User Acceptance of Metaverse: Insights from Technology Acceptance Model (TAM) and Planned Behavior Theory (PBT)

Yavuz Toraman
Nisantasi University, Turkey | e-mail: yavuz.toraman@nisantasi.edu.tr

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Abstract

Many innovations have entered human life with the rapid development of technology and its widespread use. The adaptation process of people to these innovations is very important in terms of efficiency and sustainability. In this research, the factors affecting the acceptance of metaverse technology, which is one of the most important innovations encountered in the last period, were examined. In this context, metaverse technology was analyzed with structural equation modeling (SEM) within the scope of PBT and TAM. For analysis, the Smart PLS 3 software was used. According to the hypothesis results, a significant positive correlation was found between PU, PEOU, AT, and Intention. In addition, a significant positive correlation was found between SN and AT, and PBC. It has been analyzed that the factors affecting the metaverse usage intention of the individuals participating in the research are parallel to the literature. When we assume that the usage area of metaverse technology will become widespread in the future, it is very important to expand the studies in this field in detail.

Keywords: Metaverse, Blockchain, E-Commerce, Technology Acceptance Model (TAM), Planned Behavior Theory (PBT)

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I. Introduction

The technological development process has been continuing at an increasing rate for many years. Although the spread of technology in the 2000s encountered some resistance, digital devices, products and services are used in many areas in the current process. In this context, blockchain technology can be given as an example of such technology. Blockchain technology proposes a decentralized system with a distributed central structure.

Blockchain technology with a decentralized system allows fast transactions. On the other hand, irreversibly recorded transactions make a significant contribution to data security. Trust and speed-based blockchain technology first appeared in the financial field in 2009 in Nakamoto's article (Nakamoto, 2008). In the following process, blockchain has been used in different fields as Technology. Metaverse technology, on the other hand, enables the visuality to reach its users in 3D. At the same time, since it uses blockchain technology, people will be able to interact without any central authority. The most important feature of Metaverse technology in today's conditions is that objects can be displayed in real sizes in the virtual environment utilizing various technological wearable technologies (Kanematsu et al., 2014).

With the COVID-19 epidemic, the digitalization of many products and services as well as the use of digital channels have been observed more frequently than before. Also, the popularity of technologies that can host other digital products and services such as metaverse have increased. In this context, the analysis of people's attitudes, intentions, and behaviors towards metaverse technology has become an important issue.

In the present study are examined the attitudes and intentions of potential users of metaverse technology, which will occupy a wider place in human life in the future. It is a known fact that human behavior depends on certain causes. In the present study, people's attitudes and intentions towards the relevant technology were investigated through two theories that are frequently used in the literature. Technology Acceptance Model (TAM) and Planned Behavior Theory (PBT), which are frequently used in the adaptation process of technological innovations, were utilized in the current research to analyze the factors affecting the intention to use metaverse technology. However, due to the low number of active users of metaverse systems, the research focused on the intention to use rather than active use (Ajzen, 1991; Davis, 1989; Tan & Sundarakani, 2020; Berki-Kiss & Menrad, 2022).

II. Metaverse

Metaverse is one of the most important reflections of the developing technology today. There are different interpretations of Metaverse technology. A metaverse is a virtual environment created by combining virtual reality and augmented reality (Cho & Kim, 2017). Metaverse is defined as a new generation world built on blockchain (Dowling et. al., 2021). The metaverse technology is also described as a virtual world, where individuals interact with each other using the avatars they created (Duan et. al. 2021, Collins, 2021). The metaverse is a virtual reality that exists beyond reality (Kye, et. al., 2021). The metaverse is a digital space created within the physical world where millions of people interact (Siyaev, A. & Jo 2021).

