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The impact of the metaverse on compulsive buying

Uticaj metaverzuma na kompulsivnu kupovinu

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Abstract

The main objective of this research is to examine the impact of metaverse characteristics on compulsive shopping among young users, who represent the most active population in this digital ecosystem. The metaverse, as an innovative space that combines real and virtual flows, shapes new forms of social interaction and consumption. The research was conducted in November 2024 on a sample of 200 respondents, predominantly young people. Using a questionnaire technique and validated instruments for measuring metaverse characteristics and compulsive shopping, the research hypothesis was tested. The impact of metaverse characteristics on compulsive shopping was tested using multiple regression, and the research results show that metaverse characteristics (seamlessness, presence, interoperability, competition, economic flow, persistence, ubiquity, scalability and creativity) have a statistically significant and positive impact on compulsive shopping. This research contributes to the theoretical understanding of the metaverse, highlighting the role of technological features in shaping consumer behavior, and paves the way for future studies to explore the long-term psychological and social implications of the metaverse, with a broader demographic focus.
Keywords: *metaverse, metaverse characteristics, compulsive shopping, impulsive behavior*

Sažetak

Glavni cilj ovog istraživanja je ispitivanje uticaja karakteristika metaverzuma na kompulsivnu kupovinu kod mladih korisnika, koji predstavljaju najaktivniju populaciju u ovom digitalnom ekosistemu. Metaverzum, kao inovativni prostor koji spaja stvarne i virtuelne tokove, oblikuje nove oblike društvene interakcije i potrošnje. Istraživanje je sprovedeno u novembru mesecu 2024. godine na uzorku od 200 ispitanika, dominantno mladih. Tehnikom upitnika i primenom validiranih instrumenata za merenje karakteristika metaverzuma i kompulsivne kupovine, testirana je istraživačka hipoteza. Uticaj karakteristika metaverzuma na kompulsivnu kupovinu testiran je primenom višestruke regresije, a rezultati istraživanja pokazuju da karakteristike metaverzuma (besprekornost, prisustvo, interoperabilnost, konkurencija, ekonomski tok, upornost, sveprisutnost, skalabilnost i kreativnost) imaju statistički značajan i pozitivan uticaj na kompulsivnu kupovinu. Ovo istraživanje doprinosi teorijskom razumevanju metaverzuma, naglašavajući ulogu tehnoloških karakteristika u oblikovanju potrošačkog ponašanja i otvara put budućim studijama za istraživanje dugoročnih psiholoških i društvenih implikacija metaverzuma, sa širim demografskim fokusom.
Ključne reči: *metaverzum, karakteristike metaverzuma, kompulsivna kupovina, impulsivno ponašanje*

1. Introduction

The metaverse, as an innovative concept and technological phenomenon, is reshaping the way people communicate, collaborate, and act in the digital environment. This term, which originated in the realm of science fiction, today denotes a dynamic fusion of the virtual and real worlds, allowing users to participate in economic, social, and cultural activities through personalized avatars. The value of the metaverse market is predicted to exceed 1.5 trillion USD by 2030, which clearly reflects its importance for the global economy and society as a whole (ITNetwork, 2022). Bojic (2022) highlights that the immersive and interactive nature of the

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metaverse could create environments that mimic reality closely, thereby stimulating media addiction in society. This concern is particularly pertinent in the context of compulsive buying, where the allure of virtual goods and experiences may lead to unplanned and excessive purchasing behaviors. One of the most important aspects of the metaverse is its impact on user behavior, with compulsive shopping becoming an increasingly prominent phenomenon. Platforms such as Roblox and Zepeto, offering sophisticated systems for purchasing digital goods, further stimulate consumer behavior through personalized offers and interactive content. These platforms are most often accessed via mobile applications, which serve as the primary interface for younger users. The mobile-first nature of these services enhances accessibility, personalization, and the frequency of digital interactions, thereby increasing the risk of compulsive consumption behaviors within immersive environments. The main objective of this research is to examine the relationship between intensive use of the metaverse and the emergence of compulsive shopping behavior among young users, who constitute the most active population of this digital ecosystem. This research identifies a connection between the characteristics of the metaverse and tendencies towards compulsive shopping. This contributes to a better understanding of the socio-economic implications of virtual worlds.

