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Metaverse Technology in Communication Practices: A Case Study of IT Products Retailers in the UAE

Faycal Farhi [1*], Riadh Jeljeli [1], Khaled Zamoum [2], Yamine Boudhane [3], Faten Ben Lagha [4]

[1] *College of Communication and Media, Al Ain University, Al Ain,United Arab Emirates.*

[2] *College of communication, University of Sharjah, Sharjah, United Arab Emirates.*

[3] *College of Mass Communication, Qatar University, Doha, Qatar.*

[4] *Department of Mass Communication, College of Arts and Social Sciences, Sultan Qaboos University, Oman.*

Abstract

Introduction: Retail companies aim to provide their customers with improved customer support and public relations services. For this purpose, metaverse technology is one of the most preferred approaches to improving customers' buying and post-purchase experiences. *Aims*: This research also examined metaverse technology acceptance among the IT products and services companies in the United Arab Emirates. *Methods*: The researchers employed a self-proposed study model and used the structural equation modeling approach. *Results*: Results revealed that relative advantage significantly affects customer support and public relations. However, transparency does not affect customer service and public relations significantly, while the effect of perceived compatibility on customer support remained insignificant while public relations remained significant. Finally, the effect of public relations on metaverse technological acceptance remained insignificant. Besides, the effect of customer support on metaverse technology acceptance remained significant. Overall, the results supported the role of certain factors proposed by the diffusion of innovation theory in the context of PR and customer support, which is further accelerating the metaverse technology adoption among the IT retailers in the UAE. *Conclusion*: Thus, this study concludes that the role and adoption of metaverse technology not only highlight its acceptance but also address its importance in improving IT retail products and services.

Keywords:
Metaverse Technology;
Public Relations;
United Arab Emirates;
Customer Support;
Perceived Compatibility.

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1- Introduction

Metaverse might be a new word for many of us, yet we imagine it as everything we experience online today [1]. The term metaverse is attributed to the future, yet computers, mobile phones, and other gadgets include metaverse technology [2]. According to Sparks [3], the metaverse helps us move between worlds so that we may communicate, work, and play in the best possible way. Several companies have introduced metaverse technology and are further working on it to bring more enhancements. Many companies worldwide are using Virtual Reality (VR) and Augmented Reality (AR) to improve customer interaction and provide them with experiences that were not possible earlier. Almaiah et al. [4] cited an example of Porsche and Ferrari showcasing their new models in augmented reality so buyers can not only walk around the cars but also delve into their braking and inner systems. Many companies also provide 3D and 4D virtual visuals of their products. For Chen [5], the metaverse is an evolution, not a revolution, as many concepts related to the metaverse have become concrete. Several companies are investing in metaverse

* **CONTACT**: faycal.farhi@aau.ac.ae

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technology as a pathway to ensure customer loyalty as they engage customers and generate targeted revenues. As noted by Ao and Huang [6], although the concepts of augmented reality and virtual reality existed long ago, the metaverse technology received instant attention as the underlying technology remained underway for many years. However, compared to earlier conceptions, today's metaverse is aimed at running on platforms whose owners and customers both regulate and control the data, transactions, and governance. Customers are especially autonomous, as they are the decision-makers and invest their assets wherever they want [7].

Similarly, using metaverse technology for public relations and customer support services is a revolutionary concept [8]. Here, Brassell [9] cited an example of a company, "Metaverse PR," that aids web3 companies worldwide to communicate with their customers in the virtual space. The New York and Miami-based agency "Web3 PR" is supported by "Double E PR," which is associated with creative and retail businesses. Metaverse PR and its other sister companies are all providing different companies across the globe with services to upgrade their communication systems to support and interact effectively with their customers. As noted by Wang et al. [10], the metaverse in communication, public relations, and customer support includes virtual interaction and involvement, visual experience through technological devices as an extension of the IoT. Like other disciplines, the metaverse is an immersive and interactive environment that is limitless, continuous, and does not depend on any physical location. According to Tang et al. [11], the metaverse in public relations and customer support maintains relations with customers and distributes product/service-related information. The metaverse companies consider PR and customer support important agendas to meet their goals. The aim is to provide the customers with transparent information that is compatible with customer needs, adding more value to their services, products, and presence among the customers [12]. As a result, many companies are also considering metaverse technology adoption as a part of their strategic planning and decision-making [13]. Talking particularly about the metaverse in IT sector organizations and its role in upgrading previous communication and sharing product and service delivery, Indarta et al. [14] consider it a widely "*go-to*" platform where communication between the users is common, easy, accessible, and ensures several fruitful outcomes. For Almarzouqi et al. [15], one of the basic reasons behind a wider acceptance of metaverse technology today is its competitive advantage and transparency, which add to its core value. Besides, its importance for public relations and customer support is obvious, as also witnessed by Aburbeian et al. [16].