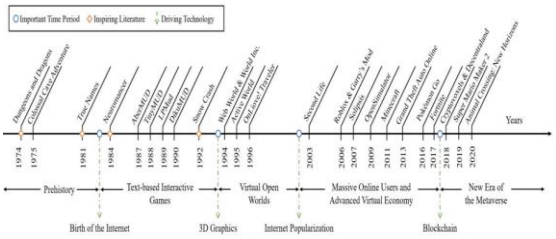

Figure 1. Timeline of the Metaverse Development

Source: (Duan et al., 2021)

Although it first emerged as a utopia in a science fiction novel, the metaverse is presented to users as a reflection of real life with the developing technological infrastructure and blockchain technology. But the absence of a single metaverse brings confusion. Although many metaverses have emerged in the future, as in Bitcoin, one of them will stand out (Kye, et. al., 2021). The metaverse ecosystem, which will be most in demand by people, will be the common meeting point in the future.

Metaverse is the real world transferred to electronic environment. A feeling of spending time in the real world can be given by means of various wearable technologies. This situation leads to an increase in the range of activities that can be carried out in the electronic environment.

Metaverse is used in different fields as a new technology. For example health, finance, banking, social platforms and virtual stores created by companies, museums, exhibitions and tourism, etc. can be listed at that point. Travel restrictions due to the COVID-19 pandemic, accordingly, the 3-dimensional and realistic image of the metaverse ecosystem has paved the way for the shift of tourism activities to this area (Zaman et. al., 2022). Studies using TAM and PBT models are shown below in Table 1.

Table 1: Literature Review

Author(s) and year	Sector	Hypotheses	Hypothesis Testing Result
Park & Kang (2021)	New Technology Acceptance: Metaverse	PEOU→PU	Not Supported
		PU→AT	Supported
		PEOU→AT	Supported
		AT→I	Supported
Akour et. al. (2022)	New Technology Acceptance: Metaverse-(Education)	PI→PU	Supported
		PI→PEOU	Supported
		PEOU→I	Supported
		PU→I	Supported
Almarzouqi et. al. (2022)	New Technology Acceptance: Metaverse-Medical Education	PI→PU	Supported
		PI→PEOU	Supported
		PU→I	Supported
		PEOU→I	Supported
Misirlis & Munawar (2022)	New Technology Acceptance: Metaverse-(Education)	SE→AT	Not Supported
		SN→AT	Supported
		SN→PEOU	Supported
		PU→AT	Not Supported
		PEOU→AT	Not Supported
Mostafa, L. (2022)	New Technology Acceptance: Metaverse	PEOU→I	Supported
		PU→I	Supported
		SI→I	Supported
		T→I	Supported
Fussell & Truong (2021)	New Technology Acceptance: A Research on Virtual Reality Devices	PEOU→PU	Supported
		PU→AT	Supported
		PEOU→AT	Supported
		PBC→I	Supported

Source: Authors' own compilation

AT= Attitude Towards Use; I= Intention; PBC= Perceived Behavioral Control; PEOU= Perceived Ease of Use; PU=Perceived Usefulness; PI= Personal Innovativeness; SN=Subjective Norms; SE= Self Efficacy; SI= Social Influenc; T= Trust

Park & Kang's (2021) study empirically identifies the process of technology acceptance of the metaverse, a virtual world-based platform that has attracted attention due to the 4th industrial revolution and the COVID-19 pandemic. Akour et. al.'s (2022) study aims to investigate the students' perceptions of the metaverse system for educational purposes in the Gulf area. Almarzouqi et. al. (2022) aims to evaluate students' perception of the application of metaverse in the United Arab Emirates (UAE) for metaverse-medical-educational purposes. In this study, 1858 university students were surveyed to examine this model. Misirlis & Munawar's (2022) study proposes a framework for university students' metaverse technologies in education acceptance and intention to use. The study is based on the Technology Acceptance Model (TAM) Mostafa, L. (2022) aims to identify the factors affecting Egyptian users of new technologies such as Metaverse. The technology acceptance model (TAM) is used to measure user intention to accept and use technology. Fussell & Truong (2021) investigated students' intentions to use Virtual Reality (VR) for training. The Technology Acceptance Model (TAM) was expanded to include two factors that are relevant to using VR in a dynamic learning environment.

As can be seen in the literature review (Table 1), the metaverse has generally been studied within the framework of TAM. There are not many studies conducted within the scope of PBT. For this reason, examining an important technology such as metaverse with a research model in which both TAM and PBT are used will make a positive contribution to the literature. Although the fact that metaverse technology has not become widespread harms the research process, it is important to analyze people's attitudes, intentions and behaviors towards this technology in the future.

