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Research Paper

Understanding Metaverse Intentions: The Impact of Perceived Behavioral Control, Attitude and Subjective Norms in Business Industry of Algeria

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Abstract

The metaverse has the ability to extend the physical world by utilizing augmented and virtual reality technology, allowing users to interact fluidly between real and simulated settings via avatars and holograms. However, intention of people towards the metaverse technology adoption is low which was not addressed by the previous studies, particularly in Algeria. Although the metaverse technology has vital importance for people while dealing with the business transactions, however, intention of the people was not addressed. Thus, this study examined the impact of perceived behavioral control (PBC), attitude, and subjective norms (SN) on intention towards metaverse technology use in business industry of Algeria. This study developed a questionnaire to measure PBC, attitude, SN and intention towards metaverse. The questionnaire was filled by the customer of various businesses involved in metaverse technology in Algeria. The positive role of PBC, attitude and SN was observed in case of intention towards metaverse. These elements such as PBC, attitude and SN has most crucial role in the development of intention towards metaverse.

Introduction

In the current era of industrialization, the use of metaverse in business activities is increasing significantly (Lee et al., 2021). Business organizations see the metaverse as a new path to connect their customers and create new opportunities for business expansion. Since the metaverse can assist in business improvement by creating immersive virtual environments for client engagement, developing the brand experiences, and advancing the innovation (Kim & Kim, 2021). It allows remote cooperation as well as training, improving productivity along with team cohesion (Lee et al., 2021). Furthermore, it offers new revenue flows with the help of virtual products as well as services, expanding market reach along with customer base. The growth in metaverse technology use can be clearly seen from Figure 2. The metaverse advances people by proposing immersive social interactions and entertainment, providing straightforward education and training opportunities, and enabling new forms of isolated work and collaboration.

Despite the extensive benefits of metaverse, the intention of people to use metaverse technology is very limited in Algeria. Although the technology of metaverse is not very old (Isaac, 2021; Singh et al., 2021), the percentage of people adopting this technique is not very. Business is trying to adopt these technologies, however, the intention of people to accept this technology is not very high. Less use of this technology by the people leading to decrease the benefits of the implementation of metaverse by various business organizations. Therefore, it is very important to increase the intention of people to extensively use this technology and get the valuable benefits. That is the reason the current study attempted to highlight the intention of people towards metaverse through various factors.

According to the current study, theory of planned behavior can play a focal role in the promotion of metaverse intention among people. The elements of this theory can be implemented to enhance the metaverse intention. For instance, this theory suggested that perceived behavioral control (PBC), attitude and subjective norms (SN) has the potential to enhance the level of intention of individuals. Therefore, this study considered PBC, attitude and SN to examine the role of in metaverse intention development. Several previous studies highlighted the use of metaverse (Kim & Kim, 2021; Kye et al., 2021; Lee et al., 2021; Lee et al., 2011), however, behavioral control, attitude and SN was not addressed. Hence, this study examined the impact of PBC, attitude, and SN on intention towards metaverse technology use in Algeria. The relationship of PBC, attitude, SN and intention towards metaverse technology use is shown in Figure 2. The achievement of this objective filled important literature gaps which were not addressed by previous studies.

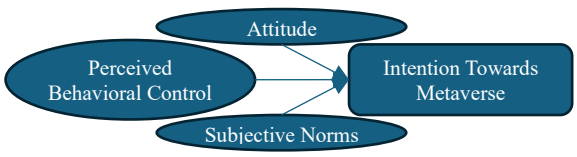

Figure 1: Study Model Showing the Relationship of PBC, Attitude, SN and Intention Towards Metaverse Technology Use.

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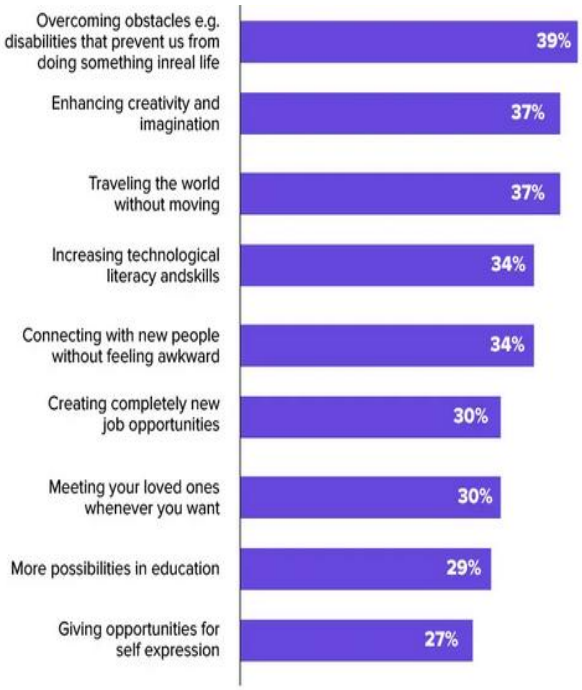

