivity related to their academic success (Hwang et al., 2023; Marzouk et al., 2019; Fahmi et al., 2014). Other research shows that the didactic effectiveness of Metaverse is related to the virtual nativeness of youngsters nowadays (Akçayır et al., 2016). Also, Wenxiao et al. (2022) asserted the Metaverse' efficacy due to the embodied learning, contextualized teaching, personalized learning, and Gamification learning in the Education-Metaverse sector.

It is important to emphasize that Metaverse can generate beneficial learning results for tourism and hospitality students. This study's good ratings may also be attributed to the success of customizing the teaching method, immersion, interactivity, and developing the language and vocational skills. Sung et al. (2021) demonstrated that Metaverse-based lessons resulted in higher levels of immersion and satisfaction of learning among students compared to traditional learning techniques. According to Fitria (2021)'s study on students' perceptions of online learning the English language through Gather Town, students recognized more contact with teachers and other students and felt as though they were actually in a real classroom while they were in a virtual one. Using the Metaverse as a teaching resource enables curricula to create virtual classrooms that are tailored to the requirements of the students. In this regard, Mistretta (2022) and Buragohain et al. (2023) claimed that the Metaverse has the potential to transform the entire globe into a virtual worldwide classroom. Similar to this, Tlili et al. (2022) argued that the Metaverse's tools and technologies have greatly enhanced pedagogical and technical assistance for education, having a favorable effect on motivation for learners through immersive learning experiences.

The immersive aspect of this technology creates more immersive surroundings (Elshaer & Marzouk, 2022), suggesting a potential use of the Metaverse in higher tourism and hospitality education. Students act like they would in the real world, experience as though they are in another universe, and are fully immersed. Additionally, since the Metaverse's technology demonstrates an expanded sense of ownership, it meets the demands of distant learning, establishing an integrated learning environment. The findings are in line with the claims made by Sopher and Lescop (2023) that the Metaverse may help teachers create future interactive classes that would attain different knowledge and learning advancement.

As this study clarifies, there are still many obstacles to overcome in order to establish successful Metaverse platforms. These obstacles include deviating from the intended educational goals, a lack of technical assistance, ignorance, and the cost of developing better technology for a genuine presence. This is consistent with the findings of Sebastian (2022), who investigated knowledge of Metaverse and its related potential issues and risks.

It is expected that the Metaverse will become widely known in due course. When it comes to education, it's critical to begin thinking about possible curricula and learning systems in the realm of Metaverse technologies. Academic and non-academic institutions need to collaborate in a well-planned and coordinated way in order to successfully produce the necessary technology, content, software, and human resources.

6. Conclusion

In conclusion, stepping into the field of education, the Metaverse will undoubtedly foster deep changes and empower future education. The metaverse, with its all-encompassing perception, virtual-real integration, and interactive intelligence, provides great opportunities for creativity in learning environments, teaching techniques, and curriculum content, which will definitely empower students. To make sure the students are equipped of dealing with the 21st century, this step is required. To create a framework that will enable today's students to achieve 21stcentury objectives, curriculum, learning environments, and education technology must be in alignment. As a result, educators, students, universities, and Metaverse businesses need to understand the driving factors for the adoption of the Metaverse in the HT&HE. Additionally, as the Metaverse is perfect for the learning process in the post-pandemic age to defeat the different challenges imposed by the pandemic or rigorous globalization, the insights gained would offer proposals and directions for boosting the dissemination and adoption of Metaverse in global HT&HE. Understanding the factors affecting the adoption of Metaverse, in particular for the higher education in developing countries who are restricted by economic and social environments, is likely to help in encouraging the acceptance of Metaverse, which will ultimately support bridging the digital divide. Furthermore, incorporating this technology into education can confront preconceptions of gender, race, and even physical disabilities (Duan et al., 2021), demonstrating its utility as an educational setting embracing multiple disciplines. While the Metaverse has enormous promise for use in tourist education, it is critical to examine elements such as accessibility, technological infrastructure, and the need for extending research to optimize its efficacy in improving learning outcomes.

6.1 Limitations and future research direction

Recognizing the higher education field's current limitations and potential study areas is crucial as Metaverse education develops further. The absence of measurements and standardized evaluation techniques to compare the efficacy of Metaverse education to traditional approaches is a limitation. Another limitation is the small sample size as most of users might not be able to participate due to the lack of knowledge about the nature of this technology or technology-related technical issues (e.g., high-speed internet connection and sufficient gear needed to properly evaluate the Metaverse).

It is clear that many components and aspects must alter significantly in order to implement the Metaverse in education, necessitating the creation of new domains of competence. As a result, it is critical to comprehend the principles of comprehension, narrative, and application, which are the first steps of Metaverse and educational transformation. This impose that future research should discusses technological infrastructure, educational material providers, and pedagogical design techniques that take into account the specific characteristics of the Metaverse environment.

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الميتافيرس كأداة تعليمية في التعليم العالي للسياحة والضيافة: تصورات أعضاء هيئة التدريس

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الملخص

تشهد عملية التعليم والتعلم في التعليم العالي تغييرًا كبيرًا حيث تغيرت التفاعلات الأكاديمية بين أعضاء هيئة التدريس والطلاب وزملائهم بسبب التحديات التي فرضتها العولمة الصارمة وعواقب الوباء. ونتيجة لذلك، تواجه الجامعات تحديات كبيرة فيما يتعلق بأساليب التعلم التقليدية داخل الحرم الجامعي أو عبر الإنترنت. وقد تم الاعتراف على نطاق واسع بأن هذه العوامل لها تأثير سلبي على تجارب تعلم الطلاب، ونتيجة لذلك، هناك حاجة إلى التركيز على بيئات التعليم المعززة بالتكنولوجيا. لكن فكرة التحسين تتطلب دراسة التغيرات والعوامل الضرورية التي يجب أن يأخذها الأكاديميون والمهنيون القائمون على التعليم بعين الاعتبار. لذلك تقدم هذه الدراسة تقييمًا شاملاً لبرنامج الميتافيرس كأداة ومصدر تعليمي في مجالات التعليم العالى للسياحة والضيافة من وجهة نظر أعضاء هيئة التدريس. من خلال المنهج الوصفي، تقوم هذه الدراسة بتقييم الجوانب الفنية والآفاق والتحديات وتصورات أعضاء هيئة التدريس حول تكنولوجيا الميتافيرس وفائدته التعليمية. وقد تم استكمال الاستبيان من قبل 407 من الأساتذة الجامعيين والأساتذة من مختلف الجنسين والأعمار والمستويات الأكاديمية والخبرة التدريسية الذين يعملون في عدد من الكليات والمعاهد العليا في مصر.

تم تحليل إجاباتهم بشكل وصفي، وتم استخدام برنامج الـ SPSS لدراسة التباينات في أحكامهم لمختلف العوامل التي تم دراستها. تم التوصل لعدد من الفجوات حسب مجال الدراسة وسنوات الخبرة في التدريس في تقييمات المشاركين واستكشافها ضمن النتائج الرئيسية. توصلت الدراسة أيضا إلى تقديم تصور بشكل مركز حول العناصر التقنية والإمكانات المستقبلية وتحديات إستخدام تكنولوجيا الميتافيرس فى التعليم العالى السياحى والفندقى.

الكلمات الدالة

الميتافيرس
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النواحى التقنية
الخبرة الأكاديمية
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