

ASSESSING THE ADOPTION AND ACCEPTANCE OF THE METAVERSE FROM A MARKETING PERSPECTIVE

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Abstract

Metaverse has the potential to revolutionize business interactions with customers and product promotion. The extent to which consumers embrace and accept Metaverse, which provides access to highly diverse domains, is a significant matter that requires attention. Because the more Metaverse, which is a new technology, is adopted and accepted by consumers, the more the intention of continuous use will increase. The increase in the intention for continuous usage can benefit companies in many ways. The purpose of this study is to examine Metaverse in terms of technological innovativeness and determine the factors influencing consumers' intention of continuous usage. For this purpose, the level of technological innovation has been calculated, factors leading to the intention of continuous usage have been identified, and the effects of attitude and usefulness on the intention of continuous usage have been examined. The study results indicate that Metaverse is partially embraced by consumers who have access to this technology. Furthermore, it has been established that perceived usefulness and perceived attitude alone do not directly impact intention of continuous usage; instead, they require the mediating effect of technological innovativeness.

Keywords: Metaverse, Consumer Innovation, Technological innovativeness, Diffusion of Innovations, Consumer Behavior

Jel Codes: M30, M31, M39

METAVERSE'İN BENİMSENMESİ VE KABUL EDİLMESİNİN PAZARLAMA PERSPEKTİFİNDEN DEĞERLENDİRİLMESİ

Öz

Metaverse, işletmelerin müşterilerle etkileşimlerinde ve ürün tanıtımında devrim yaratma potansiyeline sahiptir. Çok çeşitli alanlara erişim sağlayan Metaverse'in tüketiciler tarafından ne ölçüde benimsendiği ve kabul gördüğü dikkat edilmesi gereken önemli bir konudur. Çünkü yeni bir teknoloji olan Metaverse tüketiciler tarafından ne kadar benimsenir ve kabul edilirse, sürekli kullanım niyeti de o kadar artacaktır. Sürekli kullanım niyetinin artması şirketlere birçok açıdan fayda sağlayabilir. Bu çalışmanın amacı, Metaverse'ü teknoloji yenilikçiliği açısından inceleyerek, tüketicilerin sürekli kullanım niyetleri üzerinde etkili olan faktörlerin neler olduğunu belirlemektir. Bu amaçla, ilk olarak teknoloji yenilikçiliğinin seviyesi hesaplanmıştır. Daha sonra sürekli kullanım niyetine yol açan faktörler tespit edilmiş olup, algılanan tutum ve algılanan kullanışlılığın teknoloji yenilikçiliği aracılığıyla sürekli kullanım niyeti üzerindeki etkileri incelenmiştir. Çalışma sonuçları, Metaverse'in, bu teknolojiye erişimi olan tüketiciler tarafından kısmen benimsendiğini göstermektedir. Ayrıca algılanan kullanışlılığın ve algılanan tutumun tek başına sürekli kullanım niyetine etki etmediği, bunun için teknoloji yenilikçiliğinin aracılık etkisine ihtiyaç duyduğu belirlenmiştir.

Anahtar Kelimeler: Metaverse, Tüketici Yenilikçiliği, Teknoloji Yenilikçiliği, Yeniliklerin Yayılması, Tüketici Davranışı

