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Metaverse Users' Purchase Intention in Second Life

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***Abstract*— The Metaverse is a regenerated digital environment that fully immerses people in a virtual world experience. It is often referred to as the "internet of the future" and has drawn the interest of businesses and academics as well. An analysis was carried out utilizing Second Life as a platform in order to investigate this idea and comprehend consumers' motivations to purchase. 267 valid responses to a web-based survey using judgment and convenience sampling were obtained. The collected data was analyzed using SPSS 20 to assess the validity and reliability of the seven-dimension Technology Acceptance Model. Multiple regression modeling, validity and reliability analyses, and descriptive statistics have been carried out. The study's other hypotheses, such as the benefits of telepresence on trust, perceived usefulness, and enjoyment; perceived ease of use on perceived usefulness; perceived usefulness on attitudes; trust on attitudes; perceived social presence on trust and enjoyment; and enjoyment on attitudes in Second Life, were supported by the findings, even though the hypothesis that perceived social presence positively influenced perceived usefulness in Second Life was not supported. This research provides insights into the Metaverse and its users' virtual product purchase intentions, shedding light on its potential impact on future internet experiences.**

Keywords*— *Metaverse, second life, virtual worlds, extended technology acceptance model

I. INTRODUCTION

Digitalization has significantly transformed various aspects of everyday life, including business operations, organizational boundaries, and education. The phrase "metaverse" was first coined in the 1992 book "Snow Crash," and it refers to three-dimensional virtual environments where users can interact with one another and their surroundings without being constrained by the real world [1]. Although the idea is not new, its popularity grew when Mark Zuckerberg announced Facebook's rebranding to Meta. Second life is a multi-user popular environment which is considered as one of the primitive metaverse platforms. Second Life is often cited while discussing the metaverse since it falls under subcategories such as social virtual worlds, multi-user virtual environments, and virtual worlds [2].

3D virtual worlds are considered crucial in contemporary learning contexts as they offer opportunities for socialization, amusement, and collaborative work [3]. These realms possess an extensive background and are becoming more widely embraced due to advancements in technology. The development of communication and information technology has allowed society as a whole access to new possibilities that were previously out of reach. It has established a reputation within the digital realm by effectively integrating the most recent developments in various fields, spanning education, entertainment, design, and healthcare [3,4,5].

Increasing numbers of people are currently able to interact, shop, socialize, work, and even pursue education on virtual platforms due to technological advancements. These virtual worlds, including metaverse platforms, resemble the actual world very closely but are not constrained by it [6]. There has been a huge increase in both online gaming participation and time spent in virtual worlds. At any given time, Second Life (SL) has thousands of active users and a significant market share. These platforms thrive optimally when a sizable user base is active at once. Selling virtual items like apparel, footwear, furniture, and food has the potential to replace other forms of employment as the number of users increases. These products are bought by customers to personalize their avatars and increase their virtual world interaction.

Immersive 3D virtual worlds, or the metaverse, draw attention and funding equally as the next stage of the internet. Reaching virtual live events and workplaces enables a multi-billion-dollar business and internal economy [7]. It is crucial to peek at how people who plan to buy virtual goods behave to maintain the sector's viability. It is believed that examining consumers of Second Life, one of the biggest platforms and forerunners of the Metaverse market will benefit both the literature and the sector. The research aims to investigate the purchasing intentions of metaverse users specifically about virtual goods within the Second Life virtual environment. The idea of the metaverse, which is significant in the context of sustainable marketing techniques, is not new as mentioned earlier. Users of Second Life have had access to many of the opportunities available today since 2003. According to Philip Rosedale, the creator of Second Life, SL persists as the platform that is most closely related to the metaverse, with 650 million US dollars in yearly transaction volume [8].

The study includes users who make purchases through the Second Life platform. The study's primary limitation is that it does not account for consumers who do not make purchases. A further limitation is that the study only included users of one platform. The survey and interview questions were created using Google Forms under the assumption that the study's participants gave honest and accurate answers. The respondents were chosen for the study based on their shopping preferences in Second Life (SL) and by reviewing relevant literature to ensure their suitability for the study.

In order to shed a light consumer behavior in virtual environments, this study looks into the purchase intentions of metaverse users, with a particular emphasis on Second Life.