Technology adoption and incorporation revolutionize society at every level. Especially today, when metaverse technology is booming, it is technically altering the social landscape and transforming almost every aspect of our lives [11]. By keeping in view the adoption of metaverse technology in the United Arab Emirates [17, 18], this research is also focused on examining its adoption through the lens of the theoretical background provided by the diffusion of innovation. However, the focus would remain on the IT product and service suppliers, particularly retailers in the United Arab Emirates. These retailers are linked with after-sales services, which demand strong public relations and customer support as part of their responsibilities [19]. Depending on the current topic of metaverse technology, the existing literature also indicates some prominent gaps. For instance, the use of technology was common before the COVID-19 pandemic, yet the pace was gradual and continuous. Today, in the post-pandemic era, technology adoption has increased, emphasizing the need to further analyze its adoption and factors that may accelerate its usage [20]. Second, despite the metaverse technology in communication and public relations being widely addressed during the past two years, there is a lack of relevant studies in the United Arab Emirates. Finally, the third gap is of a theoretical nature. Notably, many studies are conducted in the context of metaverse technology, incorporating theories and models proposed under IT [21], computer sciences [22], and software engineering [23], yet no studies have focused on metaverse technology in the context of diffusion of innovation theory. Thus, the structure of this article is based on systematic rules of research writing, as the first section involves an introduction to the study's topic, problem, background, and objectives. The second section involves literature to further aid in the development of hypotheses. The third section highlights the theoretical underpinnings, while the fourth discusses the suitable approaches for this study. The fifth section contains an analysis of the gathered data and results. Finally, the last section discusses the results, conclusion, and study limitations.

1-1- Background: Metaverse Technology in the UAE

The United Arab Emirates is an economically developed country. With a special focus on social and economic development at every level, sustaining development goals and achieving them is a primary agenda of the local government [24]. Under the UAE Centennial 2071 (agenda of technology and artificial intelligence) for sustainable development, the United Arab Emirates is currently working on different projects [25]. Considering the technological adoption and outreach in the UAE, Etisalat Group, now known as Global Technology and Investment Group, entered the metaverse with the universe launch" at GITEX GLOBAL 2022. Low latency and strong bandwidth are required to ensure the functioning of metaverse technology [15]. With 5G services, metaverse technology can function well for users [26]. According to Toraman [27], although metaverse technology is in its initial stage, it will become an important technology trend in 2022. Besides the private sector, the local Emirati government has also established its presence in the digital world [8]. The United Arab Emirates also aims to become one of the world’s leading metaverse

technologies. For this purpose, the UAE wants to attract 1,000 companies specializing in technology, especially blockchain, by easing visa and immigration rules for creatives, entrepreneurs, and freelancers [17]. Thus, private and government sector organizations in the United Arab Emirates have clear policies and aims regarding metaverse investments and adoption, indicating a potential technological transformation in the country [22, 28].

2- Review of Literature

2-1- Relative Advantage in Customer Support and Public Relations

"Relative advantage" refers to the degree to which customers value a new product or service compared to its competitors. When introducing new items on the market, the term "relative advantage" is typically used to describe their relative superiority [26]. This concept is based on consumers' perceptions of a product or service as opposed to the objective features of that product or service. This enables businesses to assess if their clients prefer an existing product over a rival one or if they want to stick with a given product [16].

Behind the scenes of practically all businesses are individuals who never interact with or greet consumers. Directly interacting with consumers are those who provide customer support. The views of the company and its products are shaped by the encounters of its customers with the people who provide the items with their distinctive characteristics [3]. Customer service is the interaction between the person selling a product and the customer. Most merchants consider this essential to enhance a company's competitiveness and attract customers who purchase their products or services. In recent years, conventional public relations have evolved significantly into integrated public relations. Public relations, commonly known as PR, is an essential component of integrated communication that enables businesses to legitimately reinforce their message [9]. Public relations are an essential management approach that allows organizations to develop their company's presence and image and acquire a competitive edge. Public relations (PR) can enhance a company's reputation. It can be a cost-effective communication method with a large audience if done effectively. However, success is difficult to achieve. Consider the advantages and disadvantages of public relations to maximize its application in business [27].

H1a: *Relative Advantage has a significant effect on Customer Support*

H1b: *Relative Advantage has a significant effect on Public Relations*

2-2- Transparency in Customer Support and Public Relations

Companies with a culture of openness have a significantly greater chance of success. Customers are informed of a reasonable estimate of when a product or service will be delivered and the associated expenses. When managed with integrity, customers are more likely to return and have their requirements addressed [29]. In addition, a business will be much more effective due to newly discovered openness, allowing the company to focus on its strengths rather than its shortcomings. The additional resources are better allocated to meet the needs of the company's customers. Additionally, transparency will increase customer trust. Telling the complete truth about the company's offers is an effective method for gaining clients' trust [2]. Existing concerns and assumptions are eliminated when information is openly and easily accessible to consumers [30].

To be transparent, all customer service and public relations contacts should be committed to honesty and integrity. This includes keeping the buyer constantly informed of positive developments. In addition, customer support and PR include informing the customer by requesting their feedback and telling them about product and service upgrades, treating the client's information as confidential, and providing clear terms and policies [6]. Due to the ease with which customers can transfer allegiance to a competitor in the digital environment, trust is a precious asset. Transparency creates trust; trust-building customer experiences directly lead to consumer satisfaction, and a pleased customer will remain loyal. Businesses must consider the benefits of transparency in Public Relations by businesses [31]. Public relations and customer service are the pillars of the organization. Bringing the two to light should be optimal for the organization's functionality. Because they contact clients directly, public relations and customer service must reflect the company's commitments, traits, and values. Change is a regular occurrence in business. Ensure that public relations professionals and customer support services are aware of any impending or recent changes. Transparent communication facilitates a positive relationship between customers, the organization, and all other stakeholders [32].