Jel Kodları: M30, M31, M39

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1. Introduction

Within discussions of the new digital age, there are those who characterize it as an era of digitalization, where everything from the past is expressed through new technologies (Dijitalleşme, 2021). Conversely, there are viewpoints that label the entire period dominated by rapidly advancing technologies as the digital age (Çalışkan, 2020). Notably, Google executives have succinctly and effectively defined the digital age by elucidating its forthcoming implications. Schmidt and Cohen (2014) encapsulated this era by stating that “soon everyone on Earth will be interconnected.” In the present state of technology, mere interpersonal connections have proven insufficient; the desire has arisen for connections to be three-dimensional, more realistic, and tangibly perceivable. Thus, in a sense, the multi-dimensional manifestation of the internet, referred to as Metaverse, has emerged. A plethora of diverse opinions exists surrounding the concept of the Metaverse. Some critics assert that the Metaverse is an ambiguous concept or a fanciful realm generated by technology giants, lacking sufficient applications beneficial to users, yet dubbed as the “exciting feel-good place of the future” (Kim, 2021). Conversely, some critics contend that the Metaverse constitutes a fantasy world fabricated by forces that will govern our lives and propel us into the “black box of consumption” (Bogost, 2021). In a report by Marketing Türkiye (Kaya, 2022), citing Statista data, it is noted that 260 billion applications were downloaded in 2021, with a continued annual growth trend. The same report highlights that Zoom's revenue reached one billion dollars in the fourth quarter, Facebook increased its net profit by 17% despite controversies, 76% of employees are content with remote work according to Kaspersky data, and 8 out of the 10 most downloaded applications, according to Sensor Tower, pertain to social media platforms. Noteworthy brands such as Microsoft, Aglet, Nike, Adidas, H&M, Coca-Cola, Anheuser-Busch, and Crockpot have ventured into the Metaverse by selling their own NFTs (non-fungible tokens). Gucci has also launched a special collection of digital clothing that users can purchase for their avatars within the online role-playing game Roblox (Barnes, 2021). A striking 93% of global consumers concur that technology will shape our future, with 76% expressing their dependence on technology in their daily lives. Of the generational segments, 79% of Generation Z, 80% of Generation Y, 75% of Generation X, and 67% of Baby Boomers believe that daily life is intertwined with technology (Marketing Türkiye, 2021). Just as the 20th century was characterized by the era of mass production, the forthcoming century will be hailed as the era of the digital world and the Metaverse. A report published by Gartner forecasts that by 2026, 25% of individuals will dedicate at least one hour daily to exploring virtual stores, visiting schools, socializing, and entertaining themselves within the Metaverse (Rimol, 2022).

The fundamental concept of the Metaverse is to transfer everything that exists in the two-dimensional realm of the internet and holds the potential for digitization into a three-dimensional digital environment (Sparkes, 2021). When this technology reaches a sufficient level of advancement, many activities ranging from consumers shopping, meeting friends at cafes, watching movies, to attending concerts will effortlessly occur solely through the aid of virtual reality devices, without requiring any exertion (The Brand Planet, 2021). One of the most notable instances of these opportunities is the virtual concert held by renowned rap artist Travis Scott within the Metaverse in 2020, which saw 12 million people joining through Fortnite. Initially introduced by Stephenson (2003) in his novel “Snow Crash,” the term Metaverse refers to a three-dimensional virtual world where avatars of real individuals reside. Starting from 2020, this concept has garnered attention in the realm of technology and by 2021, it has become one of the most popular technology terms worldwide. A study conducted by Smart et al. (2007) portrays the Metaverse as an ever-present digital information flow and an all-encompassing digital playground, whether individuals navigate physical spaces or immerse themselves in virtual worlds. Considering how the proliferation of remote work during the Covid-19 pandemic has altered numerous habits, it is evident that the Metaverse will add a distinct dimension to this phenomenon (Outlook, 2021). The Metaverse offers the capacity to provide consumers with diverse experiences through virtual reality-based wearable products. These products will enable consumers to transcend the boundaries of their homes and acquaint themselves with the Metaverse. In the near future, individuals will overcome the challenges they might encounter during the process of commuting to the office by working from home, thus enhancing work quality and yielding more efficient business models (White, 2021). Companies aspiring to compete within the Metaverse realm seek to generate awareness about their products, engage with the audiences within their environment, alter consumer habits, express their identities, respect consumer desires, and establish favorite brands (Domorosla, 2022). In a study by Toraman (2022) investigating the factors influencing the acceptance of Metaverse technology, a positive relationship was established between perceived benefits, perceived usefulness, attitude towards use, and intention to use.

In definitions concerning the Metaverse, although terms denoting innovation are employed (Kraus et al., 2022), an examination of conducted studies reveals a notable absence of investigation from the perspective of technological innovativeness. These descriptions typically center around the virtual world (Bourlakis et al., 2009; Davis et al., 2009; Jun, 2020). The Metaverse promises to transcend the capabilities of internet technologies thus far, offering a considerably more interactive, collaborative, and consumer-engaged iteration (CNBCTV18, 2021). Consumer engagement constitutes a motivational structure that leads to the adoption of technology and a continuous intention of use, encompassing online

purchasing, blog creation, in-store mobile usage, among others (Huang et al., 2021). The present literature review also discerns an absence in identifying the factors that can induce continuous usage. The aim of this study is to investigate the Metaverse through the lens of technological innovation, determining the factors that influence consumers' intentions for continuous use. To achieve this, the level of technological innovation will be initially established, thereby contributing insights into the impact of innovation level on Metaverse adoption. Subsequently, factors inducing continuous intention of use will be identified, thereby contributing to the adoption of the Metaverse by consumers.