Figure 2: Benefits of Metaverse Use.
Source: Appinventiv

Literature Review

Attitude

Attitude refers to a psychological construct representing an individual's positive as well as negative estimate, feelings, and inclination towards a distinct object, person, event, or the idea (Al-Rahmi et al., 2021; Chen & Kao, 2020; Kodjamanis & Angelopoulos, 2013; Muis et al., 2015; Wilkinson, Roberts, & While, 2010). It encompasses affective, cognitive, and the behavioral modules, displaying how one feels, thinks, and behaves viewing the subject. Attitudes are modeled through experiences, social controls, and personal beliefs, often manipulating decision-making and actions (Alkhalaf et al., 2013; Changchun, Haider, & Akram, 2017). They can be explicit (consciously held as well as expressed) or implicit (unconscious and automatic). Understanding attitudes is essential in fields like psychology, marketing, as well as sociology as they pointedly affect behavior and social communications.

Most fundamental concepts in all of social psychology is attitude. Classifications of attitude have changed somewhat throughout history. However, much of the literature provides a one-dimensional or tridimensional explanation of attitude. From this limited perspective, an attitude is nothing more than a value assessment of how wonderful or awful something is (Manstead, 1996). Attitude is defined as "the disposition to respond favorably or unfavorably to an object, institution, or event" (Janzen, 2005). One's attitude is frequently linked to their actions. However, numerous studies have presented that attitude is a poor interpreter of actual behavior. The direct correlation between perceived convenience, perceived ease of use, and future behavior is moderated by attitude. The learner's perspective significantly influences how receptive they are to embracing e-learning (El-Bakry & Mastorakis, 2009; Su, Tzeng, & Hu, 2016). The perception of something's simplicity and usefulness determines its attitude. Attitudes towards the adoption of metaverse products are favorable or unfavorable depending on the positive behavior of other people.

Subjective Norms

SN denote to the perceived social density a particular feels to perform or not achieve a particular behavior (Abrams, Ando, & Hinkle, 1998). They are induced by the beliefs and the expectations of significant others, such as family, friends, and colleagues, regarding the behavior in question. This perception plays the crucial role in decision-making and behavior, as persons often correspond to the norms to gain social approval or avoid disapproval (Al-Swidi et al., 2014; La Barbera & Ajzen, 2020). SN are a crucial section of the Theory of Planned Behavior, helping predict behavioral intentions.

A person's SN are the person's perspective of how most significant individuals to him believe he should or should not engage in the activity in question." SN has been found to be more significant prior to or during the early stages of innovation adoption, when consumers have little direct experience to build attitudes (Keo, Norng, & Seng, 2021; Pierce & Delbecq, 1977). Adoptive parents could experience pressure from their social networks. SN towards the adoption of metaverse products depend upon the behavior of the people who are important to an individual. An individual will adopt metaverse if the majority of people who are important to him are using the metaverse products positively.

Perceived Behavioral Control (PBC)

PBC refers to an individual's faith in their capacity to perform a particular behavior, considering both internal and external factors (Cheung & Chan, 2000; Kidwell & Jewell, 2003). People's sense of the ease or difficulty of engaging in interest-based behavior defines the extra construct known as PBC, which is used to explain nonvolitional acts. It includes the perceived ease or difficulty of carrying out the behavior, as impacted by previous experiences and predicted impediments. It specifically suggests that the presence of constraints can impede intentions to perform behavior and its actual performance. This concept is crucial in determining behavioral intentions, as higher perceived control generally leads to stronger intentions to engage in the behavior (Aminnuddin, 2020; Hussain & Javed, 2019; Jain et al., 2020; La Barbera & Ajzen, 2020; Mcmillan & Conner, 2003). PBC is a central element of the Theory of Planned Behavior, shaping how individuals approach decision-making and action. Figure 3 highlighted that how attitude, SN and PBC shaping intention of the people.