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The research contributes to sustainable marketing strategies and guides the development of the metaverse economy by identifying the elements that influence the purchasing of virtual goods. The problem that has to be addressed is understanding consumer decisions about the acquisition of virtual products and realizing the significance of these insights for the advancement of literature and recognition of the metaverse market's sustainable existence.

II. THEORETICAL FRAMEWORK

A. Metaverse

After being reintroduced a few years ago, the idea of the metaverse has progressively acquired popularity. Key events like Roblox's announcement that it planned to establish a metaverse and Facebook CEO Mark Zuckerberg's speech that he intended to rename the company, Meta, all contributed to a greater interest in the subject. Consequently, the phrase "metaverse," which gained popularity in 2020, became one of the most frequently used terms in 2021 [9]. The Metaverse, which is viewed as a natural development [10] is based on technology that enables people to engage across multiple dimensions, participating in virtual environments, digital objects, items, and social interactions [11, 12].

The two main categories of metaverse research are the ones that describe the metaverse's features and those that describe how it affects the way we live and how companies ought to utilize it. The definition of the metaverse in earlier works has not been given a coherent explanation or a general agreement [13]. Since Second Life's launch, the COVID-19 pandemic has affected millions of people, contributing to its rapid expansion in user base [14].

Understanding the fundamentals of marketing in the metaverse is the first step towards snatching up some of this constantly increasing market. Supporting this notion, the Council of the European Union [15] report highlights the potential for the Metaverse to capture a $800 billion market share by 2024. Correspondingly, the European Parliament's report [16] indicates that economic analyses anticipate the market share to reach €597.3 billion by 2030.

B. Virtual Worlds

Virtual worlds have already become a preferred environment and a massive market for the world [17]. It is becoming more popular as technology advances, providing spaces where individuals may socialize, have fun, and find numerous career opportunities. Besides, it is regarded as a vital instrument in modern educational methods. In the modern era, the term "virtual" is constantly heard. The term "virtual world" is formed by combining the words "world," which refers to the space where we experience and sense the presence of objects in the physical realm [7] as well as "virtual," which is explained as "developed with computer technology, providing the impression of presence but not existing in the real world." [18].

These virtual worlds are categorized by Furber [19] as metaverse platforms, internet games, and video games. These virtual realms, which began as text-based Multi-User Dungeons (MUDs), evolved into persistent settings and then into Massively Multiplayer Online Role-Playing Games (MMORPGs), which are distinguished by their ability to accommodate a large number of players at once [20]. In a comparison between virtual worlds and other unreal environments, Bartle [20] emphasizes the absence of physics, the representation of a single player, and the parallel time to real life. These unique attributes define virtual worlds. Individuals trade virtual goods within virtual areas, generating a distinctive business environment.

According to research by Guo and Barnes [21], the rise in transactions involving virtual products requires a study of consumer purchasing behaviors. The market for virtual products and services, especially those that improve avatar qualities, is significant in virtual environments [22]. The popularity of virtual goods is rising alongside the growth of e-commerce and other online social networks. This shift is driven by the increasing presence of human activities online, leading to a growing desire to enrich virtual experiences.

C. Second Life

Since it was founded years ago, Second Life, a long-running real-time multiplayer virtual environment, has maintained its popularity. Users from all around the world create avatars and through these avatars, they can socialize, and run business as in real life. For some individuals, this world serves as an outlet to escape the pressures and challenges of their actual lives, whereas some use it to pursue their academic goals and engage in social interactions without disclosing their genuine identities. The Linden dollar, which can be converted into other currencies and is frequently regarded as an ancestor of contemporary cryptocurrencies, is a unique virtual currency used in this environment [23].

Within SL, users have an enormous chance to take part in constructive projects and actively engage in business. The development of social entrepreneurship projects and community-based activities is supported by social and cultural factors in SL [24]. Virtual staff members are employed by virtual businesses including bars, and shopping centers to do a variety of tasks. Some people help beginners by offering their knowledge and advice. Notably, accomplished entrepreneurs have established profitable online ventures [25].

Numerous real-world companies, such as Adidas, BMW, IBM, and Vestel, have taken part in Second Life in the past decade [26, 27, 28]. Most of the companies did not maintain their SL activities over time. According to Dogan, Hello Kitty is a distinctive real-world branding which may be found across Second Life. Dogan goes on to state that virtual brands generated by SL users are more appropriate for the SL platform than well-known real-world companies [28].