Academic investigations into the Metaverse and consumer behaviors constitute relatively novel and developing research areas, encompassing a multitude of yet-to-be-explored dimensions. The transition from mass marketing to an individualized digital realm, where customizable products and services take precedence, will be further augmented by the proliferation of Metaverse domains (Özkaynar, 2022a). The Metaverse presents a complex and dynamic environment that offers new challenges and opportunities for comprehending consumer behavior. Research in this domain aids in delineating the distinctive features of meta-data and how they shape consumer behavior. As more individuals interact with the Metaverse, understanding its influence on consumer behavior becomes paramount. Furthermore, the Metaverse provides novel avenues for businesses to reach consumers and offer innovative products and services. Consequently, this study has the potential to shed light on the patterns, motivations, and behaviors of consumers within virtual realms.

2. Diffusion of Innovations and Metaverse

Innovation was first examined by Rogers in his book “Diffusion of Innovations” in 1962, where it was defined as the degree of acceptance of new ideas or technologies. The positivity or negativity of the innovation affects the product's acceptance (Rogers, 2003). The acceptance of a technological innovation has a positive impact on perceived usefulness (Agarwal & Prasad, 1997; Zhou & Lu, 2011), and simultaneously, perceived usefulness also influences technological innovativeness (Kim & Mirusmonov, 2010; Nicolás et al., 2008). Perceived usefulness is defined as the ease individuals perceive in the learning process of utilizing an advanced technology (Davis, 1989).

Before delving into the concept of the Metaverse, the evolution from the internet to the Metaverse involves concepts such as Web 1.0, Web 2.0, and Web 3.0, which significantly capture attention. These concepts represent pivotal expressions employed to illustrate the progression of the internet. Briefly, these concepts can be elucidated as follows: Web 1.0 primarily denotes the first version of the web, characterized by static web pages and

information sharing (Nath, 2022); Web 2.0 encapsulates dynamic web pages, social media, and user-generated content (Charles, 2023); Web 3.0 characterizes the latest iteration of the web, marked by blockchain integration, NFTs, and cryptocurrency (Ritterbusch & Teichmann, 2023). The emergence of the Metaverse is a consequence of the growing interest in Web 3.0, representing the latest segment of the new generation of the internet (Monaco & Sacchi, 2023). The Metaverse is anticipated to influence AI-driven virtual worlds populated with user-generated content (Cheng et al., 2022; Yang et al., 2022), as well as innovative approaches in educational planning, pedagogy, teacher training, and student assessment (Charles, 2023). A currently highly popular concept, the Metaverse hints at a world where we can find more than just text and images (Öztürk & Gemi, 2022).

The notion of the Metaverse is intricately linked with the notions of decentralization, communal knowledge, and reliance. Anticipations revolve around the Metaverse encompassing the smooth and cooperative amalgamation of AI-fueled virtual realms enriched with content generated by users (Cheng et al., 2022; Yang et al., 2022). This integration is envisioned to be brought to fruition through the tenets of Web 3.0, which epitomize a radical transition towards a user-centric and decentralized approach to the online domain (Hackl et al., 2022; Kshetri, 2022). Furthermore, the Metaverse is foreseen as a decentralized virtual realm facilitating users in forging connections, engaging in communication, carrying out professional tasks, partaking in recreational activities, and conducting transactions akin to tangible reality (Isnain et al., 2023). This decentralization is poised to cultivate an environment conducive to the collective sharing of knowledge, where users can collaborate on concepts and undertakings (Zhai et al., 2022). However, the absence of industry standards and regulatory rules within the Web 3.0 empowered Metaverse ecosystem has led to financial crimes like fraud, code exploitation, wash trading, money laundering, illegal services, and stores (Wu et al., 2023). This situation has resulted in a lack of trust within the Metaverse ecosystem, necessitating the development of effective trading tools and reputation systems to address these issues (Ying et al., 2023).