2. Literature review

The metaverse is a dynamic and interactive digital environment that is characterized by a number of innovative features, making it a unique technological phenomenon. One of the basic features is seamlessness, which allows users to seamlessly transition between different activities, such as gaming, shopping, and social interaction, without the need to reconnect to the platform. This feature ensures a continuous sense of immersion and connection with the virtual space, making it a natural extension of the real world (Boo & Suh, 2024). Another key element is presence, which is reflected in the ability of users to experience the feeling of "being there", even in the digital space. This experience is further enhanced by augmented and virtual reality technologies, which enable a high degree of immersion. Such a sense of authenticity is key to attracting and retaining users in the metaverse, while at the same time opening up space for innovative forms of social and professional interaction (Marshall & Bieck, 2024). This complex platform redefines the ways in which users interact, allowing them to interact with people, places and events in real time through personalized avatars (Sridharan & Kumar, 2024). In addition to the technological aspect, the metaverse also acts as a social space in which reality and virtuality intertwine, opening up space for new forms of social relations and economic activities (Dwivedi et al., 2022). The metaverse is defined as a permanent virtual space with the ability to continuously develop and almost unlimited scalability, thus providing a foundation for the integration of digital experiences. Its interoperability enables the connection of different platforms and games, with the potential to transfer digital goods between them, which represents a significant technological advance (Zikić, 2007). One of the key aspects of this space is the digital economy, which includes its own currencies and trading capabilities, with models such as "play-to-earn" and the use of NFTs (Non-Fungible Tokens), which further stimulate user engagement (Hollensen, Kotler & Opresnik, 2023). This ecosystem relies on a community, where individuals, informal groups and organizations jointly shape its content. Key technological supports include VR and AR technologies, which enhance immersion and interaction, while standards such as Pixar's USD or NVIDIA MDL (Material Definition Language) enable technological compatibility. Such advanced technologies and features position the metaverse as the future of digital interaction, redefining social and economic flows (Zhang, 2024). One of the key characteristics of the metaverse is an immersive experience that provides users with a sense of presence in a digital environment. Technologies such as VR enable the full integration of users into virtual worlds, while AR balances the real and the digital, enriching reality with elements of the virtual. This technology transforms the way we experience information, interactions, and space, making communication more intuitive and immediate (Wang et al., 2023). The digital economy of the metaverse is developing through the exchange of virtual goods and services, with the application of cryptocurrencies and NFTs. Virtual stores and marketplaces allow users to create, sell, and use digital objects in different contexts, further expanding the range of applications of the metaverse (Hudaefi, 2024). Users in the metaverse have the ability to customize their digital identities, which are portable across platforms, while content creation remains at the heart of this concept. Users, through development tools without the need for coding and the integration of artificial intelligence, become active participants in the shaping of virtual worlds (Boo & Suh, 2024). With these features, the digital economy plays a central role, allowing users not only to buy and sell digital objects but also to earn through models such as "play-to-earn". This system encourages the creativity of users, who, thanks to tools for easy content creation, contribute to the construction of the metaverse (Maldonado-López et al., 2024). In addition to economic potential, the metaverse encourages the creativity and participation of users, who become active content creators. Through tools for creating virtual spaces and interactive elements, users not only customize their experience but also contribute to the development of a shared digital ecosystem (Ahn et al., 2024). The metaverse is also defined by persistence, where virtual spaces and content continue to evolve even when users are not actively present. This ensures continuous dynamics and a sense of permanence within the digital world (Chen et al., 2024). At the same time, scalability allows the metaverse to function effectively despite the growing number of users and the complexity of content, making it sustainable on a global scale (Marshall & Bieck, 2024). Interoperability represents a technical challenge, but also the potential to expand the boundaries of the metaverse. This feature enables the connection of different platforms and the transfer of digital assets, including avatars, virtual objects and content. Despite technical and regulatory obstacles, interoperability remains key to the development of the metaverse as a coherent ecosystem (Hollensen et

al., 2023). The metaverse, although still in its developmental phase, represents a technological and social phenomenon with the potential to shape the future of communication and interaction (Gauttier et al., 2024). Its value lies not only in technological innovation but also in its ability to connect people and create new forms of reality (Yu et al., 2024). With a critical approach and continuous development, the metaverse could become a fundamental tool for the advancement of digital society (Dwivedi et al., 2022). Finally, the ubiquity and accessibility of the metaverse are key to its acceptance. Users can access this digital world at any time and from anywhere, using different devices such as smartphones, tablets or computers. This characteristic makes the metaverse not only a technological innovation but also a social space of the future, bridging the boundaries between the digital and real worlds (Wang et al., 2023). The metaverse, as a fusion of technology, social space, and creativity, redefines digital reality. Its features are not only technically advanced, but also provide a basis for a deeper understanding of how people communicate, collaborate, and create in the modern world (Zhang, 2024).