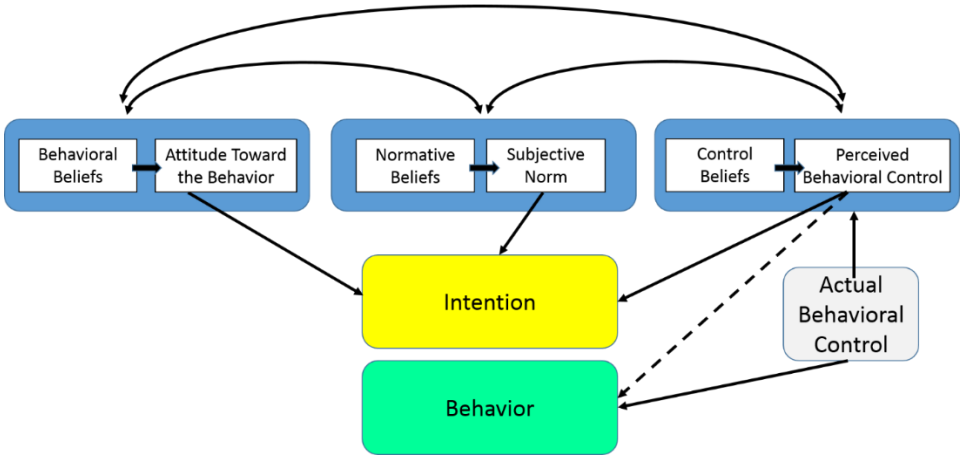

Figure 3: The Theory of Planned Behavior.
Source: Ajzen (1991)

Intention Towards Metaverse

Intention towards metaverse reflects individuals' plans and motivations to engage with virtual environments. Positive attitudes, perceived ease of use, and social influences significantly shape this intention in Algeria. Understanding these factors can help predict user adoption and guide the development of Metaverse technologies. Attitude is a settled way of thinking or feeling about something (de Wit, van Oorsouw, & Embregts, 2021; Meihua, 2009; Packham et al., 2010; Rice & Aydin, 1991). If an individual has positive attitude, by the SN and PBC from authorization and from other peoples will get the intention towards the metaverse. An individual has the effect from his social factors if the majority of peoples from his society using the metaverse rather than other technology. The last thing will remain in the mind of an individual that is the difference of technology.

Hypotheses Development

The Relationship Between Attitude and Intention Towards Metaverse

The word "attitude" describes a person's sustained emotional reaction to socially significant items, including other people, locations, and events (Phan, Wong, & Wang, 2002; Vlasic & Kesic, 2007). There is a term for this in psychology called "favorability bias." One's attitude towards something reveals how favorably or unfavorably they perceive it. The likelihood that someone may adopt metaverse practices can be partially predicted by their worldview. It has been demonstrated that attitudes affect behavior. Most people will choose, from a list of options, the one that gives the most weight to their most important values. The significance of attitude and intention in influencing future behavior is well documented in the literature (Ashill, Rod, & Carruthers, 2008; Ibrahim & Najjar, 2008; Keo et al., 2021; Zarei, Asgarnezhad Nuri, & Noroozi, 2019).

The relationship between attitude and intention (Ashill et al., 2008; Okumus et al., 2019; Sathyanarayan & Lavanya, 2018; Zarei et al., 2019) toward the metaverse indicates how the favorable or negative perceptions of metaverse affect the possibility of joining with it. A positive attitude toward metaverse usually leads to the higher intents to engage and explore its virtual environs. Understanding this link aids on predicting user adoption and developing tactics for increasing involvement with the metaverse. Research has been done on general consumer behavior as well as the topic of metaverse technological integration. Therefore, it may be inferred from an earlier study that having a positive attitude boosts a consumer's likelihood of making a purchase. However, numerous studies have found an inverse relationship between attitudes and intended behavior.

Hypothesis 1: *There is a positive relationship between attitude and intention towards metaverse.*

The Relationship between Subjective Norms and intention towards Metaverse

SN refer to the effect of social factors, such as the societal pressure to exhibit or hide a specific activity (Abrams et al., 1998; Al-Swidi et al., 2014). Various social contexts can have an impact on how people feel about a certain conduct. SN are composed of normative concepts, the underlying belief systems, and the will to hold onto such beliefs. People are considered to possess normative beliefs when they have a strong desire to adhere to the norms of a dominant group. One's SN are the sum of one's normative beliefs and the weight one accords to those concepts. The degree to which a person has a favorable or unfavorable assessment of the behavior in question is reflected in their attitude. It necessitates considering how your activities could impact others.