The advent of the new digital age brings forth Web 3.0 technologies and applications, such as the Metaverse, blockchain, and cryptocurrencies. Numerous questions arise in the context of marketing efforts involving the Metaverse such as how these developments will impact the landscape and whether these technologies will bring new products and other advantages for consumers (Özkaynar, 2022b).

The primary objective of businesses' implemented marketing strategies, undoubtedly, is to maximize profit. This reality maintains its relevance even in the latest technological innovativeness of our time, the Metaverse. Firms aiming to enhance their sales volumes within

the Metaverse can employ various methods to reach consumers, such as virtual product sales to introduce brands, interaction with the audience as seen in social media, organization of virtual events, and simultaneous marketing strategies (Hollensen et al., 2022). The positive impact of marketing strategies on consumers' purchase intentions has been consistently documented in previous research (Smith & Yoder Jr, 1956; Timoumi et al., 2022). Through their marketing strategies, companies may strive to increase the prevalence of consumer usage of Metaverse applications and generate a positive influence on purchase intentions. The perceived usefulness of an innovative system directly correlates with the intention to use that system (Cabanillas et al., 2014; Nicolás et al., 2008). Therefore, businesses should take steps to enhance the perceived usefulness of this new technology, the Metaverse. When individuals perceive the ease of using this technology, their efforts to achieve more will increase, leading to a more positive attitude toward continuous usage (Hsieh et al., 2015). This is because users base their decisions on continued usage in the future on their thoughts regarding technology usage or usefulness (Cabanillas et al., 2014; Thong et al., 2006).

Perceived usefulness significantly influences the intention of continuous usage of online applications (H. Lu et al., 2005). Through usability and technological innovation, numerous factors affect the intention of continuous usage. For example, it is known that consumers' attitudes toward and perceptions of the usability of self-service technologies affect satisfaction levels, which in turn impact their intention for continuous usage (Chen et al., 2009). Additionally, perceived usefulness and perceived attitudes toward use influence product usage intentions for various technological innovations such as medical technologies (Lin et al., 2019), paid mobile media services (Youn & Lee, 2019), smartphone operating systems (Mishra et al., 2020), online product recommendation systems (Ashraf et al., 2020), and mobile banking services (Naruetharadhol et al., 2021). Demographic factors (Le Gall-Ely, 2009), customer satisfaction (Homburg et al., 2005), consumer knowledge level (Simonsohn & Loewenstein, 2006), store atmosphere (Ligas & Chaudhuri, 2012), marketing activities of companies (Steenkamp et al., 2010), and preferred payment methods of consumers (Prelec & Simester, 2001) are all effective in shaping consumers' purchasing behaviors and sustainability of usage intentions. Opportunities presented to users in the Metaverse environment, such as entertainment (Dwivedi et al., 2022), a sense of presence in a different world (Niu & Feng, 2022), level of knowledge (Yue, 2022), and more, could impact consumers' purchase behaviors and usage intentions. Building on these considerations, the hypotheses to be examined in this study are as follows:

H₁: Perceived attitude has a direct effect on technological innovativeness.

H₂: Perceived usefulness has a direct effect on technological innovativeness.

H₃: Perceived attitude has a direct effect on intention of continuous usage.

H₄: Perceived usefulness has a direct effect on intention of continuous usage.

H₅: Technological innovativeness has a direct effect on intention of continuous usage.

H₆: Technological innovativeness has an indirect effect on intention of continuous usage through perceived attitude.

H₇: Technological innovativeness has an indirect effect on intention of continuous usage through perceived usefulness.

This study, focusing on the above hypotheses, is designed within the framework of the basic mediation model to determine how perceived attitude and perceived usefulness influence the intention of continuous usage through the intermediary of Metaverse, an innovative technology. The designed research model is depicted in Figure 1.