H2a: *Transparency has a significant effect on Customer Support*

H2b: *Transparency has a significant effect on Public Relations*

2-3- Perceived Compatibility in Customer Support and Public Relations

After a consumer has completed a purchase, the company's customer support staff can answer questions about using their new product (post-purchase services). Typically, a customer's desire for assistance causes them to seek support. Consequently, the support team must be accessible, quick to reply, and generally helpful [7]. This post will examine

some of the most critical customer support components and detail the best practices a company can use to improve its service. Previously, consumers communicated with businesses by phone or email, but now they may utilize chatbots to complete business transactions. The support team must reply to all client requests through various channels. Support staff can follow a few best practices to maintain their procedures efficiently and transparently [16]. Customer service is an essential advantage for any company that offers physical products or services. By delivering strong customer service, businesses can differentiate themselves from the competition as client demands evolve. One of the keys to providing distinct service to the company's customers is a thorough understanding of customer service and best practices in the industry [13].

Every organization, department, and institution require quality customer support. The same applies to public relations. Public relations have historically influenced customer service. Customer service and public relations are complementary [33]. Each touchpoint can either foster client loyalty or generate consumer dissatisfaction. To be effective in public relations, a company must please its clients and customers. In reality, companies want it to provide the business with a positive interaction experience. There are numerous strategies to boost client satisfaction, one of which is effective public relations. It assists firms in controlling the narrative surrounding them. Consumer service is one of the most significant determinants of customer satisfaction [34]. Thus, firms should pay close attention to it. Public relations' primary objective is to facilitate organizations' communication with their customers. It establishes productive relationships with other stakeholders and the general public, enabling an organization to achieve its goals [7].

H3a: *Perceived Compatibility has a significant effect on Customer Support*

H3b: *Perceived Compatibility has a significant effect on Public Relations*

2-4- Customer Support and Metaverse Technology

The future of communication will be borderless and seamless, and the metaverse will play a significant role in this evolution. This medium can encourage the formation of relationships. The company must comprehend the demographics and characteristics of its audience [35]. Advertising in the metaverse is an excellent way for businesses to connect with Gen Z and young people. Effective communication in the future will necessitate approaches and experiences unique to these organizations to foster long-lasting relationships and communities [11].

Users can connect to the metaverse world through different technological devices. The emphasis will change from narrating stories to letting the audience experience them through technology such as augmented reality (AR) and virtual reality (VR) [1]. According to Jung et al. [36], the conventional content should be altered in the creative process for this unique delivery channel using an integrated strategy. This gives an excellent chance to provide a three-dimensional perspective to the two-dimensional content on social media sites.

H4: *Customer Support has a significant effect on Metaverse Technology Adoption*

2-5- Public Relations and Metaverse Technology

According to Ning et al. [30], the metaverse is at the forefront of the transformation in communication marketing, with many expecting it to surpass the mobile internet in terms of PR and communication innovation. The metaverse is a brand-new cosmos. Think of it as uncharted terrain in newly discovered space. Advertisers may build distinct and original customer experiences. Virtually endless alternatives exist, from creating a virtual metropolis to creating a virtual sneaker. Many advertisers join this domain to reach a larger audience through the metaverse. Consequently, as creative advisors, PR experts are expected to assist clients in maximizing their brand image and expanding their customer base [12].

Instead of precisely conveying a company's message to people, the company should concentrate on capturing people's attention in the metaverse by providing the correct information at the right moment [27]. As a result of the shift in customer behavior, less time must be spent cultivating influencer connections and more time converting our existing audience into ardent brand champions. Supplying the audience with NFTs (non-fungible tokens) and commissioning them to develop disruptive digital content in exchange for coverage on their web pages may, for instance, entice influencers to participate in virtual events alongside others in the metaverse [25]. Brands and possibly even governments will use the metaverse as a testing ground for new forms of electronic engagement by establishing communities [37].

3- Diffusion of Innovation Theory

The Diffusion of Innovation Theory theoretically supports this study. E.M. Rogers proposed the relevant theory in the early 1960s as how an idea gains momentum over time in a complex social system [15]. Eventually, the people accept that idea as a part of a particular social system due to certain characteristics of the innovation [38]. Notably,

Diffusion of Innovation emphasizes that the idea should be innovative to accelerate and ensure its diffusion in society [32]. Talking particularly about this study, the primary variable, "*metaverse technology*," is also assumed to be innovative and have a specific pace regarding diffusion and acceptance [27]. As metaverse technology has been long-lived in Emirati society, the early conceptualizations were augmented reality and virtual reality [39]. The concept evolved as technology evolved, and finally, the metaverse is a transformation of the entire technological landscape in the UAE. Concerning the characteristics of metaverse technology, many researchers attributed them to "ease of use" and "usefulness" [40], which are empirically witnessed by many studies. However, the characteristics proposed by the Diffusion of Innovation Theory and Almarzouqi et al. [15] are relatively unique, adding novelty to the current research study. The researchers focused on relative advantage and transparency as two primary characteristics attributed to metaverse technology [4]. As noted by Lee et al. [41], when introducing metaverse technology, it contained real-time, face-to-face, virtual interactions that could even replace the need for physical interactions to observe the products. Consequently, this research assumes metaverse technology is compatible with customers' needs, adding transparency to consider the product and adding feasibility to the decision-making process [7].