III. Technology Acceptance Model (TAM)

TAM has been frequently used in the adoption processes of new technologies as the process was brought to the literature by Davis in 1986. TAM is based on the Reasoned Action Theory (GET), which is frequently used to explain human behavior. According to GET, human behavior is carried out for certain reasons. In our world where technology is developing rapidly, it is very important to investigate the factors that affect people's attitudes and intentions to use important technologies (Davis, 1989).

The world has become more and more digitalized with each passing day, with technological devices increasing rapidly after the industrial revolution, primarily working life and then individual use. In this context, technological innovations were first used in businesses for commercial purposes. After TAM was introduced to the literature in 1986, the analysis of the factors affecting the acceptance of company employees to use new technologies has become important (Venkatesh & Bala, 2008).

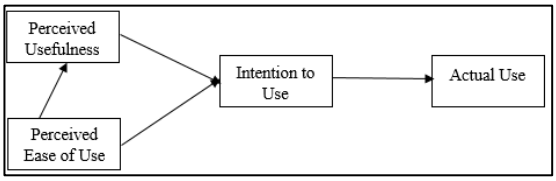

Figure 2. Technology Acceptance Model (TAM)

Source: (Venkatesh and Davis, 1996)

Figure 2 shows the TAM. The model has four basic variables. These are perceived usefulness, perceived ease of use, intention and active use. Since there are not many people actively using the metaverse system in the current study, the intention to use the system is emphasized.

Perceived ease of use refers to the degree to which people believe that their productivity will increase and they will spend less effort using the technology in question. According to TAM, the positive effect of the efficiency that will be obtained by the use of the existing technology on the perceived benefit from the technology is indicated in the results of the analysis (Davis et. al., 1989; Venkatesh & Morris, 2000). In the research, the

relationship between PEOU and PU has been examined in parallel with the literature.

H1:Perceived Ease of Use is positively related to Perceived Usefulness

Perceived usefulness is the degree to which people believe in the benefit and performance improvement they will get when they use the technology in question. According to TAM, in the process that people will use new technology, the benefit they will perceive from the relevant technology directly affects their intentions (Venkatesh & Davis, 2000; Park & Kang, 2021). The relationship between PU and I has been studied in parallel with the literature.

H2: Perceived Usefulness is positively related to Intention

TAM, which is a frequently used model in the adoption processes of new technologies, was used in the research. Other studies conducted in the literature are shown in Table 1. When examined in other studies, some deficiencies were observed. For this reason, metaverse technology is analyzed together with Planned Behavior Theory (PBT) in addition to TAM. The fact that PBT is also an important model for explaining human behavior has been a remarkable factor in creating the research model.

IV. Planned Behavior Theory (PBT)

PBT is a frequently used theory in the literature trying to explain human behavior. It is based on the motivation that people do with their behaviors (Ajzen & Madden, 1986). PBT emphasizes the importance of perceived behavioral control variables, in addition, to GET in the process of shaping human behavior. While exhibiting the behavior of people, the level of control over the behavior in question is important (Ajzen, 1991).

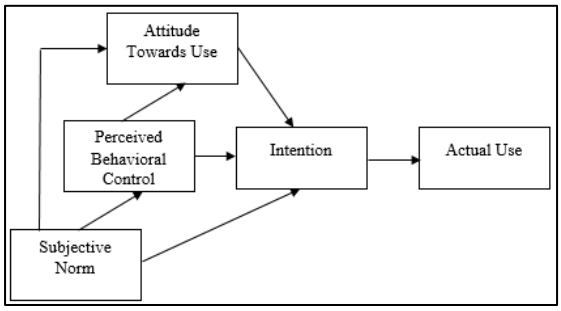

Figure 3. Planned Behavior Theory (PBT)

Source: (Ajzen 1991)

It is very important how much control people have over their behavior. For example, people may say that they want to buy organic foods to eat healthy, but they will not be able to do this if there are no organic product sales points around. In the current research, PBT was also used in addition to TAM while constructing the model. The reason is to analyze in detail what factors people are affected by using the metaverse technology.