Beyond its potential for commerce, Second Life hosts a number of charitable organizations, which include the "American Cancer Society," "Whole Brain Health," etc. Additionally, SL contributes to education by hosting virtual campuses for universities like Texas State, Harvard, and "Çağ University". These online virtual campuses provide a wide range of courses in subjects including business administration and language study [29,30].

D. Technology Acceptance Model

When it comes to predicting user adoption and utilization [31,32,33,34] TAM is recognized as a reliable and strong model [35] and is the model that has received the most empirical evaluation and citations in the field [36,37]. TAM attempts to make clear how people view and interact with information technology, as well as how they embrace it and plan to use it. The main goal is to find the elements that influence people's propensity to purchase online [38]. TAM is a model that has been tested and validated many times. Given that Metaverse is a novel technology, the TAM model's enhancements will enable us to better comprehend consumers' intentions to purchase virtual goods in particular.

This concept contends that before a person embraces a technology, they need to know the way to utilize it and perceive its use to be straightforward. They should also recognize the advantages that the technology brings them. Perceived ease of use (PEOU) and perceived usefulness (PU) influence a person's attitude toward that technology. Such perspectives reveal a person's tendency to utilize technology [39]. This model forecasts people's actions when they are unfamiliar with a system. Users' actions toward an information system are affected by PEOU and PU. Such actions eventually impact the user's motivation to utilize the system, which results in acceptance [40].

Due to intensive research efforts, TAM, which was initially developed to describe technological acceptance, has changed and improved through time. The model known as "TAM with attitude," established by Ingham et al. [41], was further developed by White Baker et al. [42] This expanded model is used to determine whether e-commerce is successful. Along with the already existing factors PEOU, PU, TRST, ENJ, PSP, and TEL are introduced. The original TAM components of PEOU, PU, ATT, ENJ, TRST, PSP, and TEL are included to clarify the variables inside this model [41,42].

III. Hypotheses And Research Model

The model of the research and the hypotheses based on the model are illustrated in Figure 1 below, based on previous studies.

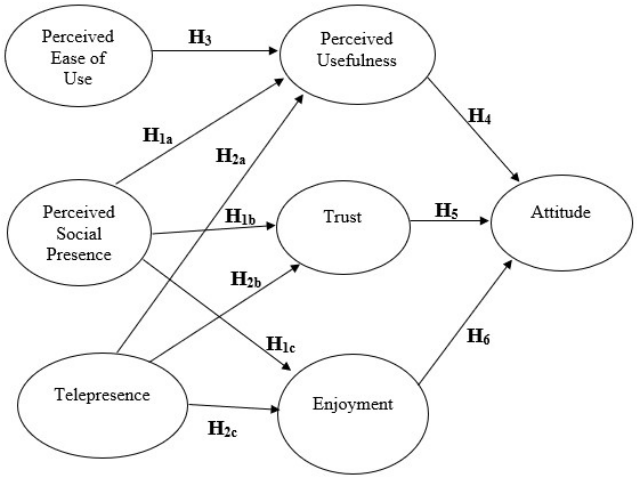

FIG. I. THE MODEL AND HYPOTHESIS OF THE RESEARCH

The concept of social presence was first put forth by Short et al. [43] [44,45]. PSP refers to the associated sense that one has while using the technology [46]. When a platform operates as a communicator between a virtual store and a consumer, there will be a positive connection between PSP and PU [47]. This leads to the following hypotheses:

H1a. *Perceived social presence has a positive impact on the perceived usefulness in SL.*

According to some research in the available literature, the formation of trust involves perceived social presence [48, 49]. The greater one's social presence, the more difficult it is to live dishonestly [42]. This points to the following hypotheses:

H1b. *Perceived social presence has a positive impact on trust in SL.*

The hedonic aspect of enjoyment impacts the inclination to make an online purchase [50]. The idea that internet shopping will be enjoyable is true. Customers can experience an emotional connection in the virtual environment that is pleasurable in a way that is like what it would be like to be with people in person thanks to perceived social presence, which is the idea that they are connected to others when interacting with them through an interface. Customers are likely to enjoy themselves more in an online environment where they feel more socially present [51]. This leads to the following hypotheses:

H1c. *Perceived social presence has a positive impact on the enjoyment in SL.*

Steuer [52] defines telepresence as the perception of feeling physically present in a space while interacting with a simulated atmosphere. The physical environment is disregarded when experiencing the telepresence and concentrated on these surroundings. In contrast to two-dimensional environments, this emotion is stronger in virtual worlds [53]. According to the findings of Samira and Rosyihan's research [55], telepresence drastically impacts purchase intention, and the ability to move around and do as one pleases might promote the growth of purchase intention. The perception of usefulness is anticipated to improve as telepresence levels rise.