H5: *Public Relations has a significant effect on Metaverse Technology Adoption*.

The flowchart of the conceptual framework that was used to achieve the study's aims is shown in Figure 1.

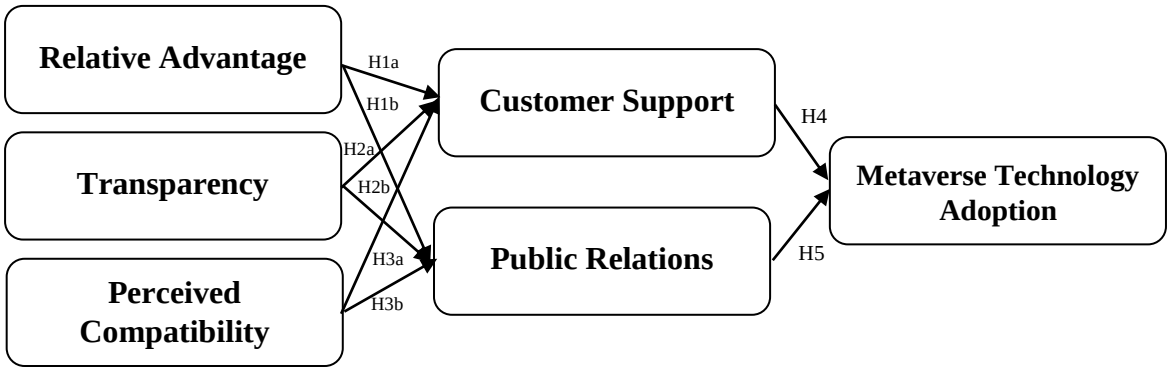

Figure 1. Conceptual framework

4- Research Methodology

This research involves an experimental design, as it contains preliminary hypotheses proposing the direct effect of different variables. As noted by Myers et al. [42], experimental method-based studies potentially adhere to the specific research design as they involve hypotheses that can be manipulated and variables that are measured, compared, and calculated. For data gathering purposes, the researchers used structured survey questionnaires designed on a Five-Point Likert scale (Strongly Disagree, Disagree, Neutral, Agree, Strongly Agree). Table 1 represents a summary of these scales and their resources. The data gathering was done from 6 September 2022 to 14 October 2022. Finally, after the data gathering, the researchers manipulated, coded, and analyzed the data using SPSS and Amos Ver. 26.

Table 1. Sources of survey scales

Constructs	Source	No. of Items
Relative Advantage	Brock et al. (2019) [43]	4
Perceived Compatibility	Jeljeli et al. (2022) [44]; Almaiah et al. (2022) [4]	4
Complexity	Damerji & Salimi (2021) [45]	4
Transparency / Observability	Almaiah et al. (2022) [4]; Mazouz et al. (2019) [46]	4
Customer Support	Ao & Huang (2020) [6]	4
Public Relations	Pasha et al. (2021) [40]; Swiatek & Galloway (2022) [47]	4
Metaverse Technology Acceptance	Xu et al. (2022) [7]; Panda et al. (2019) [48]	4

4-1- Sampling Approach

As the study focuses on public relations and customer support services, the population includes all the PR and customer support representatives currently working in different Emirati organizations. However, for sampling purposes [49], the researchers selected n = 320 individuals working in different IT product retailers in Al-Ain City. The sample size selection was based on two criteria. First, the researchers selected structural equation modeling, which necessitates a minimum sample of n = 22 individuals to retain the reliability of the survey tool. Second, the researchers calculated

the sample size by using the G* Power analysis. Results revealed the ideal sample size for the current research would be not less than n = 74 respondents, with the effects size at f^2 = .015 and the non-centrality parameter at 3.33 (Figure 2). Overall, the selected sample size of n = 320 remained ideal according to both selection criteria applied in the current research. Notably, the selection of respondents was based on the convenience sampling approach. Under the relevant sampling technique, the researchers personally visited the retail stores and distributed the questionnaires among the potential respondents that they selected as most suitable to meet the study requirements [50] and study objectives. After gathering the data, the researchers carefully analyzed and shortlisted n = 314 questionnaires suitable for the current study, indicating a total response rate of 98.1%.