PBT has 5 main variables. These are attitude towards use, perceived behavioral control, subjective norm, intention and actual use. Attitude towards use refers to a person having a positive or negative assessment or evaluation of that behavior. Attitude towards use was obtained as a result of the analysis in which intention was one of the leading symptoms, and the same results were obtained in the studies in the literature. The attitude towards metaverse technology is an important variable of the research model when determining people's intentions (Ajzen, 1991). In the research, the relationship between AT and I has been examined in parallel with the literature.

H3: Attitude Towards Use is positively related to Intention

Perceived behavioral control emphasizes people's perception of the ease or difficulty of performing the behavior of interest (Ajzen & Sheikh, 2013). The perception of control towards metaverse technology is an important variable added to the research model during the analysis of the factors affecting people's intentions. In the study, the relationship among PBC, I and AT was examined in parallel with the literature.

H4: Perceived Behavioral Control is positively related to Intention

Subjective norm is a social factor. It refers to the perceived social pressure to perform or not perform the behavior (Ajzen, 1991). According to Ajzen, the more positive the behavioral attitude and subjective norm towards behavior and the greater the perceived behavioral control, the stronger the person's intention to perform the behavior in question should be (Taylor & Todd, 1995). Because Metaverse technology is new, the fact that too many people do not have knowledge about the subject or think in this way brings about the inability of people to be affected by their environment. In the study, the relationship among SN, I, PBC and AT was examined in parallel with the literature.

H5: Subjective Norm is positively related to Intention

H6: Subjective Norm is positively related to Perceived Behavioral Control

H7: Subjective Norm is positively related to Attitude Towards Use

H8: Perceived Behavioral Control is positively related to Attitude Towards Use

The intention is the most important variable of Intent to use. The reason is that, prerequisite for any behavior is the intention to perform the behavior in question. The stronger a person's intention, the more likely that person is expected to try that behavior, and therefore the more likely the behavior will be performed (Ajzen and Madden, 1986: Ajzen, 1991).

V. Methodology

Since the metaverse can be used by all segments of the society by the scope and purpose of the research, the universe of the research consists of individuals over the age of 18 who use smart devices (phones, tablets, etc.) and have blockchain technology. Since Metaverse is a blockchain-based system, people who know blockchain technology will be able to adapt faster (Ozdamar, 1999).

Convenience sampling methods were used in the study. Convenience sampling is the inclusion of only those who can be reached among the people within the scope of the research (Kurtuluş, 2010).

The research was carried out in Istanbul for the convenience of data collection. Due to COVID-19, the data of the study were collected by an online survey method instead of a face-to-face method. The data of the research were collected through Google Forms between 05.01.2022 and 10.03.2022. The questionnaire the research was sent to 436 people and 214 responses were received. When the data were organized before the analysis of the research, a usable data set of 183 people were obtained.

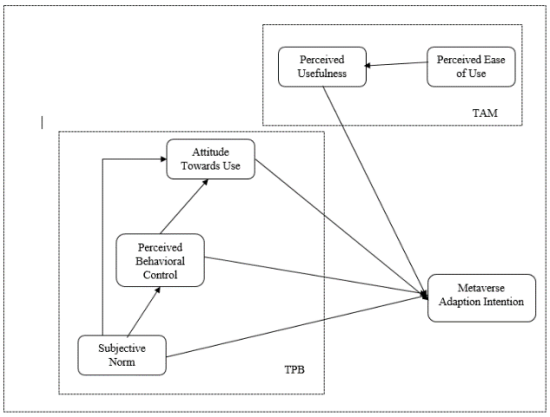

Figure 4. Conceptual Model

Source: (Ajzen 1991)

While creating the research model, the models frequently used in the acceptance of new technologies in the literature were used. The research model, which was created by making use of TAM and PBT theories, was composed for the analysis of the factors affecting the acceptance of metaverse technology. The conceptual model is shown in Figure 4 above (Venkatesh & Davis, 1996; Ajzen, 1991; Schierz et al., 2010).

