



مجلة البحوث المالية والتجارية
المجلد (23) – العدد الثالث – يوليو 2022



**Measuring Technology Acceptance Model to use
Metaverse Technology in Egypt**

Dr. Lamiaa Mostafa

Business Information System Department

College of Management and Technology

Arab Academy for Science and Technology and

Maritime Transport, Alexandria, Egypt.

Lamiaa.mostafa31@gmail.com

Lamiaa.mostafa31@aast.com

رابط المجلة: <https://jsst.journals.ekb.eg/>



Abstract

Metaverse technology is an important topic that interests social media users. Metaverse is a virtual world that allows users to perform any activity that they would not be able to perform in real life, such as working different jobs, traveling to different countries, visiting virtual locations and meeting famous people. This research paper aims to identify the factors affecting Egyptian users of new technologies such as Metaverse. Technology acceptance model (TAM) is used to measure user intention to accept and use a technology. Different versions of TAM were designed by various authors including: Extended Technology Acceptance Model (ETAM) and TAM 3. The factors selected in this research paper are Perceived usefulness, Perceived ease of use, Social Influence, Security, Technology availability and Trust. A questionnaire was designed and 661 Facebook users answered questionnaire. The results demonstrate that Perceived usefulness and Perceived ease, Social Influence, Security, Technology Availability and Trust have a, positive significant effect on User Intention to Use such technology.

Keywords:

Technology Acceptance Model, Egypt, TAM, Metaverse Technology

ملخص:

تعد تكنولوجيا ميتافيرس موضوعًا هامًا لمقنني وسائل التواصل الاجتماعية. إنه عالم افتراضي حيث يتيح للمستخدمين تادية أي نشاط لا يمكنهم القيام به في الواقع؛ مثل العمل في وظائف مختلفة، السفر إلى دول مختلفة، زيارة أماكن افتراضية ومقابلة المشاهير. يهدف هذا البحث إلى تحديد العوامل التي تؤثر على المصريين أثناء اقتناء تكنولوجيات حديثة مثل ميتافيرس. يُستعمل نموذج قبول التكنولوجيا لقياس مدى تقبل المستخدم واستعماله للتكنولوجيا. صمم العديد من المؤلفين نسخ متعددة من نموذج قبول التكنولوجيا، بما يتضمن نموذج قبول التكنولوجيا الموسع ونموذج قبول التكنولوجيا 3. إن العوامل المحددة لهذا البحث هي الفائدة المتصورة للمستخدم وسهولة الاستخدام المتصورة والتأثير الاجتماعي والأمن وتوافر التكنولوجيا والثقة. صمم استبيان لهذا البحث وأجاب 661 من مستخدمي فيسبوك على الاستبيان. توضح النتائج أن الفائدة المتصورة للمستخدم وسهولة الاستخدام المتصورة والتأثير الاجتماعي والأمن وتوافر التكنولوجيا والثقة لها تأثير إيجابي على نية المستخدم على اقتناء هذه التكنولوجيا.

الكلمات المفتاحية:

نموذج قبول التكنولوجيا، مصر، TAM، ميتافيرس



1- Introduction

This study addresses the use and adoption of the Metaverse Technology in Egypt. Metaverse is a virtual world users can enter to perform activities that they are not able to perform in real life. In 2003, Linden Lab a 3D virtual reality service called Second Life. Virtual reality includes the following fields: virtual reality (VR), augmented Reality (AR) and Mixed Reality (MR). All of these can be implemented in an on-face-to-face and on-demand manner. Metaverse gained significant attention after the spread of Covid-19, becoming part of the daily life of people. (Lee, 2021; Kyung-wha et al., 2021; Sunkyung & Yoon, 2021).

The Metaverse has become an important communication channel. However; there is little research on it, which necessitates further academic examinations. Previous studies used the Extended Technology Acceptance Model (ETAM) is a model that measures the acceptance level of metaverse usage by defining the factors affecting Metaverse usage such as content quality and personal Perceived playfulness, social influence and self-efficacy. The purpose of the study is to investigate the factors affecting the usage of the Metaverse technology in Egypt.

This paper contains seven major sections. Section two briefly described the literature review that includes Metaverse technology and TAM. In section three, description of the research model and research hypotheses. Section four describes the research methodology. Section five defines the statistical analysis details. Lastly, section six conclusion and section seven focuses on implications of this research and future work.