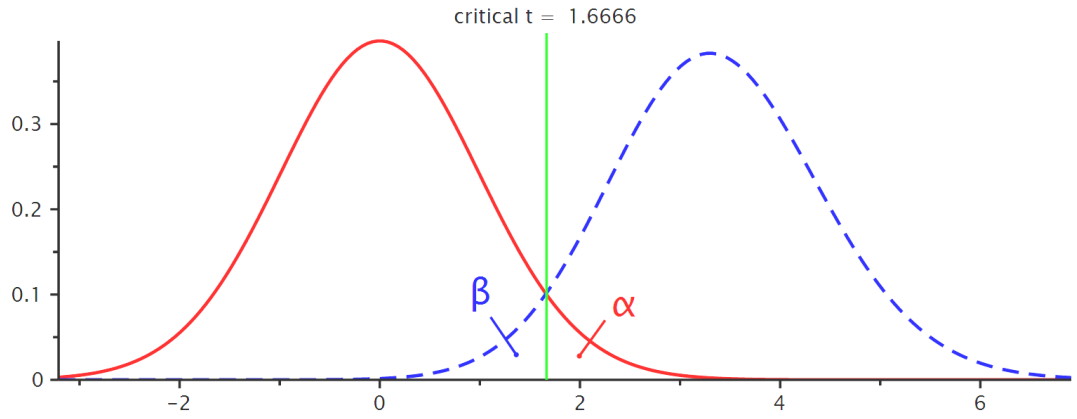

Figure 2. Central and non-central sample distribution

4-2- Common Method Bias

The researchers examined the Common Method Bias (CMB) as one of the primary requirements of current research. According to Ponto [51], Common Method Bias (CMB) occurs when the estimates of the relationships between constructs are biased as they are examined with the same approach. Thus, the researchers used Harman's One Factor Test to examine the Common Method Bias (CMB). Findings revealed the CMB value at 16.7%, which is lower than the threshold value of 50% [44, 52]. Results revealed that the current study's Common Method Bias (CMB) is under control.

4-3- Research Ethics

The research ethics committee approves this study at the University of Al-Ain, UAE. Further, the researchers informed the respondents about their data privacy and confidentiality, which is one of the primary ethics of research. The respondents were also briefed about the research study, its objectives, and the usability of the results. Notably, the respondents were approached after receiving formal consent from the retail stores' owners and branch managers. The researchers also informed the respondents that they could quit responding anytime they wanted without further obligations.

5- Results and Discussion

This study is based on structural equation modeling; the researchers first examined the convergent validity of the measurement as the primary requirement. According to Carlson & Herdman [53], the internal consistency between the study variables determines their correlation. As summarized in Table 2, the researchers first calculated the factor loading values of the survey items. Results revealed that most of the factor loading values exceeded the threshold value of 0.5. Besides, the average Vrainc Exatyrcted Values (AVE) exceed the threshold value of 0.5, indicating that the survey items are internally consistent and correlated.

Table 2. Summary of factor loadings and average variance extracted values

Constructs	Items	Loadings	AVE
Relative Advantage	RA1	0.505	0.676
	RA2	0.712	
	RA3	0.640	
	RA4	0.626	
Transparency	TRP1	0.606	0.552
	TRP2	0.472	
	TRP3	0.417	
	TRP4	0.552	

Perceived Compatibility	COM1	0.556	0.629
	COM2	0.575	
	COM3	0.463	
	COM4	0.514	
Customer Support	CSR1	0.719	0.688
	CSR2	0.139	
	CSR3	0.587	
	CSR4	0.748	
Public Relations	PR1	0.597	0.699
	PR2	0.645	
	PR3	0.753	
	PR4	0.595	
Metaverse Technology Acceptance	MET1	0.005	0.709
	MET2	0.161	
	MET3	0.540	
	MET4	0.879	

Discriminant validity examines the extent to which measures of different traits are unrelated [54]. Discriminant validity indicates that the constructs have their own identity and are not correlated to other constructs in the research [55]. To examine the discriminant validity of this study, the researchers first used the Fornell-Larcker criterion. As shown in Table 3, the calculated squares of the Average Variance Extracted (VE) values range from 0.09 to 0.304, which are not only unrelated to the correlation values but also greater than the relevant values. Besides, the researchers also calculated the Heterotrait-Monotrait Ratio (see Table 3-b). They found the HTMT value at 0.371, which remained less than the threshold value of 0.85, as suggested by Jeljeli et al. [56].

Table 3-a. Summary of Convergent Validity (Fornell-Lacker Criterion)

	RA	TRP	COM	CSR	PR	MET
RA	**0.456**					
TRP	0.140	**0.304**				
COM	0.042	0.013	**0.395**			
CSR	0.378	-0.022	0.076	**0.473**		
PR	0.377	0.015	0.255	0.349	**0.488**	
MET	0.183	0.075	0.135	0.169	0.098	**0.509**

Note: RA is Relative Advantage, TRP is Transparency, COM is Perceived Compatibility, CSR is Customer Support, PR is Public Relations, and MET is Metaverse Technology Acceptance

Table 3-b. Summary of Convergent Validity (Heterotrait-Monotrait Ratio Scale)

	RA	TRP	COM	CSR	PR	MET
RA						
TRP	0.229					
COM	-0.047	-0.070				
CSR	0.590	-0.083	0.031			
PR	0.485	-0.106	0.341	0.549		
MET	0.249	0.364	0.366	0.135	0.246	

Note: RA is Relative Advantage, TRP is Transparency, COM is Perceived Compatibility, CSR is Customer Support, PR is Public Relations, and MET is Metaverse Technology Acceptance

Further, the researchers examined the construct reliability of the measuring model by calculating the Cronbach alpha and composite reliability values [57]. As summarized in Table 4, the Cronbach alpha values range from 0.709 to 0.821, and the composite reliability values range from 0.721 to 0.822, exceeding the threshold value of 0.7 [46]. Thus, it is concluded that the construct validity of the measurement model is validated.