The concept of "SN" refers to an individual's assessment of whether an action is socially acceptable (Al-Swidi et al., 2014). There are beliefs at work here about whether or not the person's friends and other important people believe he or she should engage in the conduct. We inquire about how simple or difficult it is for a person to engage in the action being studied while

talking about their perceived level of behavioral control (Manning, 2009). Depending on the situation in which it is being used, a person's perception of their own behavioral control will alter. The person's attitude can be positive or negative after some social influences having important role in use of metaverse. According to the literature, SN only have a little influence on future behavior of people using metaverse. The relationship between normative belief systems and behavior intentions has been the subject of conflicting findings in the literature, although more research is still needed on metaverse usage and adoption. SN is a significant predictor of conduct. Additionally, it has been demonstrated that subjective standards may accurately anticipate customers' intentions when it comes to use metaverse.

Hypothesis 2: *There is a positive relationship between SN and intention towards metaverse.*

The Relationship Between PBC and Intention Towards Metaverse

PBC is defined as "any individual's faith as to how easy or challenging the performance of the actions is likely to be" (Kidwell & Jewell, 2003). Theory explains intentions to act as a function of three variables: attitudes, SN, and past behavior. Positive attitudes, better subjective standards, and greater levels of all contribute to stronger behavioral intentions to engage in behavior. Behavior is manipulated by both internal motivations and external restrictions. Lack of resources makes people less likely to carry out their goals. People with a good outlook and subjective standards but a lack of tools or knowledge to finish a task would have less motivation to do so while using metaverse. Studies on the relationship of behavioral intentions have produced contradictory results which is required to reexamine by adding metaverse technology. A positive correlation between of behavioral intentions has been found in previous studies (Gounaris, Tzempelikos, & Chatzipanagiotou, 2007; Grewal, Monroe, & Krishnan, 1998; Keh & Xie, 2009; Qin & Prybutok, 2008; Wu, 2013; Wu, Cheng, & Ai, 2017, 2018) which may have role in the field of metaverse. A few studies, like those on technology adoption failed to discover a connection between intention to use. Most studies on the subject of technology adoption have discovered a positive relationship (Chuchuen & Chanvarasuth, 2011; Kai-ming Au & Enderwick, 2000; Min, So, & Jeong, 2021; Moshi, 2013; Power & Simon, 2004; Renuka & Venkateshwara, 2006).

Hypothesis 3: *There is a relationship between PBC and intention towards metaverse.*

Methodology

In this study we used quantitative research approach because we collect the date from respondents once; in quantitative research data collected, analyzed and presented in numbers, by this method the result can be more reliable (Basias & Pollalis, 2018; Creswell, 2009; Sogunro, 2001; Strijker, Bosworth, & Bouter, 2020). The quantitative research approach used for measurement of relationships between different variables in Algeria. This study distributed a questionnaire among different customers of business industry in Algeria for data collection. Population of the study is based on the metaverse users of different businesses in Algeria.

Our study is based on metaverse users of different business. Therefore, we collect the data from different cities. 400 questionnaires were distributed among the users of metaverse. According to the research if the population is more than 100000 then the sample size should be 382 so, in the current study our total population is more than 100000 so our sample size is 382 metaverse users. Data was collected by using area cluster sampling. While using cluster sampling, population was divided into smaller groups known as clusters. Respondents randomly select among these clusters to form a sample (Johnson, Baburajan, & Sulekha, 2020). The cities were considered as clusters. The questionnaire was developed, and the scale items are presented in Table 1.

Table 1: Variable Measures.

Variables	Scale Items
Attitude	1. The use of metaverse technology is beneficial.
	2. I enjoy using Metaverse technology.
	3. Metaverse technology is important for business transactions.
Subjective Norms	1. My family encourage me to use metaverse technology.
	2. My friends encourage me to use metaverse technology.
	3. Most of my colleagues expect me to use metaverse innovations.
Perceived Behavioral Control	1. I have the ability to use metaverse.
	2. The use of metaverse technology is within my control.
	3. I am competent of overcoming any barriers to using Metaverse
Intention towards Metaverse	1. My intention to use metaverse technology regularly in the future.
	2. My intention to explore new thing about metaverse.
	3. I am making efforts to learn about metaverse technology.