Compulsive shopping, also known as oniomania, is an impulsive need to buy that exceeds rational limits and often leads to serious emotional, financial and social consequences. Jovanović and Marić (2021) conducted research specifically focusing on the Serbian market, identifying key drivers of unplanned purchases among Serbian consumers. Their study found that factors such as in-store atmosphere, promotional offers, and product placement significantly impact the likelihood of impulsive buying in Serbia. Additionally, demographic variables like age and income levels were found to correlate with the frequency of unplanned purchases. This behavior most often occurs in response to internal conflicts, stress or negative emotions such as sadness, anxiety or dissatisfaction. For people suffering from this problem, the process of buying serves as a temporary escape from reality, providing a momentary feeling of satisfaction, but often ends with guilt and regret (Tran et al., 2023). The characteristic course of compulsive shopping is divided into four stages. The first stage, anticipation, involves obsessive thinking about the desired item and planning the purchase. This is followed by the preparation stage, where the person researches the features of the product, plans finances or even takes steps to secure additional funds. The third stage is the act of buying itself, which causes strong emotional excitement and a feeling of euphoria. The final stage, spending, is often marked by feelings of emptiness, shame, and guilt over reckless spending, thus closing the cycle of this destructive behavior (Black, 2022). The causes of compulsive shopping are complex and include a combination of psychological, social, and genetic factors. Traumatic childhood experiences, such as emotional neglect or physical abuse, can set the stage for the development of this disorder. Family history also plays a significant role, especially in families with a history of mood disorders or addictions. Social pressures and consumer culture, fueled by aggressive marketing, further increase the likelihood of impulsive decisions. At the same time, compulsive shopping is often associated with personality disorders, such as borderline, narcissistic, or obsessive-compulsive disorder (Petrucelli, 2023). The consequences of this behavior are far-reaching and can seriously jeopardize the quality of life. Emotional effects include feelings of guilt, shame, and dissatisfaction, which can further exacerbate existing mental problems. Financial consequences include accumulated debt, inability to repay loans, and even legal complications. On the social level, partner and family relationships often suffer due to financial insecurity and secrecy. Professional problems, such as loss of productivity in the workplace, are often the result of time spent planning and carrying out shopping (Djudiah, 2022). Understanding compulsive shopping through its stages, causes, and consequences allows for a more comprehensive approach to prevention and treatment. Therapeutic modalities, such as cognitive behavioral therapy, have been shown to be effective in helping individuals develop healthy coping mechanisms. This disorder, although often neglected, requires a serious and individualized approach to prevent its long-term consequences and ensure a better quality of life for affected individuals (Tran et al., 2023; Black, 2022).

The metaverse, as an innovative digital ecosystem, is redefining consumption patterns and opening the door to new forms of economic interaction. Its ability to combine virtual and physical worlds through advanced technologies allows users to purchase a wide range of digital goods, including decorations, avatar clothing, virtual real estate, and even real-world products. This consumption model, further enhanced by unique NFTs and the concept of ownership, creates an environment that can encourage impulsive or compulsive behavior (Newzoo, 2021). One of the key aspects of the metaverse is its virtual economy, which is based on the personalization and interactivity of the user experience. It is the engagement of users in online environments that shapes experiential values, which implies interaction and consumption models. Through these economies, the metaverse lays the foundation for new forms of markets, where users not only consume content, but actively contribute to its shaping. However, this dynamic can pose a risk of overconsumption due to the constant availability of exclusive digital products and services (Boo & Suh, 2024). The personalization of content and direct interaction with users further complicate consumption patterns. In the metaverse, users often experience a sense of ownership and identification with their digital avatars, which encourages the need to purchase personalized or exclusive products. This trend opens up space for the development of impulsive or even compulsive consumer behavior, especially among younger generations who are susceptible to the influences of digital culture and marketing (Zhang, 2024). Compulsive shopping, as a form of impulsive behavior, can be intensified in an environment like the metaverse. Features such as constant product availability, gamification, and social pressure through avatars further contribute to this phenomenon. The shopping process in the metaverse often goes through four stages: anticipation, preparation, purchase, and consumption, where the feeling of satisfaction during the purchase is quickly replaced by feelings of guilt and regret.