Table 4. Summary of Cronbach Alpha and Composite Reliability Values

Constructs	CA	CR
Relative Advantage	0.801	0.799
Transparency	0.737	0.763
Perceived Compatibility	0.709	0.822
Customer Support	0.773	0.721
Public Relations	0.821	0.750
Metaverse Technology Acceptance	0.792	0.790

Model fit measures are important as they determine how the obtained data fits the expected data [58]. In this regard, Chi-square, FMIN, and RMSEA values are considered, further estimating the goodness of fit [59]. Besides, geodesic distance (d_G) is another important matrix to indicate a difference in empirical covariance through the composite factor model [38]. Table 5 shows that the RMS theta value is 0.069 and the FIMIN value is 0.088. Thus, it is concluded that the obtained values are sufficient to affirm the goodness of fit.

Table 5. Summary of Model Fit Analysis

Values	Estimates
SOME	0.045
d-ULS	0.092
D_G	0.061
Chi-square	34.811
FIN	0.088
RMS Theta	0.069

The descriptive analysis was conducted to examine the demographics of the study respondents, including gender, age, and qualification. As summarized in Table 6, most respondents were males (n = 163, or 51.9%), while n = 151, or 48.1%, were females. Regarding the age of the respondents, n = 204, or 65.0%, were 20 to 30 years old; n = 90, or 28.7%, were 30-39 years old; while n = 20, or 6.4% of respondents were 40 years old or above. Finally, concerning the qualifications of respondents, n = 18 or 5.7% had a professional diploma/certification, n = 40 or 12.7% had under graduation, n = 163 or 51.9% had graduation, *and* n = 89 or 28.3% had post-graduation. In comparison, n = 4, or 17.1%, prefer not to reveal their qualification level.

Table 6. Summary of demographic data

Variable	Constructs	*N*	*%*	*M*	*SD*	*R*
Gender	Male	163	51.9%	0.480	0.500	01
	Female	151	48.1%			
Age	20-30 years	204	65.0%	0.760	1.067	03
	30-39 years	90	28.7%			
	40 years or above	20	6.4%			
Qualification	Diploma/Certification	18	5.7%	2.49	1.140	05
	Undergraduate	40	12.7%			
	Graduate	163	51.9%			
	Postgraduate	89	28.3%			
	Prefer not to say	4	17.1%			

Coefficients of Determination R^2, also known as $R^{2,}$ is a standard measure regarding the power of the independent variable to cause variance in the dependent variable(s) [60]. In simple terms, R^2 analysis determines the predictive power of the independent variable in the study [60]. As summarized in Table 7, the independent variable "Metaverse Technology Acceptance" is causing 68.7% variation in transparency, 63.2% variation in relative advantage, 53.4% variation in public relations, 48.3% variation in perceived compatibility, and 40.0% variance in customer support.

Table 7. Summary of coefficients of determination R^2

Constructs	R^2	Strength
Relative Advantage	0.632	Strong
Transparency	0.687	Strong
Perceived Compatibility	0.483	Strong
Customer Support	0.400	Moderate
Public Relations	0.534	Strong

The researchers conducted the path analysis to test the proposed relationships between the study variables. Notably, the path analysis contains the conventional approach of regression analysis, yet it also determines the strength of the path/relationship between the study variables [61]. Thus, path analysis in the current study revealed (see Table 8) diverse results. First, the researchers examined the proposed effect of relative advantage on customer support. As noted by Yang et al. [62], a product's degree of superiority relies on its features and service quality. If the product is available with weak customer support, the customer will likely switch to other retailers, indicating the role of services in supporting sales and positive customer decision-making. The first study hypothesis remained significant, with the path value at 0.32 and the significance level at p>0.000. Regarding the second hypothesis, the researchers proposed a significant effect of relative advantage on public relations. According to Jung et al. [36], public relations representatives are the representatives and spokespersons of an organization. The more their communication skills are refined, the more an organization gains a distinct position. Thus, this argument also remained valid in the current study, with the path value at 0.428 and the significance level at p>0.000.

In the third and fourth study hypotheses, the researchers assumed a significant effect of transparency on customer support and public relations practices. Kim et al. [29] argued that communicating transparently is important. Organizations where PR and customer support agents maintain transparency are comparatively more credible, head, and trusted by their customers. These people play an important role in adding more value to the organization's reputation and more loyal customers. However, findings in the current research contradict this stance (p>0.138, p>0.427), as the study respondents disagreed with the role of transparency in customer support and public relations. Further, the researchers proposed that perceived compatibility significantly affected customer support and public relations in the fifth and sixth study hypotheses. As Almarzouqi et al. [15] stated, perceiving an innovation as compatible with the end users indicates that the representatives are motivated and expect positive results regarding its adoption and usage as a compatible product, which is not only beneficial for the users but also highlights its features that endorse its compatibility. On the one hand, the results indicated that perceived compatibility does not significantly affect customer support. Here, the respondents disagreed with the proposition that customer support agents have relevant perceptions about the product (p>0.245). On the other hand, the respondents agreed that perceived compatibility significantly affects the public relations agents, with a path value of 0.307 and a significance level of p>0.000.