Figure 1. Research Model

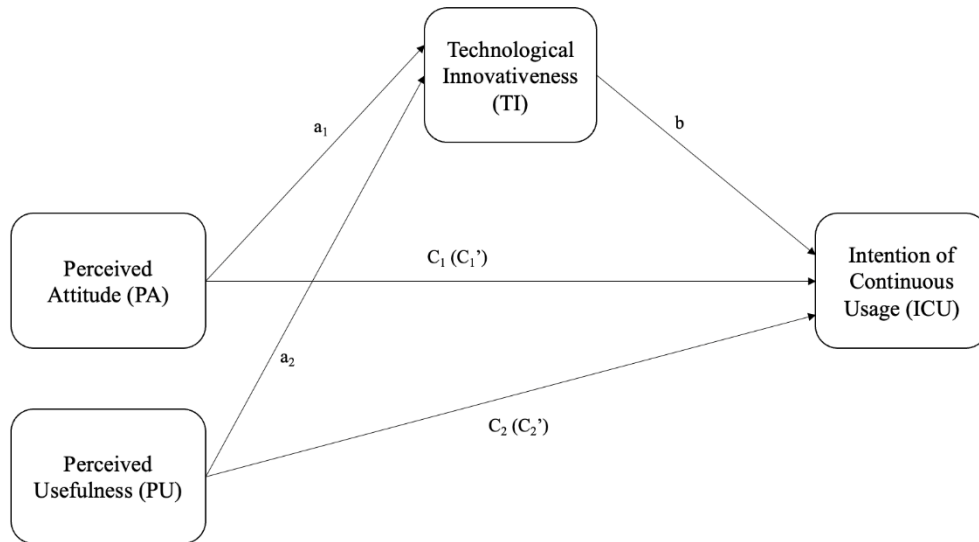


Figure 1 illustrates the direct effect of perceived attitude on technological innovativeness as a_1 , the direct effect of perceived usefulness on technological innovativeness as a_2 , the effect of technological innovativeness on the intention of continuous usage as b_1 and b_2 , the direct effect of perceived attitude on the intention of continuous usage as C_1 , and the direct effect of perceived usefulness on the intention of continuous usage as C_2 . The indirect effect of technological innovativeness on intention of continuous usage through perceived attitude

is represented as C_1 , and the indirect effect of perceived usefulness on intention of continuous usage through technological innovativeness is denoted as C_2 .

3. Methodology

This study aims to investigate the Metaverse in terms of technological innovativeness and determine the factors influencing consumers' intentions for continuous usage. To ensure appropriate response times and clarity of expressions, a pilot study was conducted with a total of 20 participants known to have a high level of knowledge in the field of technology and diverse demographic characteristics. Following the pilot study, certain adjustments were made to the questionnaire format to improve its comprehensibility. The survey was conducted online using Google Forms. Online surveys offer researchers flexible, convenient, and cost-effective means of data collection (Burns et al., 2017). At the beginning of the survey form, it was indicated that ethical approval had been obtained from the Ethics Committee of Sivas Cumhuriyet University, dated 30.03.2022 and numbered E-60263016-050.06.04-149802. Participation was voluntary, anonymous, and participants could withdraw from the study at any time based on their preference.

3.1. Participants

The population of the study consists of individuals interested in technology and with prior knowledge of the Metaverse. To accurately reach the target population, a question was posed before initiating the survey: "What is your level of knowledge about the Metaverse?" Participants were asked to provide a coding between 1 and 10. In determining the sample for data collection through an online survey, the table of sample selection methods for internet-based sampling was utilized (Kıncal, 2017). Accordingly, a sample was selected through the convenient sampling approach using the uncontrolled vehicle distribution method. Data were collected from participants aged 18 and above who marked 5 or higher on the control question. Between April 04 and April 25, 2022, the study was completed with the responses of 521 participants who met the criteria, out of a total of 829 participants reached through the convenience sampling method. Frequency analysis was employed to determine the demographic characteristics of participants, and the results are presented in Table 1.

Table 1. Demographic Characteristics of Participants

Variable	Category	Frequency	Percentage
Gender	Female	248	47.60%
	Male	273	52.40%
Age	Between 18-30 Years	184	35.32%
	Between 31-40 Years	128	24.57%
	Between 41-50 Years	94	18.04%
	Between 51-60 Years	66	12.67%
	61 Years and Over	49	9.40%
Education Level	Secondary Education and Below	91	17.47%
	Licence	402	77.16%
	Postgraduate	28	5.37%
Income Level	I have low-income level	94	18.04%
	I have moderate-income level	378	72.55%
	I have high-income level	49	9.40%

As seen in Table 1, the majority of participants in the study are male, aged between 18 and 30, university graduates, and individuals with a moderate-income level.

The scales used in the research process were adapted from the existing literature. Each scale item was evaluated using a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Perceived attitude, perceived usefulness, and intention of continuous usage were adapted from the study by Huang et al. (2020), while technological innovativeness was adapted from the study by Mathwick et al. (2010). Information related to the scales used in the research process is presented in Table 2.