2- Literature Review

Metaverse is a combination of Meta meaning virtual and transcendence. It is a compound word of Universe, which means state. Taking this logic in mind, the Metaverse consists of a virtual world and augmented reality, divided into two worlds; the Mirror World and Virtual World. According to ASF(2021), Activities similar to social, economic and cultural activities can be conducted in the Metaverse (Su, 2008; Han, 2021). Examples of Virtual worlds in a metaverse platform include such as Geppetto,Gathertown, Fortnite, Roblox,Minercraft, ZEPETO (Su, 2008).

Developing and marketing women's items such as showcases and fashion isthefocus of many major technological companies such as Facebook and Cyber world. The Metaverse has become a medium that allows such companies to market their products (Kyung-wha et al., 2021;Su,2008). Lee (2021a) stated that online information sharing and communication would be replaced with communication via the Metaverse.

Davis et al. (1989) proposed the Technology Acceptance Model to predict the acceptance of innovative technologies. The model presents two determinants, namely perceived ease of use and perceived usefulness, regarding user intentions to use a given technology. Perceived usefulness measures the individual's certainty that a given technology would enhance his/her performance. On the other hand, Perceived ease of use refers to individual's ability such technology without any crippling difficulties. However, further research on TAM shows that is not efficient in measuring acceptance levels in other fields(Venkatेश& Davis,2000;Venkatेश &Bala,2008; Choi et al.,



2017). For this reason, an Extended Technology Acceptance Model (ETAM) was proposed. This model includes several external variables, which allow for a more accurate measurement(Choi et al., 2017).

Venkatesh et al. (2003) proposed an extended model of TAM that includes social influence, gender, age, or effort expectancy. Venkatesh and Bala (2008) proposed TAM 3,thatincludestrust and perceived risk on system use. More recently, Dutot (2014) integrated security and technology availability to TAM3,applying social media per generation. Dutot (2015) repeated the test of applying TAM3 but this time on the Near Field Communication (NFC) adoption.

Mussa (2022) investigate the effect of Augmented Reality (AR) in creating customer experience and purchase intention from the online shopper's perspective in Egypt in times of COVID-19. 384 responses ,she concluded that there is a significant relationship between AR, customer experience, and purchase intention. There is a high consumer purchase intention through AR and customer experience.

Fussell and Truong (2022), determined the factors that influence student's intention to use VR in a dynamic learning environment using ETAM. Confirmatory factor analysis (CFA) and structural equation modeling (SEM) processes were employed.

Photiadis and Papa (2022), determined the self-disclosure behavior through Second Life while understanding the progression of enhancing online well-being. Self-disclosure behavior is very important in social media platforms. They concluded that HCI and media psychology affect online social environments.

Al-Oudat and Altamimi(2022) , investigated the factors affecting the

adoption of VR in Jordan higher educational institutes. Extended the technology Acceptance Model (TAM) with four additional factors including: perceived facilitating condition, perceived effort expectancy, and perceived compatibility. Dataset collected from 503 Jordanian students, they concluded that perceived facilitating condition, perceived effort expectancy, and perceived compatibility significantly affected the intention to use VR.

Alsharhan et al. (2022), aims to understand the Middle East users perspectives on the major factors that affect their decision to adopt Augmented Reality AR smart glasses (ARSG). 584 respondents filled elements in the questionnaire that represent eleven hypotheses. They concluded that indicate that Pre-Market Knowledge, Image, Own privacy and Technology innovativeness show the significant impact on ARSG adoption. In addition, the results indicate that three of the social and technological factors include Perceived Ease of use, Perceived usefulness and others privacy show the significant effect on ARSG adoption.

Bodendorf, and Ranke (2022) evaluate the acceptance of an implemented deep learning-based cost estimation system by the basic theories of the Technology Acceptance Model. The results from 50 questionnaires and qualitative participant observations show further development potentials of intelligent cost estimation systems in terms of perceived usefulness and user friendliness.

This study investigates the factors affecting the usage of the Metaverse technology in Egypt. Different variables are used, including Perceived Ease of Use and Perceived Usefulness (TAM), Social Influence from



(ETAM) and Trust, Security and Technology Availability (TAM3).

3- Model conceptualization and hypotheses development

The following subsections discuss the factors affecting user's intentions to use the Metaverse technology and support of previous researchers that studied these factors. Table (1) shows the variables in the research literature.