H2a. *Telepresence has a positive impact on the perceived usefulness in SL.*

The experience of feeling physically present in a space while applying virtual surroundings is known as telepresence, as defined by Steuer [52]. When perceiving the telepresence circumstance and concentrating on this space, the physical environment is forgotten. Previous studies [42,55,56] showed that physical telepresence strongly affected e-commerce attitudes and trust. This leads to the following hypotheses:

H2b. *Telepresence has a positive impact on trust in SL.*

Whenever an individual seems extremely present in a virtual space, they focus on the environment instead of their immediate surroundings. These individuals are more likely to enjoy themselves and feel less like there is a disconnect between them and the virtual environment. Recent research has shown how telepresence affects enjoyment [42,57,58]. This leads to the following hypotheses:

H2c. *Telepresence has a positive impact on enjoyment in SL.*

"The way that an individual assumes that implementing a specific system would be effort-free" represents what Davis [59] referred to as perceived ease of use. According to him, buyers of applications they find easy to use were more likely to utilize these. It is an essential concept since it impacts consumers' PU-based purchase intentions and serves as one of the main barriers to the adoption and utilization of novel technologies [60]. This points to the following hypotheses:

H3. *Perceived ease of use has a positive impact on the perceived usefulness in SL.*

As stated by Davis [59], "the way a person perceives that employing a particular system will increase their performance" is a measure of perceived usefulness, an essential component of the model of technology adoption. Shih [61] claims that the perceived benefits of Internet shopping include reduced prices and faster delivery dates. Attitude is defined as "positive or negative feelings about performing the behavior" [62], and PU and PEOU have an impact on attitudes. Attitudes ultimately impacts the behavioral intent [63]. In line with Davis et al. [33], PU and PEOU mutually identify ATT in TAM using empirically calculated regression coefficients. This supports the following hypotheses:

H4. *Perceived usefulness has a positive impact on attitudes in SL.*

A person's assumptions regarding other people, which generally depend on their previous interactions, are the basis of their trust [64]. Several studies have found in the literature that the TRST variable impacts consumer sentiment toward using technology [65, 66, 67]. It supports the following hypotheses:

H5. *Trust has a positive impact on attitudes in SL.*

Customers are more likely to make purchases when they are experiencing larger levels of enjoyment, which is a good feeling that can motivate them to make a purchase [51]. Studies are showing that the pleasure of online shopping positively affects the attitudes of consumers [42]. This leads to the following hypotheses:

H6. *Enjoyment has a positive impact on attitudes in SL.*

IV. Materials and Methods

A. The Research Sample

To examine the purchasing intentions of metaverse residents regarding virtual goods in SL, data were gathered from users who were chosen by convenience and judgment sampling methods. When asked whether they purchase products in Second Life, 267 out of 281 respondents said "yes" and voluntary participated in the study. It had been utilized a screening question in the survey to make sure that all the participants had shopping experiences.

B. Procedure

Through the application of Google Docs as a tool, a voluntary survey conducted on a generic consumer group generated the main dataset for the study. The questionnaire was divided into four sections and a form with 44 items in total was created for it. The third section of the questionnaire comprised 26 items which were evaluated on a 5-point Likert scale, while the other parts were questions about demographics and descriptive information. It was required to respond to every question in the online survey. As a result, it was ensured that the survey was completed entirely and sent. The online survey link was sent by the researchers on March 16 and May 17, 2022. First, with help from SL users, the researchers had previously interacted with a pre-test including 62 replies was carried out during the questionnaire distribution phase. As a result of participants' comments received through e-mail and SL's chat function at this point, the study underwent the specific alterations stated in the analysis section.