Table 2. Information About the Used Scales

Scale	Cronbach's Alpha	Average \pm Std. Dev.	Item Num.
Perceived Attitude (PA)	0.875	2.92 \pm 0.96	5 items
Perceived Usefulness (PU)	0.933	3.25 \pm 0.93	7 items
Technological Innovativeness (TI)	0.937	3.05 \pm 0.94	7 items
Intention of Continuous Usage (ICU)	0.891	2.90 \pm 0.99	6 items

Upon examining the information about the scales provided in Table 2, it can be observed that all scales used in the research exhibit a satisfactory level of scale reliability.

4. Results

The theory of innovation diffusion asserts that innovation influences consumer attitudes and behaviors (Rogers, 1995). In line with this information from the literature, the averages of responses given by consumers to the technological innovativeness scale were calculated to determine perception differences between low and high innovation levels. While calculating these averages, to avoid scientific inaccuracies and determine the accurate cutoff point of the obtained sample, the technological innovativeness scale underwent Rasch analysis. Although the typical cutoff point for a 5-point Likert scale is 3, the Rasch analysis indicated a midpoint of 3.75 for technological innovativeness. In this study that examines Metaverse as a technological innovation, participants with response averages above 3.75 were considered to have a high level of technological innovativeness, while those with averages below were considered to have a low level of technological innovativeness. It could be inferred that participants belonging to the high technological innovativeness group showed greater interest in the Metaverse, while those in the low group exhibited relatively less interest.

Based on the normality test, it was determined that the data for all four dimensions (perceived attitude, perceived usefulness, technological innovativeness, and intention of continuous usage) included in the research model did not exhibit a normal distribution ($p=0.001$; $p<0.05$). Therefore, a Mann-Whitney U test was conducted to ascertain whether there was a statistical difference in perceived attitude, perceived usefulness, and intention of continuous usage between individuals with high and low technological innovativeness levels towards the Metaverse. The results of this analysis are presented in Table 3.

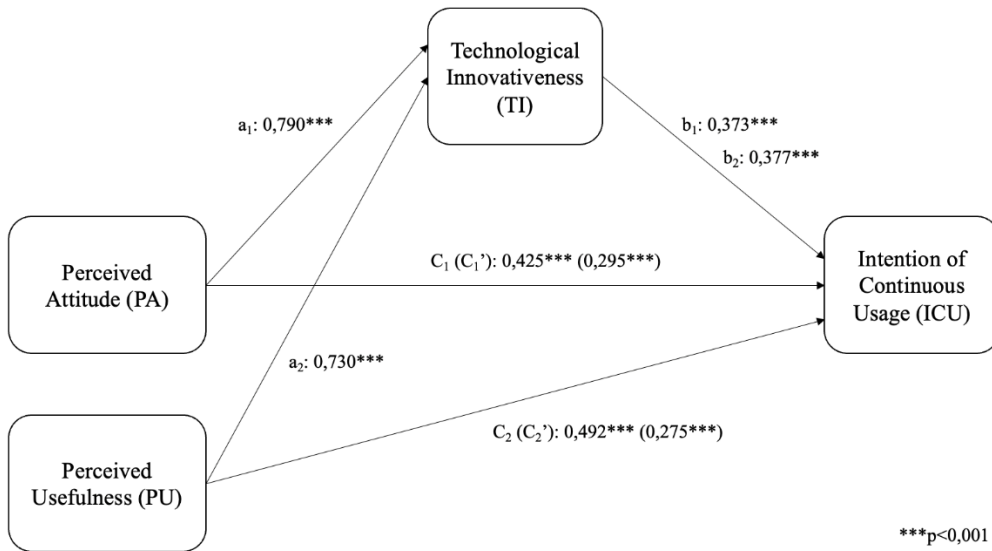
Table 3. Mann-Whitney U Test for Differences

Scale	Low Technological Innovativeness (Average \pm Std. Dev.)	High Technological Innovativeness (Average \pm Std. Dev.)	p
Perceived Attitude (PA)	2.66 \pm 0.85	3.99 \pm 0.64	<0.001
Perceived Usefulness (PU)	3.04 \pm 0.88	4.12 \pm 0.55	<0.001
Technological Innovativeness (TI)	2.58 \pm 0.79	4.24 \pm 0.42	<0.001
Intention of Continuous Usage (ICU)	2.83 \pm 0.86	3.96 \pm 0.68	<0.001

When examining the results of the Mann-Whitney U test presented in Table 3, a statistically significant difference between individuals with high and low levels of technological innovativeness towards the Metaverse has been observed ($p<0.05$).