Table 1: Research Model Variables and the previous researchers

Research\Variable	Country and field	Perceived Ease of Use	Perceived Trust	Social Interaction	Security	Technology Availability	Trust	Intention to use	Self Efficacy	Performance expectancy	Effort Expectancy
Alsharhan et al., 2022	UAE, AR	X	X	X	X	X	X	X			
Mussa, 2022	Egypt, retail							X			
Photiadis and Papa, 2022	Cyprus, Second life			X				X			
Lee, 2021	Metaverse, Korea	X						X			X
Davis, et al., 1989	Computer, USA	X	X					X			
Dutot, 2015	France, NFC				X		X	X			
Dutot, 2014	France, Social Media				X		X	X			
Henningson et al., 2020	Denmark, Retail	X	X					X			
Al-Oudat and Altamimi (2022)	Jordan, VR	X	X	X		X		X			
Bodendorf, and Franke (2022)	Germany, Automotive	X	X					X			
Fussell and Truong, 2022	USA, VR	X	X						X	X	X
Count		8	6	3	3	2	3	5	1	1	2

Based on the count of the variables, the researcher noticed that Perceived usefulness, Perceived ease of use, Social Influence, Security, Technology availability and Trust are the most used variables on the literature, for a reason the following variables are selected:

3.1 Perceived Ease of Use

Perceived ease of use focuses on user's attitude towards a given technology and how much the user perceives that said technology is easy to use (Fussell and Truong,2022; Al-Oudat and Altamimi ,2022; Al-Oudat and Altamimi, 2022;Davis et al., 1989;Venkatesh&Bala,2008; Choi et al., 2017; Kyo& Han, 2019; Lee, 2021).

H1. Perceived Ease of Use has a significant effect on user Intention to use

3.2 Perceived Usefulness

Perceived usefulness is the degree to which individuals perceive that using a given technology may improve their performance(Henningsson et al., 2020).Perceived usefulness can be defined as the quality of life when users adopt a given technology [Fussell and Truong,2022;Al-Oudat and Altamimi,2022;Alsharhan et al. 2022;Henningsson et al., 2020; Lee, 2021].

H2. Perceived Usefulness has a significant effect on Intention to use

3.3 Social Influence

Social influence is the opinion of an individual about the technology. Opinions often circulate and affect other peoples opinion as well [Alsharhan et al., 2022].It has an effect on intention to use a given technology continuously (Photiadis and Papa ,2022;Al-Oudat and Altamimi(2022).

H3. Social influence has a significant effect on Intention to use



3.4 Security

Users may face problems like risk, bugs and hackers while using technology. Security concerns arise from the perspective of users who wish to protect their personal financial information. Security standards and rules allow users to perform their operations and adopt technologies safely (Alsharhan et al., 2022; Wang et al., 2003; Dutot, 2015).

Due to the lack of physical contact, security and trust are key factors in individual's decision to adopt technologies (Radomir&Nistor, 2013; Dutot, 2014).

H4. Security has a significant effect on Intention to use

3.5 Technology Availability

Al-Oudat and Altamimi(2022) stated that individual opinions are affected by system infrastructures, whether they are strong or weak. When the infrastructure is strong, the technology becomes available all the time.

The better and stronger a given infrastructure is, the more user would adopt a technology that uses said infrastructure (Alsharhan et al., 2022).

H5. Technology availability has a significant effect on Intention to use

3.6 Trust

Trust affects user intention to adopt technology and it is a cornerstone in

Developing-commerce and social media (Alsharhan et al., 2022; Dutot, 2014). Organizations exert great efforts to build long-term relationships with customers by increasing trust level (Alsharhan et al., 2022; Kim, et al., 2008).

Trust has considered as a behavioral component which focus on individuals intention to use reflects the security level that he has towards the technology. There are several studies that examined trust in relation to intention to use a given technology (Al-Oudat and Altamimi ,2022; Liu

et al., 2004; Dutot, 2014; Dutot ,2015).

H6.Trust has a significant effect on Intention to use

3.7 Intention to Use

Applications owners are interested the factors that affect a users decision to use a given application or technology (Mussa, 2022;Henningsson et al., 2020;Al-Oudat and Altamimi ,2022; Alsharhan et al., 2022; Bodendorf&Franke, 2022; Kabir et al., 2022; Katebi et al.,2022; Metallo et al., 2022).;Koh, 2018;Dutot, 2015).