Finally, the structural equation model (SEM) was used in the analysis process of research. In structural equation modeling, the relationships among more than one independent variable and more than one mediator as well as dependent variable are taken into account. SEM, which is frequently used in the literature, was utilized because the relationship between more than one variable was examined in the study (Hair et al., 2010). The Smart PLS 3 program, which is frequently used in the analysis of structural equation models, was used in the research. In the analysis part of research, firstly, the reliability and validity of data obtained from the variables were checked (Hair et al., 2017).

VI. Results

The data of the research were first checked for the assumption of normality before the reliability and validity analysis. The skewness and kurtosis values of the research data were found between -1.5 and +1.5. In this context, it can be said that the data of the research exhibit a normal distribution (Tabachnick et al. 2007; Hair et al., 2017; Hair et al., 2010).

Concerning the multicollinearity of the research, when the Variance Inflation Factors (VIF) values are examined briefly in terms of multiple connections, the highest VIF value is 4.250. VIF values between 1 and 5 are accepted in the literature. When the sub-dimensions of the model are examined, the values are between 2 and 3.8 (Daoud, 2017).

Table 2: Results of Measurement Model

Construct	Items	Mean [a]	Factor Loading	AVE	CR	Cronbach's Alpha
Perceived Usefulness	PU1	3.865	0.934	0.859	0.961	0.945
	PU2	3.919	0.951			
	PU3	3.973	0.962			
	PU4	4.176	0.937			
Perceived Ease of Use	PEOU1	3.743	0.901	0.859	0.961	0.945
	PEOU2	3.662	0.945			
	PEOU3	3.716	0.942			
	PEOU4	3.703	0.918			
Attitude Towards Use	AT1	3.595	0.960	0.930	0.975	0.962
	AT2	3.743	0.965			
	AT3	3.730	0.968			
Perceived Behavioral Control	PBC1	3.865	0.815	0.673	0.861	0.761
	PBC2	4.108	0.865			
	PBC3	3.959	0.779			
Subjective Norm	SN1	2.878	0.800	0.707	0.879	0.794
	SN2	3.243	0.860			
	SN3	3.689	0.861			
Intention	I1	4.054	0.959	0.937	0.978	0.966
	I2	3.932	0.957			
	I3	4.054	0.987			

Source: Smart PLS 3 Software

[a]Items measured on a 5-point Likert scale (1= strongly disagree; 5= strongly agree); AVE: Average Variance Extracted; CR: Composite Reliability

In analysis, perceived usefulness, perceived ease of use, attitude towards use, perceived behavioral control, subjective norm and ıntention Cronbach's alpha's composite reliability should be higher than 0.70. AVE values should be higher than 0.50 (Hair et al., 2014). The results are shown in Table 2 above.

Table 3: Discriminant Validity Analysis based on Fornell-Larcker Criterion

	AT	I	PBC	PEOU	PU	SN
AT	0.964					
I	0.834	0.968				
PBC	0.476	0.604	0.821			
PEOU	0.569	0.644	0.605	0.927		
PU	0.781	0.860	0.606	0.656	0.946	
SN	0.661	0.631	0.474	0.607	0.604	0.841

Source: Smart PLS 3 Software

AT= Attitude Towards Use; I= Intention; PBC= Perceived Behavioral Control; PEOU= Perceived Ease of Use; PU=Perceived Usefulness; SN=Subjective Norm.

As a result of the analysis of research data, after observing that it was reliable and valid, the correlation analysis among the variables of research was carried out. Analysis results are shown in Table 3 above. Correlation analysis, also known as the Fornell-Larcker Criteria Table, is obtained by taking the square root of AVE values. When the correlations among the variables were examined, no variable that would pose a problem was found based on the literature (Davis, 1989; Hair et. al., 2017). It is

mentioned that there is a positive relationship among the variables of the research.