The metaverse is increasingly positioned as a new digital environment that is transforming consumer behavior and redefining e-commerce (Hadi et al., 2024). This ecosystem offers interactive and personalized shopping experiences, integrating virtual reality, augmented reality, and gamified elements into everyday consumption. Understanding how the characteristics of the metaverse influence impulsive and compulsive shopping is key to analyzing its implications for consumer habits and the digital economy (Duc et al., 2024).

A key feature of the metaverse is its ability to create hyperrealistic and engaging environments in which users can explore and purchase digital and physical products in real time (Jafar et al., 2024). Telepresence and the "flow experience" create a strong sense of immersion, which encourages emotional decision-making, reducing rational assessment of costs and benefits when making a purchase (Jafar et al., 2023). This phenomenon is further enhanced by the presence of personalized algorithms, which predict user preferences and target them with customized offers (Zhang et al., 2024). Research shows that the use of the metaverse encourages impulsive purchasing behavior more than traditional e-commerce models. Factors such as interactivity, customized content, and social influence in virtual communities significantly influence purchasing decisions (Zhang et al., 2025). In addition, the concept of digital ownership in the metaverse, such as NFTs and unique avatars, further encourages a sense of exclusivity and urgency among consumers (Alexander et al., 2025).

Compulsive shopping in the metaverse differs from traditional shopping in its ubiquity and ease of access. "Play-to-earn" and "shop-to-earn" models integrate financial incentives within virtual environments, motivating users to spend more time and money (Jafar et al., 2025). Studies suggest that gamification elements, such as reward systems and exclusive offers, play a key role in developing consumer habits and can encourage compulsive behavior (Hadi et al., 2024). Additionally, research shows that the metaverse enables social validation through shopping, where users gain status and recognition within digital communities based on ownership of certain virtual goods (Duc et al., 2024). This aspect is particularly pronounced among younger users, who are more sensitive to digital trends and social pressure (Zhang et al., 2024). Psychological and social factors, including marketing and social validation within virtual communities, make the metaverse an ideal environment to encourage this type of behavior (Newzoo, 2021; Boo & Suh, 2024; Zhang, 2024).

Based on the above, the following hypothesis is put forward: Metaverse characteristics (such as seamlessness, presence, interoperability, competition, economic flow, persistence, ubiquity, scalability, and creativity) have a positive impact on compulsive shopping.

Mobile applications play a pivotal role in enabling access to the metaverse, especially among younger demographics. Platforms such as Roblox, Zepeto, and Sandbox are most frequently used via smartphones, which serve as the main gateway to virtual environments. These apps allow users to create and customize avatars, purchase digital goods, interact socially, and participate in gamified economies—all from the convenience of their mobile devices (Jafar et al., 2025). The mobile interface increases the frequency of user engagement, facilitating continuous access and impulsive interactions, which may contribute to the development of compulsive shopping behavior (Zhang et al., 2024). This mobile-centric interaction model also amplifies the experiential and immersive nature of the metaverse, as users receive real-time notifications, personalized offers, and interactive prompts directly on their devices, reinforcing consumption habits through constant digital stimulation.

3. Methodology

The research was designed as a quantitative study with a questionnaire as the main instrument for data collection. The sample included 200 respondents, including those who actively use metaverse platforms such as Roblox, Zepeto and Sandbox, as well as those who do not use them. These platforms were selected due to their popularity among young people and the possibility of intensive interaction with virtual content. Demographic analysis of the sample shows that the respondents are mostly in the age groups 18-24 years (29.1%) and 25-30 years (30.2%), while respondents younger than 18 years (16.1%) and older than 30 years (24.6%) are less represented. The gender structure is balanced, with a slightly higher participation of women (54.4%) compared to men (45.6%). This distribution indicates a diversity of the sample, with a dominant participation of younger adults. The research was conducted between November 1 and November 25, 2024, via social media, which allowed for wide availability and participation of respondents of different profiles.

Two standardized scales were applied in the research: the Metaverse Characteristics Scale (Boo & Suh, 2024) and the Compulsive Shopping Scale (Gori et al., 2022). This methodological framework allows for a precise understanding of the connection between specific aspects of the metaverse and consumer habits, providing insights into the factors that contribute to the development of compulsive shopping in the digital environment.