The researchers asked the SL avatars at random if they would be willing to participate in the study and those who said yes were given the link. Additionally, distribution was shared on Reddit, virtualverse.one, and SL Community Forums, among other websites. On their pages, various SL authors additionally addressed the questionnaire. Despite the varied sharing structures and channels, 267 SL residents took part in the study. This is caused by SL users' reluctance to click on a URL from an unknown source, based on observations. The SPSS program was utilized to analyze the valid data (267).

C. Data Collection Tools

White Baker et al. [42]'s study provided the framework for the research, and 26 items were adjusted. White Baker et al. [42], likewise, utilized the scales consisting of "PEOU" [68,69], "PU" [70,71], "ENJ" [72,73], "TRST" [74], "PSP" [48], "TEL" [75], "ATT" [68,76] from the mentioned studies. Four parts constitute the online survey distributed to the study's participants. The first question posed to the participants was added to exclude those who do not make purchases in the SL. Afterward, it was tried to determine the channels where users frequently purchase. A five-point Likert-type scale was applied to prepare the items for the third phase, which assessed the purchase intentions of Second Life users. Simultaneously, inquiries were carried out to evaluate consumers' habits of use. The last part of the questionnaire contained questions on demographic characteristics.

V. Results

A. Demographic Characteristics

Accompanying evaluation of the 267 feasible comments' accuracy and comprehensiveness regarding the screening question. Of the respondents that were included in the research, 168 (62.9%) were female, whereas 177 (66.3%) stated that they preferred female avatars. Results indicated that 121 users (45.3%) grouped into the '12 years and above' SL age group, with 55 (20.6%) belonging to the 36-45 age range. When looking at the participants' marital status, it can be noted that 79 people (29.6%) have a master's degree or more, and 123 of them (39.8%) are single.

B. Findings Regarding the Participants' Purchase Patterns

This section provides results from the study's investigation into the buying behaviors of SL users. As the online survey circulates, more descriptive questions have been added, which

has affected the number of participants. When formulating new requests, the feedback from those who responded was considered.

When asked how frequently they bought goods, 63 (28.5%) stated they did it at least once a week, 49 (22.2%) of them claimed they performed it once a week, & 23 (10.4%) of them indicated they did so daily.

TABLE I. REASONS FOR PURCHASING PRODUCTS

	n	%
an event	120	17,5
group theme	83	12,1
occasions	96	14,0
getting a favorable price	130	19,0
feeling joyful	118	17,2
keeping pace with fashion	96	14,0
other	43	6,3
Total	686	**100**

Table 1 displays the answers to another descriptive question that was developed using the participants' comments. When the table is analyzed, it is demonstrated that the respondents usually purchase products to feel joyful, get a good deal or a good price, and participate in an event.

TABLE II. FREQUENTLY PURCHASED GOODS/SERVICES

Goods / Service	**n**	**%**
Clothing	225	19
Footwear	171	14,4
Hair	168	14,2
Accessories	158	13,3
Home and Garden	151	12,8
Real Estate	65	5,5
Art	65	5,5
Vehicles	64	5,4
Scripts	54	4,6
Other	40	3,4
Weapons	23	1,9
Total	1184	**100**

Respondents were inquired about their frequent acquisitions in SL. As depicted in Table 2, certain categories were specified, and participants were permitted to select multiple options. The table presents data collected from 267 participants, revealing that SL users predominantly buy clothing, with shoes, hair, and accessories following closely behind according to the gathered data.

FIG. II. SECOND LIFE STORE NAMES

Users received inquiries about their shopping destinations. As a result, some users provided one or more names, while others gave the response "far too many to list herein" (11,3%). The most frequently encountered stores in the responses were "Blueberry" and "Addams" stores (see Figure 2).

The question of whether respondents intend to experience virtual worlds other than Second Life and which one they would favor most was asked to the respondents. They answered this wide-ranging inquiry in different ways. Answers included names like "Meta, Sansar, OpenSim, Kitely, and Decentraland" regularly. Some of them indicated that they had already used a different virtual world beyond SL, and "OpenSim, Kitely, and Sansar" were the most common names among them. Those in the "Possibly, but do not know any" response category said they would be open to trying out a new virtual environment, yet they are uncertain of which ones are noteworthy. Moreover, half of the responses were "no," which was reported by 139 participants.