Table 4: Results of the Hypothesized Structural Model

	Hypotheses	Path Coefficient	Standard Error	T Statistics	P Value	Hypothesis Testing Result
H1	PEOU→PU	0.656	0.103	6.372	0.000	Supported
H2	PU→I	0.453	0.098	4.624	0.000	Supported
H3	AT→I	0.398	0.117	3.399	0.001	Supported
H4	PBC→I	0.122	0.081	1.513	0.131	Not Supported
H5	SN→I	0.037	0.067	0.550	0.583	Not Supported
H6	SN→PBC	0.474	0.122	3.885	0.000	Supported
H7	SN→AT	0.562	0.125	4.511	0.000	Supported
H8	PBC→AT	0.210	0.134	1.572	0.116	Not Supported

Source: Smart PLS 3 Software

p<0,05 AT= Attitude Towards Use; I= Intention; PBC= Perceived Behavioral Control; PEOU= Perceived Ease of Use; PU=Perceived Usefulness; SN=Subjective Norm.

The result is shown in Table 4. The hypothesized model was estimated based on bootstrapping with 1000 subsamples. All 8 hypotheses were not supported. Of the 8 relationships tested, 5 were found to be significant at $p < 0.5$. Specifically, Perceived Ease of Use had a positive effect on Perceived Usefulness ($\beta = 0.656$, $p < 0.5$). Perceived Usefulness had a positive effect on Intention ($\beta = 0.453$, $p < 0.5$). As a result of the analysis, 2 hypotheses constructed according to TAM showed parallel results with the literature. In addition, Subjective Norm had a positive effect on both Perceived Behavioral Control ($\beta = 0.474$, $p < 0.5$) and Attitude Towards Use ($\beta = 0.562$, $p < 0.5$). However, Subjective Norm had no influence on Intention ($\beta = 0.037$, $p > 0.5$). Perceived Behavioral Control, had a negative influence on both AT ($\beta = 0.210$, $p > 0.5$) and I ($\beta = 0.122$, $p > 0.5$). The fact that the Perceived Behavioral Control hypotheses are not supported can be explained by the fact that metaverse technology is not actively used and therefore people have limited control over the technology in question. Attitude towards use had a positive effect on intention ($\beta = 0.398$, $p < 0.5$) (Hair et al., 2017).

Table 5: Results of R2 and R2 Adjusted

	R^2	R^2 Adjusted
Attitude Towards Use	0.472	0.457
Perceived Behavioral Control	0.225	0.214
Perceived Usefulness	0.430	0.422
Intention	0.819	0.808

Source: Smart PLS 3 Software

The R^2 values of research are shown in Table 5 above. Since the metaverse technology, which is the focus of the research, is new, the intention to use has become more important than its active use. The R^2 value of the Intention to use the dependent variable of research was found to be 0.819, and the Radj² value was found to be 0.808. R^2 values above 0.70 indicate that it has a strong explanation percentage. In this context, it can be said that a significant part of the factors that affect people's acceptance of their motivation to use metaverse are included in the model (Agustina, 2019).

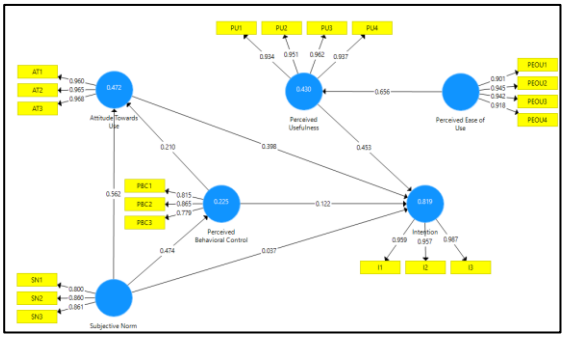

Figure 4. Results of Research Model (Smart PLS)

Source: Smart PLS 3 Software

p <0,05 AT= Attitude Towards Use; I= Intention; PBC= Perceived Behavioral Control; PEOU= Perceived Ease of Use; PU=Perceived Usefulness; SN=Subjective Norm.

As a result of the research analysis, it was determined that the model was reliable and valid. The correlation between the variables was as expected. In the continuation of the analysis, the existence of hypotheses constructed in the model was tested with path analysis. The Smart PLS 3 output of the research model is provided in Figure 4 above.