The statistical tools used in this research are SPSS that is the statistical package used for the analysis of the data. Furthermore, the analysis of data is performed using partial least square because robustness and practicality can be better predicted through partial least square (Barroso, Carrión, & Roldán, 2010; Cheah et al., 2018; Henseler & Chin, 2010; Henseler et al., 2014; Matthews, 2017; Ringle, Sarstedt, & Straub, 2012). The PLS approach was used to determine

loadings, path coefficients, and significance levels, followed by bootstrapping procedures. The measuring model was assessed following the structural model assessment.

Data Analysis and Results

Structural equation modeling (SEM) is used in this study to examine the relationship between PBC, attitude, SN and intention towards metaverse technology use. It is a multivariate, hypothesis-motivated method that relies on a structural model to suggest a proposition about the causal connections between numerous variables (Aji et al., 2017; Chen & Chang, 2013; Li et al., 2019; Maiyaki & Mokhtar, 2012; Makiabadi et al., 2019). It is based on two steps, measurement model and structural model. Measurement model was used to check the reliability and validity. Structural model was used to examine the relationship. Results of measurement model are given in Table 2. It can be observed that all the scale items have factor loading higher than 0.7. Additionally, compositor reliability (CR) is higher than 0.7 for PBC, attitude, SN and intention towards metaverse technology use which confirmed the reliability. The convergent validity was achieved through average variance extracted (AVE) which is higher than 0.5 (Anis et al., 2020; Cheah et al., 2018) for PBC, attitude, SN and intention towards metaverse technology use.

Table 2: Reliability and Validity.

Variables	Scale Items	Factor Loadings	Composite Reliability (CR)	Alpha	AVE
Attitude	1. The use of metaverse technology is beneficial.	0.832	0.779	0.775	0.522
	2. I enjoy using Metaverse technology.	0.701			
	3. Metaverse technology is important for business transactions.	0.788			
Subjective Norms	1. My family encourage me to use metaverse technology.	0.789	0.822	0.810	0.587
	2. My friends encourage me to use metaverse technology.	0.825			
	3. Most of my colleagues expect me to use metaverse innovations.	0.901			
Perceived Behavioral Control	1. I have the ability to use metaverse.	0.854	0.896	0.869	0.598
	2. The use of metaverse technology is within my control.	0.888			
	3. I am competent of overcoming any barriers to using Metaverse	0.897			
Intention towards Metaverse	1. My intention to use metaverse technology regularly in the future.	0.755	0.751	0.736	0.512
	2. My intention to explore new thing about metaverse.	0.705			
	3. I am making efforts to learn about metaverse technology.	0.729			

Discriminant validity was addressed to examine the correlation between the scale items (Hafkesbrink, 2021; Stöber, 2001). Presence of correlation between scale items of different variables show the problem of validity. However, no correlation shows the achievement of validity. For this purpose, this study used Heterotrait-Monotrait ratio of correlations (HTMT), the latest criteria to check the discriminant validity. It can be observed from Table 3 and Figure 4, all the values are less than 0.85 which is recommended in the literature.

Table 3: Discriminant Validity.

	Attitude	Intention towards Metaverse	PBC	SN
Attitude				
Intention towards Metaverse	0.511			
PBC	0.628	0.788		
SN	0.419	0.698	0.694	