TABLE III. PURPOSE OF SECOND LIFE JOINING

Goods / Service	***n***	**%**
Socialization	78	20,7
Recommendation from someone	57	15,1
For role-playing and activities that aren't possible in real-life	44	11,7
Curiosity	42	11,1
Exploring	42	11,1
Customizing and content creation	32	8,5
Escaping from RL	26	6,9
Business	23	6,1
Education	17	4,5
Remaining empty	9	2,4
Covid-19	7	1,9
Total	337	**100**

The open-ended question "Q17) What attracted you to Second Life?" was asked to the participants in the questionnaire form, and many responses were received. As shown in Table 3, the replies have been sorted into various categories. Based on the answers, each of them was assigned to more than one related category rather than just one. According to the study results, a sizable percentage of people (78 participants) choose Second Life mostly for socializing. Another factor that 57 participants pointed out in their choice to join the platform was that they had been introduced to Second Life by someone else, such as relatives or friends.

C. Analysis of Validity and Reliability

This section presents the study's validity and reliability analysis. The questionnaire's reliability coefficient for its 26 items was 0.945. The outcome demonstrates the scale's high level of reliability. The values for kurtosis-skewness indicate that the data were normally distributed.

TABLE IV. FACTOR ANALYSIS RESULTS

Variables and Measurement Items	***Factor Loading***	***Cronbach's Alpha***
Perceived Ease of Use		***,880***
PEOU1	0.707	
PEOU2	0.752	
PEOU3	0.821	
PEOU4	0.754	
Enjoyment		,947
ENJ1	0.810	
ENJ2	0.831	
ENJ3	0.796	
ENJ4	0.780	
Telepresence		,891
TEL1	0.857	
TEL2	0.864	
TEL3	0.806	
TEL4	0.767	
Trust		,898
TRST1	0.843	

Variables and Measurement Items	*Factor Loading*	*Cronbach's Alpha*
Perceived Ease of Use		***,880***
TRST2	0.865	
TRST3	0.648	
TRST4	0.633	
Perceived Social Presence		,952
PSP1	0.903	
PSP2	0.875	
PSP3	0.889	
Perceived Usefulness		,921
PU1	0.507	
PU2	0.818	
PU3	0.855	
PU4	0.702	
Attitude		,902
ATT1	0.785	
ATT2	0.761	
ATT3	0.742	

[a.] Notes: n = 267

Table 4 displays the factor analysis results for 26 items in the questionnaire form that addressed respondents about their intentions of purchasing virtual products in the metaverse. The specified factor loads are based on the above 0.50 value. Values above 0.70 were considered when evaluating the Cronbach Alpha (CA) coefficient. In this study, the variables were accepted as reliable since the CA value of each variable was above 0.70.

D. Analysis of Multiple Regression

Multiple regression analysis was utilized in this research. The regression analysis employed the "enter" method. The percentage of the dependent variable that the independent variables in the model explained was evaluated in this analysis. Durbin-Watson statistics were used to examine the possibility of first-order autocorrelation. There is no autocorrelation when the Durbin-Watson test statistic is between 1.5 and 2.5 [77]. The diagnosis of multiple correlations was made using the Variance Inflationary Factor (VIF). The possibility of a problem with variable divergence is indicated by the fact that the VIF number, which represents divergence among all of the independent variables, is more than 10 [78]. As a consequence of the regression analysis's findings, it was determined that there was no issue with divergence among the independent variables since the VIF value for each independent variable did not surpass 10.

TABLE V. REGRESSION ANALYSIS RESULTS FOR H1A, H2A, H3 HYPOTHESES

Independent Variables	Unstandardized β	Std. Error	Standardized β	t	Sig	Tolerance	VIF
(Constant)	,337	,183		1,843	,067		
PSP	,053	,033	,074	1,633	,104	,789	1,267
TEL	,101	,038	,121	2,668	,008	,782	1,278
PEOU	,717	,043	,696	16,659	,000	,927	1,079
Dependent Variable: PU **Independent Variables:** PSP, TEL, PEOU ***R*=0,758, *R²*=0,575, *R²(adjusted)*=0,570, *F*=118,558, *p*=0,000** ***Durbin-Watson** = 1,905*							

PSP, TEL, and PEOU were marked as independent variables, and PU was marked as the dependent variable. Based on the R2 value, the independent variables in the model may clarify 57.5% of the variation in the perceived usefulness. The difference between the t-values for PEOU and TEL, 16.659 for PEOU and 2.668 for TEL, shows that PEOU provides a more convincing explanation for the variances in constructing Perceived Usefulness (PU) than TEL. The connection between the "Perceived Social Presence" measure and Perceived Usefulness shows no statistically significant link, as shown by the p-value of 0.104, which is higher than the 0.05 significance level. Consequently, the hypothesis H1a is not substantiated.