VII. Discussion and Conclusions

Almost every day, a new technological product or service enters its life. In addition to the benefit of the developing technology to humanity, adaptation and adaptation processes are required for active use. In the process from the past to the present, experts have done a lot of work in this field. Technology Acceptance Model (TAM) and Planned Behavior Theory (PBT) have been used frequently in these studies. In this context, the subject of acceptance of technological products or services, which has become important to people day by day, has been examined in terms of the metaverse.

Metaverse can be named as the transport of physical environments to the digital universe with blockchain infrastructure. There is more than one metaverse system. Due to the newness of metaverse technology, the number of users is limited. The lack of many active users made it necessary to determine the dependent variable of research as intention. However, according to TAM and PBT theories, the most important antecedent indicator of people's use of technological innovation is their intention. With the assumption that intention is a prerequisite, the metaverse in the present study has been examined within the framework of TAM and PBT theories.

H1 and H2 hypotheses were created in accordance with the Technology Acceptance Model (TAM) theory. Parallel to the literature, a positive and significant effect was found between PEOU and PU as well as between PU and I. The perceived usefulness of people's metaverse system was affected by the perceived ease of use. In addition, finding the benefits of the

metaverse system positively affected their intention to use it. In this context, it has been concluded that the usefulness of the metaverse system and the fact that people think they will benefit affect their intentions, which are the pioneers of active use of the system (Venkatesh & Davis, 2000; Davis, 1989; Park & Kang, 2021; Yorulmaz & Alnıpak, 2020; Akour et. al., 2022; Almarzouqi et. al.. 2022).

In accordance with the Planned Behavior Theory (PBT), hypotheses H3, H4, H5, H6, H7 and H8 were formed. While no significant relationship could be found between subjective norm and behavioral control variables as well as intention, attitude towards use affects intention positively and significantly. The new use of metaverse technology and the lack of knowledge of many people on the subject led to the rejection of tH4 and H5 hypotheses. The positive effect of attitude towards use variable, which is one of the most important determinants of usage intention, is one of the important results of the research. Adaptation processes will accelerate with the positive effect of people's attitudes towards metaverse technology (Ajzen, 1991; Arkorful, 2022; Javid et. al., 2022).

In addition, according to the results of research, it can be mentioned that the subjective norm variable, perception, has a significant positive effect on behavioral control and attitude towards use. This situation expresses the positive thoughts of the close environment of potential metaverse users in the usage processes, despite the fact that the metaverse technology is new. Finally, there is no significant effect of the behavioral control variable on attitude towards use. This situation can be explained by the fact that the technology is new. The widespread use of metaverse causes people to have limited control over technology. The lack of knowledge of using the relevant technology is an important factor here. Therefore, the H8 hypothesis was rejected (Ajzen, 1991; Javid et al., 2022).

Blockchain has found use in many sectors due to its decentralized structure, fast transaction opportunity, encrypted transfer of information, and 24/7 operation. Since Metaverse uses blockchain technology as an infrastructure, it is in an advantageous position in the process of adapting to people in the future. It is assumed that the metaverse technology discussed in the current research will be used by many people in the future. However, it cannot be said that it has widespread use in terms of individual and commercial use at the moment. With Adidas, Gucci, Is bank, etc. companies investing in the metaverse ecosystem and the widespread use of cryptocurrencies, people will be able to actively use the metaverse to meet their needs (Is Bank, 2022; Adidas, 2022; Gucci, 2022).

Especially after COVID-19, e-commerce activities have increased. Metaverse will attract the attention of companies and individual users in the future due to 3D product selection, crypto money payment option, 24/7 transaction opportunity, etc. In the literature, metaverse technology has been limitedly studied with TAM. In the current research, it is expected to contribute to this field by using PBT, which helps to explain human behaviors. The research was carried out with the theory of planned behavior and the technology acceptance model. Metaverse studies can also be investigated with models used in other technology adoption processes. In particular, a metaverse study using Everett Rogers's Diffusion of Innovation Theory (DIT) will present a different perspective to the literature. A separate study can be conducted on the metaverse and the use of cryptocurrencies.

In the case of Turkey, Digital Turkish Lira (DTL) trial work continues. After the DTL's launch, its usage area will quickly become widespread. In this context, DTL can be used in future metaverse ecosystems. This will accelerate the adoption of metaverse usage.

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