Following the differential test, causal relationships between the dependent and independent variables in the mediation effect model were investigated. The results indicating the mediating effect of perceived attitude and perceived usefulness on the relationship between technological innovativeness and intention of continuous usage are shown in Figure 2.

Figure 2. Results of the Basic Mediation Model



It can be observed in Figure 2 that perceived attitude ($\beta=0.790$; $p<0.001$) and perceived usefulness ($\beta=0.730$; $p<0.001$) have a direct effect on technological innovativeness. This supports hypotheses H₁ and H₂.

Further analysis of the information in Figure 2 reveals that perceived attitude ($\beta=0.790$; $p<0.001$) and perceived usefulness ($\beta=0.730$; $p<0.001$) have a direct effect on intention of continuous usage, thereby supporting hypotheses H₃ and H₄. Moreover, the direct effect of technological innovativeness ($\beta_1=0.373$, $\beta_2=0.377$; $p<0.001$) on intention of continuous usage is evident, indicating the support for hypothesis H₅ from the results in Figure 2.

As indicated by the results in Figure 2, while technological innovativeness has a significant impact on intention of continuous usage, the influence of perceived attitude also persists. Parameters that need to be examined to determine the mediating effect in this analysis are indirect effect ($\beta=0.425^{***}$) and total effect ($\beta=0.295^{***}$). The finding that the total effect is smaller than the indirect effect indicates that technological innovativeness has a partial mediation role on the influence of perceived attitude on intention of continuous usage ($p<0.001$). Thus,

hypothesis H₆ is supported. With a total effect ($C_1' = C_1 + (a_1.b_1)$) of 0.720, where direct effect (C_1) is 0.425 and indirect effect ($a_1.b_1$) is 0.295, it can be inferred that 59.03% of the direct effect and 40.97% of the indirect effect can be explained.

Lastly, while technological innovativeness has a significant impact on intention of continuous usage, the influence of perceived usefulness is also observed. According to the results in Figure 2, the total effect ($\beta = 0.275^{***}$) being smaller than the indirect effect ($\beta = 0.492^{***}$), indicates that perceived usefulness has a partial mediation role in the influence of technological innovativeness on intention of continuous usage ($p < 0.001$). Thus, hypothesis H₇ is supported. With a total effect ($C_2' = C_2 + (a_2.b_2)$) of 0.767, where direct effect (C_2) is 0.492 and indirect effect ($a_2.b_2$) is 0.295, it can be inferred that 64.15% of the direct effect and 35.85% of the indirect effect can be explained.

Due to the presence of a partial mediation role of technological innovativeness in the influence of both perceived attitude and perceived usefulness on intention of continuous usage, it can be inferred that there may be other mediators in this relationship. Significance values for the basic mediation model for both independent variables are shown in Table 4.

Table 4. Significance (Bootstrap) Values for the Mediation Model

		β	LLCI	ULCI
PA --> TI --> ICU	<i>Direct Effect</i>			
	PA --> TI	0.790	0.734	0.846
	TI --> ICU	0.373	0.291	0.454
	PA --> ICU	0.425	0.342	0.508
	<i>Indirect Effect</i>			
	PA --> TI --> ICU	0.295	0.218	0.372
	<i>Total Effect</i>			
PA --> ICU	0.720	0.663	0.776	
		β	LLCI	ULCI
PA --> TI --> ICU	<i>Direct Effect</i>			
	PU --> TI	0.730	0.663	0.797
	TI --> ICU	0.377	0.310	0.443
	PU --> ICU	0.492	0.421	0.563
	<i>Indirect Effect</i>			
	PU --> TI --> ICU	0.275	0.207	0.343
	<i>Total Effect</i>			
PU --> ICU	0.767	0.710	0.824	

Perceived Attitude (PA), Perceived Usefulness (PU), Technological Innovativeness (TI), Intention of Continuous Usage (ICU)