TABLE VI. REGRESSION ANALYSIS RESULTS FOR H4, H5, H6 HYPOTHESES

Independent Variables	Unstandardized β	Std. Error	Standardized β	t	Sig	Tolerance	VIF
(Constant)	1,047	,183		5,709	,000		
PU	,123	,051	,142	2,404	,017	,539	1,854
TRST	,230	,057	,253	4,043	,000	,482	2,073
ENJ	,392	,049	,430	7,965	,000	,647	1,544
Dependent Variable: ATT **Independent Variables:** PU, TRST, ENJ ***R*=0,709, *R²*=0,503, *R²(adjusted)*=0,497, *F*=88,685, *p*=0,000** ***Durbin-Watson** = 2,137*							

Table 6 illustrates that the regression model is statistically significant. Multicollinearity problems are not present when tolerance values are more than 0.10 and VIF values are less than 10. The model is derived from three independent variables, and H4, H5, and H6 are supported.

TABLE VII. REGRESSION ANALYSIS RESULTS FOR H1C, H2C HYPOTHESES

Independent Variables	Unstandardized β	Std. Error	Standardized β	t	Sig	Tolerance	VIF
(Constant)	2,526	,154		16,419	,000		
PSP	,288	,038	,420	7,540	,000	,803	1,245
TEL	,206	,044	,262	4,702	,000	,803	1,245
Dependent Variable: ENJ **Independent Variables:** PSP, TEL ***R*=0,585, *R²*=0,342, *R²(adjusted)*=0,337, *F*=68,739, *p*=0,000** ***Durbin-Watson** = 1,746*							

The R^2 value in the performed regression analysis was found to be 0.342. This shows that PSP and TEL can explain 34% of the variation in enjoyment. The error terms have a high positive association, as indicated by the Durbin-Watson value of 1.746. With a p-value of 0.000, the regression analysis's findings showed a relationship between PSP, TEL, and ENJ. As a result, the analysis's coefficient is statistically significant, providing evidence in favor of the hypotheses H1c and H2c.

TABLE VIII. REGRESSION ANALYSIS RESULTS FOR H1B, H2B HYPOTHESES

Independent Variables	Unstandardized β	Std. Error	Standardized β	t	Sig	Tolerance	VIF
(Constant)	2,526	,75		14,391	,000		
PSP	,175	,043	,254	4,024	,000	,803	1,245
TEL	,164	,050	,207	3,285	,001	,803	1,245
Dependent Variable: TRST **Independent Variables:** PSP, TEL ***R*=0,393, *R²*=0,154, *R²(adjusted)*=0,148, *F*=24,108, *p*=0,000** ***Durbin-Watson** = 1,943*							

PSP and TEL were introduced as independent factors in the regression model shown in Table 8 with TRST being the dependent variable. R^2, the model's explanatory power, was determined to be 0.154. 15.4% of the variance in the dependent variable may be attributed to the independent variables in the model, as indicated by this figure. The Durbin-Watson value

for this model, which is 1.943, is also noteworthy. Both independent variables have tolerance levels above 0.10, but their VIF values are still less than 10. This demonstrates the absence of multicollinearity issues within the model.

VI. Discussion and Conclusions

Businesses engage in highly interactive behavior to stay up with the modern world's rapid advancements. They ought to react to the competition and engage in cost-effective competition. In addition to physical marketplaces, competition has grown increasingly difficult in recent years in virtual ones as well. While the world has changed and there is an increasing shift towards virtual markets, it additionally exposes a descriptive characteristic of consumer behavior. Businesses are coming up with their virtual market strategy to recognize the significance of digitalization. To rule the virtual markets, new and unconventional approaches are required [79].