In the final two hypotheses (H7 and H8), the researchers proposed a significant effect of customer support and public relations on metaverse technology acceptance. According to Zhou et al. [12], metaverse technology offers a multidimensional view with virtual reality simulation that positively affects the customers' decision-making process. As customers can not only watch a product but also check its physical look and features, acceptance of metaverse technology is significantly increasing today. The results also affirmed the hypothesis indicating a significant effect of public relations on metaverse technology acceptance (p>0.000). However, the effect of customer support on metaverse technology acceptance remained insignificant (see Table 8 and Figure 3).

Table 8. Summary of Path Analysis (Regression Weights, t-value, p-value)

S/R.	Hypotheses	β	*t*-value	P
H1	Relative Advantage → Customer Support	0.352	7.421	***
H2	Relative Advantage → Public Relations	0.428	7.376	***
H3	Transparency → Customer Support	-0.043	-1.485	0.138
H4	Transparency → Public Relations	-0.028	-0.794	0.427
H5	Perceived Compatibility → Customer Support	0.062	1.163	0.245
H6	Perceived Compatibility → Public Relations	0.307	4.740	***
H7	Customer Support → Metaverse Technology Acceptance	0.154	2.728	0.006**
H8	Public Relations → Metaverse Technology Acceptance	0.035	0.783	0.434

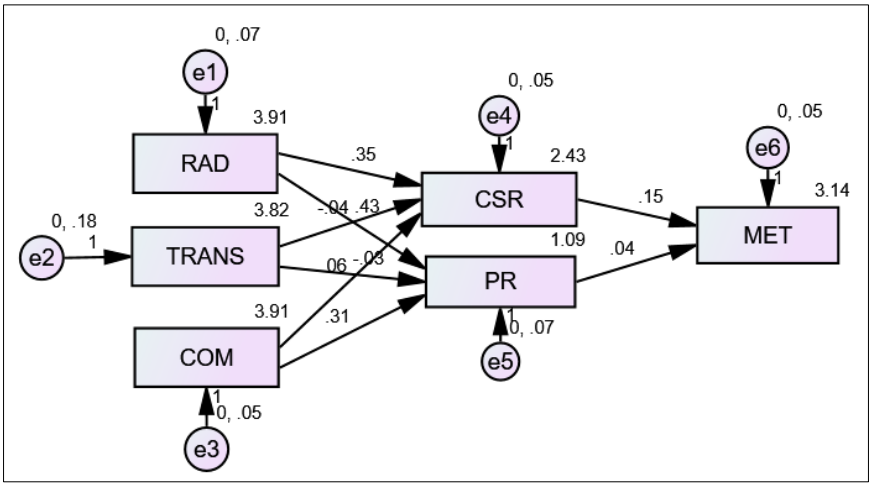

Figure 3. Results of Path Analysis

5-1-Discussion

Talking about the results of the current study, the respondents also agreed with the acceptance of metaverse technology as accompanied by certain characteristics that added to its value and adoption in the United Arab Emirates. In this regard, the current research was based on n = 24 questions investigating the respondents' opinions about metaverse technology in the Emirati IT sector [22]. The respondents were asked about the effect of relative advantage on customer support and public relations in the IT retail sector. The respondents widely (69.3%) agreed that having a relative advantage is significantly affecting the IT sector in the sense that the customer support services are fast and efficient and provide the customers with direct support and guidance [63]. Besides, respondents also indicated agreement (73.1%) that PR services also provide customers with suggestions and recommendations about the most suitable products and services that may match their needs and affordability [64]. According to 70.6% of respondents, the relative advantage of metaverse technology is attributed to the fact that today's customer support services significantly add value to their products and services, and they (75.1%) consider metaverse technology a potential part of the PR and customer support systems in the Emirates. The wider agreement regarding relative advantage and its relevance to metaverse technology is consistent with the propositions given by Zhou et al. [12], as they also consider the metaverse to have strong competitive advantages for users.

Further, the respondents investigated the effect of transparency on customer support and public relations in Emirati IT retail companies. More specifically, according to 74.3% of respondents, transparency is not an important metaverse technology in PR and customer support; rather, 76.0% consider PR communication as the main factor that may accelerate user preferences. The subjective reason, according to the respondents, for not considering transparency as an important factor was the even greater importance of communication. According to 74.2% of respondents, communication is important as it mainly indicates the product's and service's quality. Besides, despite the fact that they somewhat agreed (67.2%) with the transparency, the focus remained on PR and customer as mainly driven by communication and interaction. These results indicated an explicit disagreement with Lu & Hsiao [33], as they consider transparency a fundamental concept of communication practices to appeal to and support customer queries and concerns. However, they indicate consistency with the findings of Jeljeli et al. [44], in which they witnessed the role of communication as the primary factor behind a company’s success and customer loyalty.