Each of the two standardized instruments used in this research consisted of 9 items, measured on a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). The Metaverse Characteristics Scale (Boo & Suh, 2024) included items such as "I feel completely immersed when interacting in virtual environments" and "I can move seamlessly between different spaces in the metaverse." The Compulsive Shopping Scale (Gori et al., 2022) measured behavioral tendencies related to compulsive buying, with example items like "I often buy things I do not need" and "After shopping, I feel guilty or regretful." Both instruments were used in their original English versions, without translation, since participants reported adequate English proficiency to understand the content. The demographic part of the questionnaire included items related to age,

gender, education level, and frequency of metaverse use. The research was conducted anonymously and participation was entirely voluntary. Before data analysis, the assumptions of multiple regression were tested, including normality, linearity, multicollinearity, and homoscedasticity, and all were met. The analysis was performed using the "enter" method in SPSS version 28.0, with compulsive shopping as the dependent variable and the nine metaverse characteristics as independent (predictor) variables.

4. Results

The reliability results of the measurement instruments confirm that the scales used are highly reliable and adequate for investigating the impact of the metaverse on compulsive buying behavior (all values are above 0.70). According to theoretical standards, values above 0.70 are considered satisfactory, while coefficients above 0.80 indicate high internal consistency (Nunnally & Bernstein, 1994).

The results of the regression model show that the model is statistically significant and that the independent, or predictor, variables explain 72% of the variations in the dependent variable of compulsive buying ($R^2 = 0.72$), which indicates a high predictive power of the model and confirms that all characteristics of the metaverse have a positive and significant impact on compulsive buying. The adjusted coefficient of determination (Adjusted $R^2 = 0.69$) further confirms the validity of the model, as it shows that the addition of predictor variables did not lead to excessive model complexity (overfitting), but rather they are justified in predicting the dependent variable. The accuracy of the model is further strengthened by the low standard error of estimation (SEE = 0.45), which suggests that the predicted values of compulsive shopping are relatively close to the actual values, thus increasing the reliability of the analysis. Finally, the high value of the F-test (18.92) confirms that the model was not obtained by chance, but that there is a real connection between the predictor variables of the metaverse and compulsive shopping, which further strengthens the empirical basis of the research and justifies the hypotheses set. Table 1 shows the evaluation of the individual contribution of the independent variables in explaining the dependent variable. Beta coefficients show the strength and direction of the influence of each variable, with the largest influences recorded for Economic Flow ($\beta = 0.45$, $p < 0.001$), Presence ($\beta = 0.41$, $p < 0.001$) and User Engagement ($\beta = 0.38$, $p < 0.001$), indicating that these metaverse characteristics are key predictors. Partial R^2 values show that Economic Flow contributes most of the variation (20%), while other variables, such as Presence (15%) and Creativity (12%), also have a significant but smaller contribution. All variables are statistically significant ($p < 0.05$), which confirms that each of them has a real impact on the dependent variable. In conclusion, the characteristics of the metaverse have a strong and statistically significant impact, with economic aspects, sense of presence and user engagement being the most important factors.

Table 1. Evaluation of the individual contribution of independent variables

Independent Variable: Metaverse Characteristics	Dependent Variable: Compulsive Buying Behavior				
	Beta Coefficient	p-value	Significance (Sig.)	Partial R^2	Contribution to the Model
Seamlessness	0.32	0.002	**	0.10	10%
Presence	0.41	0.001	***	0.15	15%
Interoperability	0.25	0.012	*	0.08	8%
Competition	0.28	0.008	**	0.09	9%
Economic Flow	0.45	0.000	***	0.20	20%
Persistence	0.30	0.004	**	0.11	11%
Ubiquity	0.26	0.010	*	0.07	7%
Scalability	0.22	0.018	*	0.06	6%
Creativity	0.29	0.006	**	0.12	12%
User Engagement	0.38	0.001	***	0.14	14%

Source: Author's calculation based on SPSS 28.0

In the table, standard symbols are used to indicate the level of statistical significance of the p-value:

- $p < 0.001$ (***) Very strong statistical significance, which means that the effect of the independent variable on the dependent variable is extremely strong and reliable.
- $p < 0.01$ (**) Strong statistical significance, which indicates a significant influence of the predictor variable.
- $p < 0.05$ (*) Moderate statistical significance, which means that there is an influence of the predictor, but it is smaller compared to other variables.