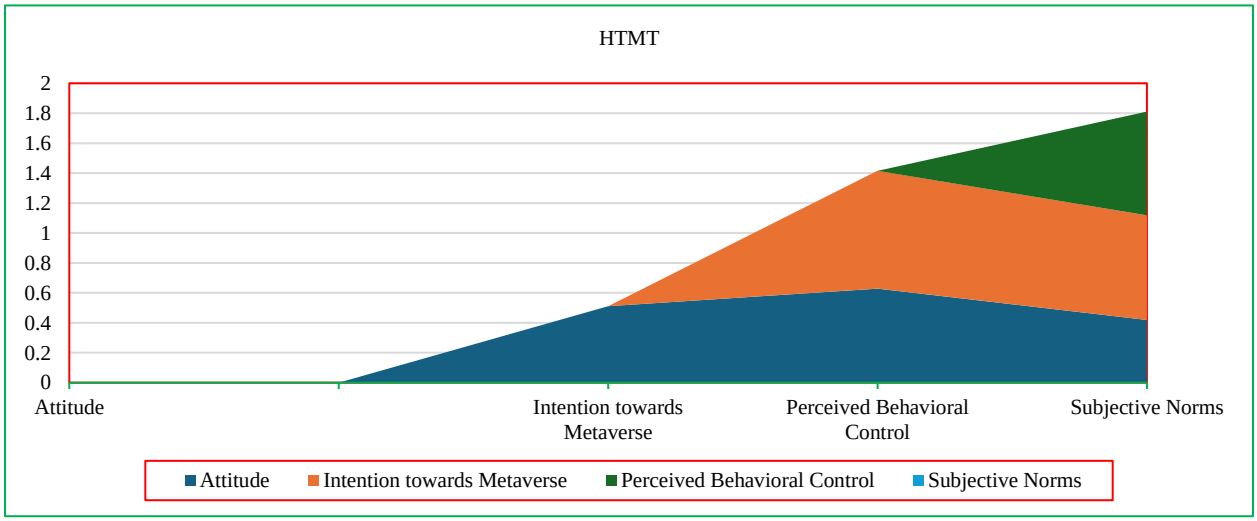

Figure 4: $HTMT_{0.9}$.

Path coefficients are normalized linear regression weights that can be used in structural equation modeling to estimate possible causal links between statistical data. Therefore, this study used path coefficients to examine the effect of PBC, attitude, and SN on intention towards metaverse technology use. According to the results, PBC has positive effect on intention towards metaverse technology use with t-value 3.889. Furthermore, attitude has positive effect on intention towards metaverse technology use with t-value 3.302. Finally, SN have positive effect on intention towards metaverse technology use with t-value 3.326. All the results are presented in Table 4 and Figure 5.

Table 4: Path Coefficient.

	Beta	T Statistics	P Values
Attitude -> Intention towards Metaverse	0.258	3.302	0.001
PBC -> Intention towards Metaverse	0.425	3.889	0
SN -> Intention towards Metaverse	0.121	3.326	0.001

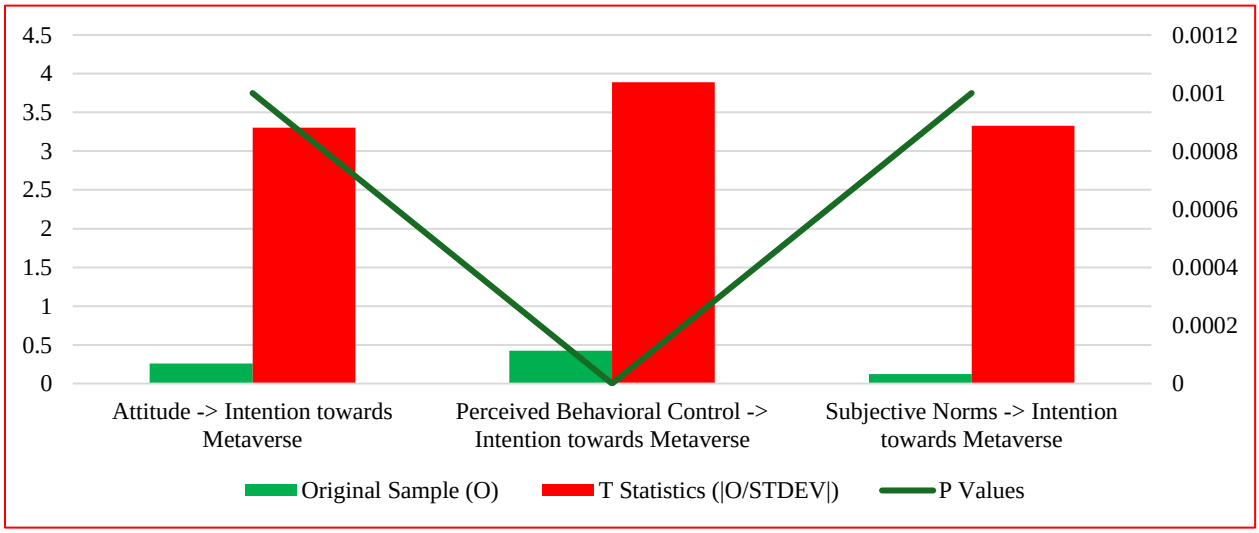

Figure 5: Path Coefficient Results.