4- Research Methodology

4.1 Sampling and Data collection

The existence of new technology raises the question of applying this technology in Egypt. This study uses quantitative research methods aims to study the factors affecting the usage of the Metaverse in Egypt. A questionnaire was employed via Google form as a method of data collection. The target population is customers that use social media, Facebook in particular.

The type of the research sample is stratified sampling, which is one of the sampling methods in social media data collection (Chaudhuri&Stenger, 2005). The stratified sample is the participants who are accessible to the author since the other has an academic background, it is noticed that the occupation of the participants either in the academic field or students

The questionnaire was created in English using Google Forms. 661 participants on Facebook were invited to participate in this questionnaire on the condition of anonymity. Data collection lasted 30 days.

The questionnaire involves all variables understudy and demographic information. The questionnaire consisted of 25 questions and the Likert-type five level scales questions. The options for each question use points



from 1 to 5 to represent extremely disagree, disagree, neutral, agree, and extremely agree, respectively.

Two statistical software, SPSS25.0 and AMOS23.0, were used to measure the relationships of the proposed models variables. The tests are descriptive analysis and reliability test. Furthermore, the structural equation model (SEM) was established and the confirmatory factor analysis and hypothesis verification analysis were conducted.

4.2 Measures

The questionnaire consisted of two parts. The first part consisted of some questions about the demographic characteristics of the respondents including Gender, age in year and occupation. Second part consisted of items that aimed to assess the theoretical constructs of the study. To assess the Perceived ease of use ,five items were adapted from (Lee,2021; Henningson et al., 2020; Alsharhan et al., 2022; Bodendorf, and Franke, 2022).To assess the perceived usefulness was measured using five items adapted from Venkatesh& Davis (1996). Additionally, perceived ease of use was measured using four items adapted from (Al-Oudat and Altamimi, 2022). On the other hand, social influence was assessed using two items adapted from (Alsharhan et al., 2022). Security was measured using two items from (Alsharhan et al., 2022). Technology availability was assessed by using four items adapted from (Al-Oudat and Altamimi, 2022). Finally, trust was measured using three items adapted from (Alsharhan et al., 2022). The questionnaire depended on a five-point Likert scale ranging from strongly disagree to strongly agree to measure the studies constructs. The items of the questionnaire are displayed in Appendix A.

5- Discuss of Results

This section tackles the description and statistical analysis of the results based on the participant responses. The analysis is a descriptive one and entails a reliability test. The structural equation model (SEM) was established. To add, the Exploratory Factor Analysis and the Confirmatory Factor Analysis are developed.

5.1 Descriptive Analysis of the Sample

The description of the study sample, whose opinions were surveyed, depends on demographic variables, which are age and gender and occupation. Table (2) shows the statistical description of the sample participants.

Table 2 :The distribution of the sample according to personal data(n=661)

Personal Data	Number	Percentage
Gender		
Male	345	52.1%
Female	316	47.8%
Age in Year		
15- 25 years	131	19.8%
26 and 45 years	267	40.3%
46 and 60 years old	243	36.7%
Older than 60	20	3.7%
Occupation		
Academic	561	84.8%
Student	100	15.1%
Total	661	--

5.2 Reliability Analysis

Twenty-five items are relevant to seven constructs of the research model. Those items are adopted from existing literature and refined based for the purposes of this study. Cronbachs alpha coefficient is employed to determine the reliability of the questionnaire. Based on Kannan& Tan (2015), Cronbachs alpha coefficient is equal or greater than 0.7, which is similar to constructs constraints. All items in the questionnaire are measured using a five-point Likert scale ranging from (1) referring strongly disagree to (5) referring to strongly agree as shown in Table 3.

Table 3: Reliability Analysis

#	Construct	Cronbachs alpha	Number of Items
1	Perceived ease of use	0.78	5



2	Perceived usefulness	0.90	4
3	Social Influence	0.87	2
4	Security	0.97	5
5	Technology availability	0.91	4
6	Trust	0.92	3
7	Intention to Use	0.91	2
	Total		25

5.3 Exploratory Factor Analysis (EFA)

Six assumptions are used to assist the =exploratory factor (Hosain et al., 2021).Kaisers–Mayesolk in measurements are greater than 0.5; that is the minimum value for each factor. Taking into account the sample size, the factor loading becomes 0.50. After examining the pattern matrix of EFA, all items have factor loadings greater than 0.50 as demonstrated in Table 4.