Regarding the effect of perceived compatibility on customer support and public relations, the respondents disagreed that perceived compatibility significantly affects customer support. As Wang et al. [65] point out, compatibility adds to the significance of customer support services in a retail organization. The more compatible customer services are, the more they provide customers with direct support and instant problem-solving services. However, the respondents (78.2%) agreed with the compatibility's effect on public relations. The respondents (62.8%) indicated that compatibility in public relations is important in enhancing its role and improving the customers' experiences, yet its impacts cannot be considered strong (72.4%). The respondents also remained slightly agreed that perceived compatibility affects the customer's support for services, yet its impacts are marginal in many ways. These results indicated inconsistency with the propositions by Jami & Walsh [66], as they emphasized the importance of compatibility before and after sales, as PR experts help the customers with decision-making, helping them to prefer and adopt certain technology, and helping them solve their issues with supportive communication.

Finally, regarding metaverse technology acceptance, the respondents agreed that customer support services play an important role. In other words, the respondents (79.2%) agreed that the companies aim to provide customers with direct support and suggestions, answer their queries, and solve their concerns. According to the majority of the respondents (69.2%), providing the customers with good services is possible as the customers have real-time

interaction and observation facilities that increase the acceptance of metaverse technology in the United Arab Emirates. 70% also agreed with the increasing role of metaverse technology in improving customer support services, besides 73.67% also agreed that the adoption of relevant technology will increase in the future due to its distinguished features. These results are consistent with the argument by Ning et al. [30]. As noted, metaverse technology is still evolving. Its acceptance primarily depends on different factors such as WOM, eWOM, and others that may help others understand this technology and accept it for better purchase experiences. Therefore, it is argued that new operation functions, i.e., virtual to realistic, incorporating virtual into real, virtual real value, and other relevant aspects, are further generating improved opportunities for retail companies and their customers. However, the respondents (72.2%) also disagreed with public relations as playing a potential role in metaverse technology. According to the respondents (72.8%), the role of PR practitioners is to communicate effectively and provide them with suitable pieces of advice, which metaverse technology does not always facilitate. According to 72.9% of respondents, the role of metaverse technology in public relations is still weak, and respondents (79.3%) also indicated less reliance on metaverse for PR purposes. These results remained inconsistent with the study by Xu et al. [7], in which they indicated a greater reliance on the metaverse for PR communication purposes. Yet, PR professionals can resort to verbal communication to attract or support customers. Accelerating or affecting metaverse technology acceptance can be attributed to public relations. Yet, other factors are comparatively more significant, playing a prominent role in metaverse technology acceptance in IT retail sector organizations.

5-2- Theoretical Implications

Over the past few years, metaverse technology has spread across the globe and attracted attention from major investors and retailers. The same case is observed with IT product retailers, distributors, and sellers in many countries, particularly the United Arab Emirates [67]. Earlier, the concepts of augmented reality and Virtual Reality (VR) were limited, yet their innovativeness for users cannot be denied. However, the relevant technology took a specific time to diffuse into Emirati society, conceptualizing and adopting metaverse technology as one step ahead [35]. According to Sasaki [32], driven by the trend of metaverse technology development, global business services concerning industries actively adopted metaverse technology to improve their customers' experiences. From purchase to after-sales services, these companies provide their customers with real-time product features and models and guide them regarding installing and setting up these IT products [8]. As a result, the assumptions given by the Diffusion of Innovation theory fit well, as metaverse technology is accompanied by certain characteristics to diffuse into Emirati society [67].

5-3- Study Limitations

This study has some primary limitations that narrow its scope. First, this research is focused only on the IT retail sector. However, different sectors and organizations use metaverse technology for their customers in the UAE. Second, this study used a convenient sampling technique that limited its scope. Finally, the third limitation involves the geographical generalizability of results. As his research is conducted in Al-Ain, the generalizability of the results can be questionable in other areas.

6- Conclusion

The metaverse technology will continue to evolve in different spheres, from business to education, and from education to other corporate sector industries. Specifically, its customer role supports services for buying, and after-sales services are progressing, benefiting both parties to the maximum. Increased use of the metaverse in retail sector organizations affects the retail business landscape in the United Arab Emirates and the whole world. Due to the role of metaverse technology in the retail sector and customer support, this study also focused on its acceptance by IT product and service companies. Thus, it is concluded that the role and adoption of metaverse technology not only highlight its adoption and acceptance but also address its importance in improving IT retail products and services.

7- Declarations

7-1- Author Contributions

Conceptualization, F.F. and RJ.; methodology, K.H.; software, K.H. and F.F.; validation, Y.B. and F.L.; formal analysis, Y.B.; investigation, F.F.; resources, F.F.; data curation, K.H.; writing—original draft preparation, F.F. and R.J.; writing—review and editing, F.F.; visualization, F.F.; supervision, R.J.; project administration, Y.B and F.L. All authors have read and agreed to the published version of the manuscript.

7-2- Data Availability Statement

The data presented in this study are available in the article.

7-3- Funding

The authors received no financial support for the research, authorship, and/or publication of this article.

7-4- Institutional Review Board Statement

This research is approved by research ethics committee of Al Ain University UAE.

7-5- Informed Consent Statement

Informed consent was obtained from all subjects involved in the study.

7-6- Conflicts of Interest

The authors declare that there is no conflict of interest regarding the publication of this manuscript. In addition, the ethical issues, including plagiarism, informed consent, misconduct, data fabrication and/or falsification, double publication and/or submission, and redundancies have been completely observed by the authors.

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