Numerous international businesses, such as Gucci, Ralph Lauren, Vans, Pepsi, and Coca-Cola, are interested in and have invested in metaverse platforms. Among these companies are Gucci, which worked with Roblox and Zepeto; Ralph Lauren; Louis Vuitton, which designed a line for League of Legends; and Nike, which offered virtual apparel via Zepeto [80,81]. This heightened interest in global brands is not a recent development. As was already mentioned, there have previously been a lot of companies within Second Life, such as Adidas, BMW, Mercedes Benz, Philips, and American Apparel.

According to Barnes et al. [82], the inability of companies to build strong brand interactions and relationships with customers is the reason why they fail. Hemp [83], on the other hand, notes that real-world companies' efforts to build their brands in virtual environments are insufficient simply by existing there. Instead, he indicates that there should be activities that will raise the brand's visibility, such as getting involved in charitable events. In this regard, it is thought that it was appropriate to look into Second Life's (SL) consumer behavior, given that SL is the largest and most connected platform to the metaverse [84]. This may help businesses to learn from their previous mistakes.

By assessing variables consisting of attitude, PSP, PEOU, TEL, ENJ, TRST, ATT, and PU, the study sought to understand patterns among Second Life users (residents). 14 participants who stated they did not make virtual purchases were not included in the analysis. In both real life and Second Life, there was a sizable proportion of women among the participants. General data on their marital status, level of education, place of job, and income were also acquired for the study. Notably, 63 respondents made regular purchases, mostly driven by good deals, attending events, and seeking happiness. The most often purchased things were found to be apparel, footwear, hair, and accessories.

The names “Blueberry” and “Addams” came up frequently when participants were asked to list the names of the stores they frequently visited throughout the study. 139 out of 267 respondents (52.1%), when asked if they were interested in trying out another virtual environment, responded “no.” Many of them gave reasons for their hesitation, including the fact that they have friends in Second Life and find it difficult to imagine spending time in another virtual environment. In addition, although there were many motivations for joining Second Life, sociability emerged as a key factor among the users.

To evaluate the impact of various variables on consumers' purchasing intention in Second Life, researchers modified 26 products from White Baker et al.'s [42] study. The influence of “PSP on PU in SL” was one of the hypotheses that was shown to have no significant effect ($p = 0.104 > 0.05$). Except for H1a, the other hypotheses were supported statistically (p 0.05). In their study, White Baker et al. [42] referred to the research conducted by Animesh et al. [66] which investigated the influence of external stressors on users' software-generated interaction. According to Animesh et al. [66], virtual involvement arbitrators PU, TRST, and ENJ highly impact attitudes and purchase intention. However, PSP was found to have a beneficial impact on PU in the context of SL in a 2019 study by White Baker et al. White Baker et al. [42] found no evidence to support the favorable influence of TEL on PU, in contrast to prior findings. While the majority of their findings were in line with earlier studies, one result—the link between TEL and PU—broke from the expected trend. There are inconsistent results in the literature regarding the relationship between TEL and PU, precisely as the relationship between PSP and PU [42].

The limitation—that it only examines one platform—may be overcome by future research by utilizing other platforms in diverse ways. The dependability of the study's results may be further improved by boosting the sample size. Furthermore, for the next studies, interviews with merchants who own a Second Life brand may be undertaken.

To explain the adoption of new technologies like the metaverse, it would be beneficial to examine in further research with consumer behaviors on this (SL) and similar platforms in the context of other theories (Unified Theory of Acceptance and Use of Technology, Diffusion of Innovations Theory, Social Cognitive Theory, Task-Technology Fit Model, Cognitive Evaluation Theory, etc.).

The research's objective was to identify the variables that impact SL users' purchase intentions; therefore, it is expected that knowledge of these intentions will be beneficial for future research and for businesses considering using well-known metaverse platforms. It is believed that SL should take advantage of the present situation, particularly in light of the recent revival of discussion surrounding the Metaverse. SL is always seen to be growing, but not to the level it merits with an audience that is already loyal. Advertising may be prioritized, as in the past, to draw global brands to its framework.

Instead of repeating their past mistakes and focusing solely on preserving their presence on platforms, businesses might try out the various academically recommended techniques.

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CONFLICT OF INTEREST

The Author(s) declare that they have no conflicting interests

DATA AVAILABILITY

The data supporting the findings of this study are available upon request from the authors.

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