The results of the multiple regression analysis in Table 1 show that the models have high predictive power, which is confirmed by R^2 values in the range of 0.63 to 0.75. This means that the characteristics of the metaverse explain 63% to 75% of the variation in the dependent variable (compulsive behavior), indicating a strong influence. The adjusted coefficient of determination (Adjusted R^2), which varies from 0.61 to 0.73, further confirms that the models are well-adjusted and that there is no excessive complexity. The standard error of estimate (SEE), which ranges from 0.35 to 0.47, indicates a high accuracy of the predictions, which means that the predicted values are close to the actual ones. High F-test values (in the range of 14.00 to 25.00) and statistically significant p-values (Sig. F = 0.000) confirm that all models are statistically significant, i.e., that there is a real connection between the independent and dependent variables. All independent variables have positive Beta coefficients and statistically significant p-values ($p < 0.05$), meaning that each of them

contributes to the explanation of the dependent variable. This confirms that the hypothesis that metaverse characteristics have a significant impact on compulsive shopping is accepted.

5. Discussion and conclusion

The results of this research are fully consistent with the findings of recent studies that have investigated similar phenomena in the context of the metaverse and digital platforms. According to Boo & Suh (2024), the technical characteristics of the metaverse have a direct impact on user experience and behavior, which is consistent with our findings. These authors also emphasize that a continuous and uninterrupted experience can increase the tendency to impulsive behavior, which confirms our conclusions about the role of technical aspects in shaping compulsive shopping.

Similarly, Marshall & Bieck (2024) emphasize that the subjective feeling of presence in a virtual environment can have a profound impact on the emotional state of the user, which is fully consistent with our findings. These authors also indicate that deep immersion in the metaverse can lead to emotional changes that encourage compulsive behavior, which confirms our results and contributes to the validity of our conclusions. In the context of the economic aspects of the metaverse, Zhang (2024) emphasizes that virtual currencies and the trade of digital goods play a key role in shaping consumer habits. This is fully consistent with our findings that economic flow has the largest contribution to the model, confirming that economic aspects of the metaverse play a key role in the development of compulsive behavior. Zhang (2024) also emphasizes that platforms should develop mechanisms to control impulsive behavior, which is in line with our recommendations for practical implications. Furthermore, Wang et al. (2023) investigate the role of social interactions in the metaverse and their impact on user behavior. Their findings show that social interactions can increase user engagement, but also lead to negative effects, such as increased propensity for impulsive behavior.

Finally, Hollensen et al. (2023) emphasize that technological innovations, such as the metaverse, require new approaches in marketing and customer experience management. Their findings confirm that it is crucial to understand how the technical and social characteristics of platforms affect user behavior, which is fully consistent with the objectives and results of this research. They also emphasize the need to develop strategies that will minimize the negative effects of technology, which is in line with our recommendations for practical implications. Given the strong link between immersive VR features and addiction (Bojic et al., 2024) future interventions should prioritize regulation of multisensory and gamified elements known to encourage excessive use. Specifically, app-level protections—such as mandatory breaks, spending reminders, and in-app psychoeducation—might effectively curb compulsive purchases triggered by hyper-immersive engagement.

The results of this study not only confirm the hypothesis, but also fully agree with the findings of recent studies in this field. As highlighted in the literature, the technical and social characteristics of the metaverse have a direct and significant impact on user behavior, which is consistent with our findings. This study contributes to the existing literature by providing additional evidence on the mechanisms linking the metaverse to compulsive behavior. Therefore, technology is just a tool, and it is up to us to decide how to use it. This study contributes to this understanding, providing a foundation for further research and application in the real world. On the practical side, this study indicates the need to develop strategies that will minimize the negative effects of the metaverse on users. Platforms should introduce mechanisms to control impulsive behavior, such as limits on spending virtual currencies or warning systems that will remind users of the potential risks of excessive purchases. Also, educating users about the risks of compulsive behavior may be key to promoting responsible use of the metaverse.

Although this research provides important insights, there are certain limitations that should be kept in mind when interpreting the results. First, the research was conducted on a relatively small sample, which affects the generalizability of the results. Another limitation relates to the use of only quantitative methods, while a qualitative approach, such as interviews or focus groups, could provide deeper insight into the experiences and motives of users. In future research, it is recommended to expand the sample and use mixed methods to gain a more comprehensive insight into this phenomenon. It would also be useful to investigate how different demographic groups respond to the characteristics of the metaverse, as well as how cultural factors influence these processes. Finally, it is important to explore how technological innovations, such as artificial intelligence and machine learning, can be used to reduce the negative effects of the metaverse on users. Given that access to the metaverse is predominantly realized through mobile applications, future strategies for preventing compulsive behavior should consider app-based interventions, such as spending alerts, usage limits, or in-app educational prompts aimed at promoting digital well-being.

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