Table 4: Exploratory Factor Analysis

Latent Variable	Item	Factor	Construct	Average
Perceived ease of use	PE1	0.81	0.811	0.882
	PE2	0.68		
	PE3	0.871		
	PE4	0.871		
	PE5	0.861		
Perceived usefulness	PE1	0.918	0.981	0.811
	PE2	0.721		
	PE3	0.829		
	PE4	0.975		
Social Influence	SI1	0.881	0.898	0.895
	S22	0.721		
Security	S1	0.808	0.843	0.901
	S2	0.929		
	S3	0.819		
	S4	0.831		
	S5	0.931		
Technology availability	TA1	0.754	0.771	0.882
	TA2	0.719		
	TA3	0.781		

	TA4	0.779		
Trust	T1	0.932	0.896	0.767
	T2	0.786		
	T3	0.778		
Intention to Use	IU1	0.817	0.991	0.901
	IU2	0.887		

5.4 Confirmatory Factor Analysis

Confirmatory factor analysis (CFA) is a statistical technique used to verify the factor structure of the observed variables. The relative Chi-Square for this model is 3.507, which is smaller than 5.0 as recommended by Marsh & Hocevar (1985). The comparative fit index (CFI) is 0.978 that greater than threshold as Bentler (1990) puts it. The root mean residual (RMR) value was found to be 0.024, which is less than 0.08 as Hu & Bentler (1998) define it. Goodness of fit index (GFI) of the model is 0.942, which is more than the recommended value of 0.90 that Joreskog & Sorbom (1993) suggest. The adjusted goodness of fit index (AGFI) was found to be 0.891, which matches the threshold that Anderson & Gerbing (1984) recommend. The root mean square error of approximation (RMSEA) is 0.063, which is also less than the suggested fit of Browne & Cudeck (1993). Finally, the standardized means square residual (SRMR) is 0.051, which is less than 0.08 as Browne & Cudeck (1993) put it. Table 5 defines the confirmatory factor analysis model fit.



Table 5: Confirmatory Factor Analysis Model Fit

Model Fitting Index	Value	Level of Acceptance
Chi-square/df	3.507	<5.0
Comparative fit index (CFI)	0.978	>0.90
Root mean residual (RMR)	0.024	<0.08
Goodness of fit index (GFI)	0.942	>0.90
Adjusted goodness of fit index (AGFI)	0.891	>0.85
Root mean square error of approximation (RMSEA)	0.063	<0.08
Standardized means square residual (SRMR)	0.051	<0.08

Structural equation modeling focuses on identifying the significant relationships among ten different factors that affect the intention to use the Metaverse technology. All variables have positive impacts. On the other hand, Perceived usefulness, Social Influence, Security, Technology availability, and Trust have significant impacts with the following values respectively: 0.897, 0.921, 0.692, 0.871.

6- Conclusion

The research study in this article aimed to examine the factors that affect user to use a new technology like metaverse. The following sections provide a discussion of the main findings.

6.1 H1. Perceived Ease of Use has a significant effect on user Intention to use

This hypothesis was supported. The findings indicated that perceived usefulness of the using metaverse is a strong indicator of user's intention to continuously use them in the future. These findings have been

supported in the extant metaverse literature. For instance, Alsharhan et al. (2022) found that perceived usefulness is a major determinant in the usage of virtual reality applications. Similarly, Fussell and Truong (2022) and Lee (2021) argued that consumer's perceived usefulness of the augmented reality significantly affects their purchase intention. Our findings underscore the importance of perceived usefulness.

6.2 H2. Perceived usefulness has a significant effect on user Intention to use

This hypothesis was supported. Our results showed that use intention to use metaverse largely depends on the perceived usefulness. The findings are similar to the findings of the (Al-Oudat and Altamimi, 2022; Fussell and Truong, 2022; Bodendorf, and Franke, 2022) which showed that usefulness is an important element in creating users intention to continuously use the technology

6.3 H3. Social influence has a significant effect on user Intention to use

This hypothesis was supported. Our findings showed that social influence is an important element that affects the user's intention to use metaverse technology. For instance, Photiadis and Papa, 2022; Alsharhan et al., 2022; Al-Oudat and Altamimi, 2022, reached the same findings when examined users intention to use virtual reality.