The tests conducted to examine the influence of perceived attitude and perceived usefulness on intention of continuous usage and to determine whether technological innovativeness mediates this causality were carried out at a 95% confidence level using the Bootstrap method. In this method, 10.000 different samples are drawn from the examined sample, and 10.000 different indirect effects are calculated. These effect values are utilized to determine the lower limits (LLCI) and upper limits (ULCI) of the 95% confidence interval (CI). As long as these boundary values are not zero (0), it can be argued that the assumed relationships are significant (Hayes & Scharkow, 2013). The significance of the mediator variable is determined based on the confidence interval values for the lower limits (LLCI) and upper limits (ULCI) of the indirect effect. Upon examining the information in Table 4, it can be observed that both perceived attitude (LLCI: 0.218; ULCI: 0.846) and perceived usefulness (LLCI: 0.207; ULCI: 0.824) have positive values. As a result, it can be inferred that the assumed model's mediation relationship is significant.

5. Conclusion

This study was designed to examine Metaverse from the perspective of technological innovation and determine the factors that influence consumers' intentions of continuous usage. For this purpose, the effects of perceived attitude and perceived usefulness on the intention of continuous usage through technological innovativeness were investigated.

In the course of the study, participants' perception of technological innovativeness was determined. Since it would not be accurate to traditionally set the midpoint of a scale prepared with a 5-point Likert scale as 3, the cutoff point for technological innovativeness was first determined using Rasch analysis. After Rasch's analysis, the cutoff point for technological innovativeness was calculated to be 3.75. This calculation contributes to the literature in terms of determining consumer participation in Metaverse. Consequently, it has been determined that individuals who are involved with Metaverse actually have a higher average in terms of innovation. This finding will provide contributions to companies and marketing professionals in terms of accurately identifying the target audience. Targeting individuals with a higher perception of innovation will lead to a positive impact on reducing unnecessary advertising and promotion costs for companies and increasing profitability from the right audience. The positive impact of technological innovativeness acceptance on perceived usefulness is well-known (Agarwal & Prasad, 1997; Zhou & Lu, 2011), and perceived usefulness contributes to the continuous use of new technologies (Chen et al., 2009; H. Lu et al., 2005; J. Lu et al., 2005). This situation is directly related to customer loyalty, which is frequently studied in marketing (Griffin, 1995). Customer loyalty directly affects profitability (Johnson

& Gustafsson, 2006), and the intention of continuous usage is a form of loyalty (Yen & Tsai, 2011). Therefore, considering the importance of loyalty for greater profitability, companies operating in Metaverse should take into account that higher levels of innovation can be reached with individuals and customers who exhibit high levels of innovation.

When examining the indirect effects investigated in the study, it has been determined that perceived attitude and perceived usefulness have a partial mediation effect on the intention of continuous usage through technological innovativeness. In this context, companies aiming to enhance consumers' intentions of continuous usage through marketing efforts based on their perceived attitudes should prioritize technological innovativeness in their strategies to achieve more effective outcomes. However, when considering the explained variance of direct and indirect effects, it appears that perceived usefulness does not require technological innovativeness to the extent that perceived attitude does. This situation can be attributed to consumers having an intention to continue using technology when they perceive usefulness regarding the technology (Hsieh et al., 2015), and making decisions to sustain future usage based on their perceptions of the technology's usefulness (Cabanillas et al., 2014; Thong et al., 2006).

In summary, based on the results of this study, it can be inferred that Metaverse is partially embraced by consumers. It is evident that mere perceived usefulness and perceived attitude are not sufficient on their own for individuals to continuously use Metaverse; marketing strategies focused on technological innovativeness are likely to yield more effective results. Additionally, the calculation of the cutoff point was performed using Rasch analysis to accurately determine technological innovativeness.

Due to the relatively low level of accessibility to Metaverse, this study was conducted by employing only the control question "What is your knowledge level about Metaverse?" Thus, repeating the study when access to Metaverse becomes more widespread and usage rates increase would assist in achieving more generalizable results. This study aimed to identify factors exclusively affecting the intention of continuous usage in Metaverse. Consequently, the obtained results have contributed to identifying factors with an indirect impact on firm profitability. In future research, conducting an inventory study that determines the purchasing behaviors of consumers using Metaverse would contribute to identifying factors that directly affect firm profitability. Additionally, by providing participants with VR or AR glasses to experience shopping in the Metaverse environment, experimental studies based on this experience could yield valuable results for obtaining real-world data.

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