Discussion

This study examined the impact of PBC, attitude, and SN on intention towards metaverse technology use in Algeria. A survey questionnaire was developed to measure PBC, attitude, and SN. Therefore, this study was quantitative in nature which obtained the data through cross-sectional research design. Three hypotheses were proposed to examine the effect of PBC, attitude, and SN on intention towards metaverse and hypotheses were tested by using statistical tool. It was found that PBC, attitude, and SN has positive effect on intention towards metaverse.

Attitudes have a positive relationship with intention towards metaverse products. The term "attitude" directs a person's long-term emotional reaction to socially relevant elements such as other people, places, and events. It asserts that one's attitude toward metaverse reflects how positively they see it. The chance of someone adopting metaverse habits can be predicted in part by their worldview. Attitudes have been shown to influence behavior (Asiegbu, Powei, & Iruka, 2012; Huang & Chen, 2009; Shekar et al., 2011; Söderlund & Vilgon, 1999; Wilkinson et al., 2010). Most individuals will select the choice that offers the most weight to their most significant values from a selection of possibilities. The importance of attitude and intention in shaping future behavior has been thoroughly demonstrated in the literature (Czeisler et al., 2020; Quratulain & Khan, 2015; Rimal & Real, 2003; Van Dyne & Pierce, 2004; Wang, 2019). There has been research on both general consumer behavior and the technical integration of metaverse services. As a result, a previous study suggests that having a good attitude increases a consumer's chance of making a purchase. Numerous research, however, have discovered a negative link between attitudes and planned behavior.

The relationship between SN and intention towards metaverse products have the significant effect for adoption of metaverse in Algeria. SN are the effects of social variables such as societal pressure to display or conceal a given action. Various social settings can influence how people feel about various behaviors. SN are made up of normative notions, underlying belief systems, and the desire to maintain such views (Abrams et al., 1998; Al-Swidi et al., 2014; Manning, 2009). People are said to have normative views if they have a strong desire to follow the standards of a dominating group. The totality of one's normative views and the weight given to those conceptions is one's SN. SN, according to the research, have minimal impact on future behavior. Although more study is needed, the link between normative belief systems and behavior intentions has been the topic of inconsistent findings in the literature. SN are a strong determinant of behavior in Algeria. Furthermore, subjective criteria have been shown to properly predict client intentions when it comes to services.

Moreover, according to this study, PBC influences the intention to use metaverse technology by increasing the people

confidence in their capability to interact with it. When people imagine they have requisite means and expertise (Lemon & Garvis, 2019; Ogbuanya & Arilesere, 2021), they are more likely to consider using metaverse technology. This perceived minimalism of use and control lowers possible difficulties, making adoption more likely. As a conclusion, those who believe they have more control over their conduct are more likely to the experiment with and use metaverse technologies. This association emphasizes significance of providing convenience and support to the users in order to boost their participation with the metaverse.

Conclusion and Implications

Findings of the study revealed that the positive role of PBC, attitude and SN was observed in case of intention towards metaverse in Algeria. These elements such as PBC, attitude and SN has most crucial role in the development of intention towards metaverse. This study provides the theoretical framework for understanding the relationship between variables, as we discussed the results and relationship between all variables related to metaverse technology have the importance to adopt the latest technology. There is need of training of people specially the people using metaverse, as we discussed the adoption level of metaverse technology is very low. PBC, attitude and SN can play a vital role to promote the metaverse technology. For this purpose, there is need of more studies on metaverse to promote the technology. The people mostly living in developed countries have the direct and easy access to metaverse, however, in developing countries, it is very challenging. There are more chances for adoption of metaverse, mostly through the change in PBC, attitude and SN. Practitioners should focus on PBC, attitude and SN for the promotion of metaverse. Hence, management of various businesses should focus on PBC, attitude and SN to promote intention of metaverse technology.

Future Recommendation for Researchers

Though this study provided original insights into the topic stated above, it does have a few limitations that might be better utilized as future research opportunities. This study targeted the people involved in metaverse technology use. On the other hand, it is important to study the customers of various organization using metaverse technology. For instance, banking section metaverse applications are most important to study. Additionally, various companies are using marketing activities through metaverse technology. Therefore, future studies should focus on the customers of organizations regularly using metaverse technology in business transactions. Furthermore, metaverse is important for marketing, therefore, future studies should include marketing in the framework of the current study to obtain better results.

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