6.4 H4. Security has a significant effect on user Intention to use

Our findings showed that security is an important factor that affects user's attitudes and continuous intention to use the technology. These findings are similar to the findings of the Alsharhan et al. (2022) which showed that users focus on security issue when buying smart glasses to be used in Augmented. In addition, our findings are consistent with (Dutot, 2014; Dutot, 2015) who argued that intention to use NFC is



affected by the level of security. People are afraid to use a new technology before measuring in ensuring that security and trust level are accepted. Thus, based on our results and the support in the extant literature, we recommend that the developers of metaverse and virtual reality application should continuously monitor the security of the user's data.

6.5 H5. Technology availability has a significant effect on user Intention to use

The hypothesis was supported. Our findings confirmed the significant relationship between technology availability and intention to use the metaverse technology. These findings are similar to the findings of Al-Oudat and Altamimi(2022) which empirically proved the relationship between technology availability and intention to use the metaverse technology. Thus, we strongly recommend to the metaverse technology providers to ensure the availability of the technology in different platforms and devices. In the same context , Alsharhan et al. (2022) insists the important of the technology availability while using smart glasses in augmented reality.

6.6 H6. Trust has a significant effect on user Intention to use

This hypothesis was supported. The findings indicated that users trust is an important factor in intention to use the metaverse technology. These findings have been supported in the previous literature. For instance, Al-Oudat and Altamimi (2022) focused on virtual reality in education and the trust level was very important in student case. In addition, Alsharhan et al. (2022) found that trust is using virtual reality smart glasses are very essential. Thus, based on these findings, the metaverse technology providers that have succeeded to build a strong trust with their customers should rely on this trust in increase the usage of the intention to use .

7- Implications and Future work

7.1 Academic Implication

The study aims to understand the factors that affect the usage of theme averse in Egypt. First, trust and security are key in getting users to adopt a given technology. Moreover, user decisions are affected by the social influencers, including people around him/her. Therefore, companies providing technology should provide a good user experience to motivate users to adopt said technology.

Even if the user may not have a technological background, the infrastructure and the availability of the technology can affect his/her decision to use it or abstain from it.

Lastly, the combination of TAM, ETAM and TAM3 can provide a number of conclusions of utility (Kyung-wha, et al., 2021; Lee, 2021; Sunkyung&Yoon, 2021; Dutat, 2014; Dutat, 2015).

7.2 Practical Implication

This research provides vital insights into metaverse technology usage. Research model is created from factors that are extracted from previous research such as Perceived usefulness, Perceived ease of use, Social Influence, Security, Technology availability and Trust. Based on a sample of 661 respondents, the findings revealed the importance of the selected variables on intention to use decision.

Social media is a powerful tool for the communication between users and new technology providers. Users will use new technology if the usefulness, trust, security and people around them use the same technology. If the new technology not available in different platforms and devices, this can affect negatively in the usage of the technology. After the covid-19 pandemic, many users are staying at home and they want to try a new technology. New technology providers must focuses on variables that affect the user intention to use such as Perceived usefulness, Perceived ease of use, Social Influence, Security,



Technology availability and Trust.

7.3 Limitation and Future Work

One of the limitations of this study is that the data used is restricted to 661 Egyptian participants. Different nations have cultures and traditions that affect their intention to use a new technology, comparative study should provide very interesting results such as testing the variables on European countries.

Future research can examine user's intention to use new technology in different countries like Gulf countries that have a big experience in new technologies. Quantitative approach in the research is limited to the number of collecting data through an online questionnaire; future research can adopt qualitative research such as interviews to provide more understanding of the intention to new technologies.

References

- Acceleration Studies Foundation -ASF (2021). Metaverse Roadmap-Pathway to the 3D Web, <http://www.metaverseroadmap.org>. Last accessed 15 Jan 2021.**
- AL-AI-,M. and Altamimia,A. (2022). Factors influencing behavior intentions to use virtual reality in education, International Journal of Data and Network Science.**
- Alsharhan, A., Salloum, S., &Aburayya, A. (2022). Technology acceptance drivers for AR smart glasses in the middle east: A quantitative study. International Journal of Data and Network Science, 6(1), 193-208.**
- Bentler, P.(1990). Comparative fit indexes in structural models, Psychological Bulletin, Vol. 107 No. 2, pp. 238-246.**
- Bodendorf, F., &Franke, J. (2022). Application of the Technology Acceptance Model to an Intelligent Cost Estimation System: An Empirical Study in the Automotive Industry. Proceedings of the 55th Hawaii International Conference on System Sciences. <https://doi.org/10.24251/hicss.2022.144>**
- Browne, M. and Cudeck, R.(1993). Alternative ways of assessing model fit, Sage Focuses Editions, Vol. 154, pp. 126-136.**
- Chaudhuri,A. &Stenger,H.(2005). Survey Sampling Theory and Methods. Taylor and Francis Group, LLC.**
- Choi,W., Kang,D., Choi, S.(2017). Factors Affecting Device Use Intention and Purchase Intention Research: Focusing on the Extended Integrated Technology Acceptance Model (UTAUT2), Information Society and Media, Vol. 18, No. 3, pp.173-208.**
- Davis, F. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. MIS Quarterly, 13(3), 319–340.**
- Davis,F., Bagozzi, R. &Warshaw, P.(1989).User acceptance of computer technology: a comparison of two theoretical models, Management Science, Vol.35, No.8, pp.982-1003, 1989.**



- Dutot, V. (2014). Adoption of social media using technology acceptance model: The generational effect. *International Journal of Technology and Human Interaction*,10(4), 18–35.
- Dutot,V.(2015).Factors influencing Near Field Communication (NFC) adoption: An extended TAM approach, *Journal of High Technology Management Research* 26 (2015) 45–57.
- Han,S.(2021). Metaverse Platform Status and Prospect, *Future HOrizon*, pp.19-24, 2021.
- Hee-Dong, Y. & Young, C. (2001).Social Influence on Information System Adoption Impact: Technology Acceptance Model Model), *Management Informatics Research*, Vol. 11, No. 3, pp.165-184.
- Hosain,M.,Ameen M., Mustafi,A, Parvin,T.(2021). Factors affecting the employability of private university graduates: an exploratory study on Bangladeshi employers. *Research Review*.
- Hu, L. and Bentler, P. (1998). Fit indices in covariance structure modeling: sensitivity to under parameterized model misspecification. *Psychological Methods*, Vol. 3 No. 4, pp. 424-453.
- Henningsson, S., Vaidyanathan, N., Archibald, P., and Lohse, M., (2020) Augmented Reality and Customer Experiences in Retail: A Case Study. *AMCIS 2020 Proceedings*. 18. Available online: https://aisel.aisnet.org/amcis2020/strategic_uses_it/strategic_uses_it/18 (accessed on 10 January 2021)
- Joreskog, K. and Sorbom, D. (1993). *Lisrel 8: Users Reference Guide*. Scientific Software International, IL.
- Kannan, V., and Tan, K. (2015). Just in time, total quality management, and supply chainmanagement: Understanding their linkages and impact on business performance. *Omega*,33(2), 153–162.
- Kim, D., Ferrin, D., &RaghavRao, H. (2008). A trust based consumer decision making model in electronic commerce: The role of trust, perceived risk, and their antecedents. *Decision Support Systems*, 44, 544–564.
- Koh,G.(2018). Intention to Continue Use of Virtual Reality Chat Service A Study on Factors Affecting Affect: An Extended Technology Acceptance Model

Focusing on Sense of Reality and Personal Characteristics, Chung-Ang University Newspaper Graduate School of Broadcasting, Masters Thesis.

Kyo,Y., &Han,D.(2019).Virtual Reality Using Technology Acceptance Model. (Virtual Reality: VR) Research on content reuse intention Old, Journal of the Korean Game Society, Vol. 19, No. 5, pp.115-132.

Kyung-wha,H., Ju-yeon,J., Oh-byeong,K. (2021). Virtual World-Type Metaverse Continuing Broadcasting, A Study on Factors Affecting Inquiry Level, Korea Management Information Society Spring Integration Conference, pp.43-46, 2021.

Lee,B.(2021). The Metaverse World and Our Future, Journal of the Korean Contents Association, Vol. 19, No. 2, pp.13-17, 2021.

Lee,J. (2021a). The Current State and Future of Metaverse, KISO Journal, No. 43 Vol, pp.17-22.

Liu, C., Marchewka, J.T., Lu, J., & Yu, C. (2004). Beyond concern: A privacy–trust–behavioral intention model of electronic commerce. Information & Management, 42, 127–142.

Marsh, H. &Hocevar, D.(1985). Application of confirmatory factor analysis to the study of selfconcept: first-and higher order factor models and their invariance across groups, PsychologicalBulletin, Vol. 97 No. 3, pp. 562-582, 1985.

AL-Al-,M. and Altamimia,A. (2022). Factors influencing behavior intentions to use virtual reality in education, International Journal of Data and Network Science.

Mussa,M (2022). The Role of Customer Experience in the Relationship between Augmented Reality and Purchase Intention in Times of COVID-19: An Applied Study on the Online Retail Sector in Egypt. Journal of Financial and Commercial Studies, Vol 1.

Photiadis,T. &Papa,V. (2022). Whats up with uremotions?Untangling emotional user experience on Second Life and Facebook, Behaviour& Information Technology, Behaviour& Information Technology.



Radomir, L., &Nistor, V.(2013). An application of technology acceptance model to internet banking services. Proceedings of the 6th international conference marketing — from information to decision (pp. 251–266).

Rupanjali, N., Bhal, K., &Kapoor, G. (2013). Factors influencing IT adoption by bank employees: An extended TAMApproach. Vikalpa: The Journal of Decision Makers,38(4), 83–96.

Sang-geun,L. (2005). The technology acceptance model (TAM) and the theory of planned behavior (TPB) based on the empirical acceptance of mobile technology Research, Information System Review, Vol. 7, No. 2, pp.61-84.

Schierz, S.W. (2010). Understanding consumer acceptance of mobile payment services: An empirical analysis. Electronic Commerce Research and Applications, 9(3), 209–216.

Suh,S.(2008). Metaverse Development Trend and Development Prospect Study, Korea HCI Society Conference, pp.1450-1457, 2008.

Sunkyung,P. and Yoon,K. (2021). A Study on the intentions of early users of metaverse platforms using the Technology Acceptance Model.Journal of Digital Convergence ,Volume 19 Issue 10,Pages.275-285

Tarafdar, M., &Vaidya, S. (2006). Challenges in the adoption of e-commerce technologies in India: The role of organizational factors. International Journal of Information Management, 26(6), 428–441.

Venkatesh, V., Morris, M., Davis, G., & Davis, F. (2003). User acceptance of information technology: Toward a unified view. MIS Quarterly, 27(3), 425–478.

Venkatesh,V. &Bala,H.(2008). Technology acceptance model 3 and a research agenda on intervention, Decision Sciences, Vol.39, No.2, pp.273-315.

Venkatesh,V.,&Davis,F.(2000). A theoretical extension of the technology acceptance model: Four longitudinal field studies, Management Science, Vol.46, No.2, pp.186-204.

Wang, Y., Wang, Y., Lin, H., & Tang, T. (2003). Determinants of user acceptance of Internet banking: An empirical study. International Journal of Service Industry Management, 14(5), 501–519.

Appendix A. Questionnaire

Latent Variable	Item	
Perceived ease of use	PE1	Learning to use Metaverse Technology is easy
	PE2	Using Metaverse Technology is clear and
	PE3	I consider that Metaverse Technology is too technical
	PE4	It is easy to become skillful at using Metaverse
	PE5	Overall, Metaverse Technology is easy to use
Perceived usefulness	PE1	Using Metaverse Technology can make one productive
	PE2	Using Metaverse Technology can make thing easier
	PE3	I consider that Metaverse Technology will allow new
	PE4	I know some future applications of Metaverse
Social Influence	SI1	People who influence my behavior would think that I
	SI2	People who are important to me would think that I
Security	S1	I consider that using Metaverse Technology is not
	S2	I consider that using a Metaverse technology is not
	S3	I am worried that information transferred by Metaverse Technology may be intercepted by other
	S4	I consider that using Metaverse Technology is not
	S5	I consider that every Metaverse technology can be
Technology availability	TA1	I consider that mobile phone are not equipped with
	TA2	I consider that Metaverse technology is available
	TA3	I consider that they are not enough opportunities for
	TA4	I consider that the use of Metaverse Technology is mainly based on the availability of the technology everywhere
Trust	T1	The Metaverse technology policy on how it would use any personal information about me makes me feel that the technology is
	T2	The Metaverse technology policy with respect to how they will share my personal information with third parties about me makes
	T3	The ability to access my personal information to ensure that it is accurate and complete makes me feel that Metaverse
Intention to Use	IU1	I have the intention to use Metaverse Technology
	IU2	I want to use Metaverse Technology in the future