

The Paradigm Shift in E-Commerce Within the Context of the New AI Space Race



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Abstract

Within the context of deepening the experiment in the metaverse, it's time to make improvements by considering reflective learning, paying attention to both businesses and users value realization in the AI-driven world. The immersive experience of metaverse in an unreal world is imposing e-commerce companies to deeply know consumers, and assumed the challenge of shaping how the technology will look. There is a real need to focus greater attention on the paradigm shift in e-commerce and participating in it, considering the new AI space race and the tangible value that will come with AI, keeping in mind humans.

Keywords: E-Commerce; Metaverse; TAM; Generative AI; Data Fusion; AI Space Race

JEL Classification: D83; L21; M21; M31; M37; O31; O33

Deepening the experiment in the metaverse, and improving by considering reflective learning. Businesses and users value realization

As we highlighted previously, there was no doubt about the importance of taking the smart strategic decision in experimenting in the metaverse (Purcarea a, 2022), including by considering the already use of the Metaverse Index, and how Web3 applications and use cases are built (Purcarea b, 2022). According to IBM's representatives (Moura-Smith, Chandra and Darkazalli, 2022), in understanding the characteristics of strategic change business value

realization (seen as “the ability to measure the direct influence of projects and people to executive-level business objectives”) is instrumental.

With regard to the value realization created and delivered via providers or producers, from the point of view of customers or users – as recently reconfirmed by Huang, Gao & Gao (a, 2023) – it is widely accepted that in the end this is established as perceived value by them, because customers or users are accomplishing products or services’ value evaluation (and not the producers or providers). Approaching customers’ and end users’ perspective of acting on the phygital reality market, the authors brought to our attention the way of application in omni-channel retailing and metaverse of digital, smart, and extended reality technologies (b, 2023). They underlined the extensive business possibilities opened by the year 2021 (considered a “crossroad for the virtualization of human society”), the metaverse (whose users can act in phygital realms) allowing not only to interact with the real world, but also to map and transcend it (c, 2023).

As metaverse and Non-Fungible Token (NFT) have become liked by many people in recent years, Toraman and Geçit (2023) approached recently how metaverse is accepted by users within the context of an increasing e-commerce (its users benefiting from many opportunities), for understanding their behavior in adopting new technologies the authors using the Technology Acceptance Model (TAM) and their proposed model looking as follows (see figure below). They conducted a structural equation analysis via Smart PLS, and demonstrated that there is a significant and positive effect of the perceived compatibility, enjoyment, and trust on perceived usefulness.

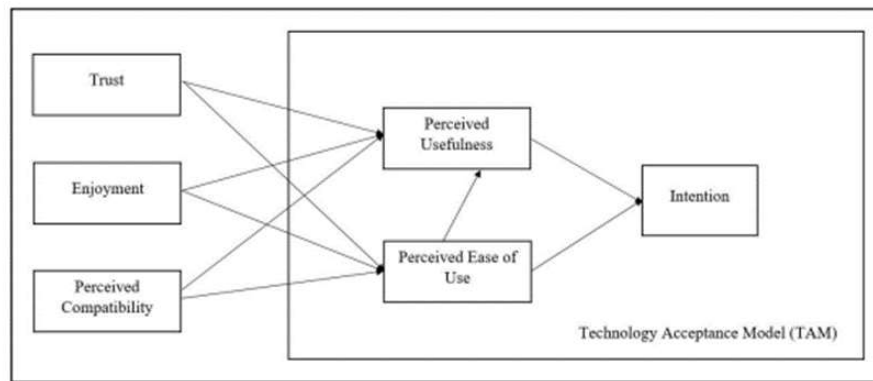


Figure no. 1: Proposed Model (by Toraman and Geçit)

Source: Toraman, Y. & Geçit, B.B., 2023. User Acceptance of Metaverse: An Analysis for e-Commerce in the Framework of Technology Acceptance Model (TAM), *Sosyoekonomi*, Vol. 31(55), p. 91 (work cited)

They made a comprehensive literature review of TAM, as shown in the below table (where: PU means Perceived Usefulness; PE is Perceived Enjoyment; C is Compatibility; PEOU is Perceived Ease of Use; AT is Attitude; I is Intention; AU is Actual Use; PBC is Perceived Behavioral Control; TR is Trust; E is Enjoyment; FE is Flow Experience; and CI is Continuance Intention). Among other aspects, research results revealed the followings: the importance of the

enjoyment variable as the metaverse system is perceived by users as a game; the importance of the compatibility perceived by users (and having a positive effect on the perceived usefulness of the individual) from metaverse systems; the role of trust in people's preference for interaction (the case of e-commerce marketplaces as reliable systems).

Table no. 1: Literature Review of Technology Acceptance Model (TAM)
(by Toraman and Geçit)

Year	Author (s)	Sector	Hypothesis	Relation	Model
2010	Chandra et al.	New Technology Acceptance: Mobile Payment System	TR→PU	Not Supported	Technology Acceptance Model (TAM) and Diffusion of Innovation Theory (DIT)
			TR→PEOU	Supported	
			PEOU→I	Not Supported	
			PU→I	Supported	
			PEOU→PU	Supported	
2019	Salloum et al.	New Technology Acceptance: E-Learning	PEOU→PU	Supported	
			PU→I	Supported	
			PEOU→I	Supported	
			AT→I	Supported	
			I→AU	Supported	
2019	Min et al.	New Technology Acceptance: Uber Mobile Application	C→PU	Supported	
			C→PEOU	Supported	
			PU→AT	Supported	
			PEOU→AT	Supported	
			AT→I	Supported	
2019	Manis et al.	New Technology Acceptance: The Virtual Reality Hardware (VR)	AT→I	Supported	
			PU→I	Supported	
			PU→AT	Supported	
			PEOU→PU	Supported	
			PU→I	Supported	
2020	Sagnier et al.	New Technology Acceptance: Virtual Reality	PEOU→I	Not Supported	
			PEOU→PU	Not Supported	
2020	Sukendro et al.	New Technology Acceptance: E-Learning	PEOU→PU	Supported	
			PU→AT	Not Supported	
			PEOU→AT	Supported	
			AT→I	Supported	
2020	Rafique et al.	New Technology Acceptance: Mobil Library	PU→I	Supported	
			PEOU→I	Supported	
			PEOU→PU	Supported	
			PU→AT	Supported	
			PEOU→AT	Supported	
2021	Kong et al.	New Technology Acceptance: Mobile Social Media	AT→I	Supported	
			PU→I	Not Supported	
			PEOU→I	Supported	
			PC→PU	Supported	
			PC→PEOU	Supported	
2021	Ramadhiana et al.	New Technology Acceptance: Virtual Hotel Operator Applications	PU→I	Supported	
			PEOU→I	Supported	
			PEOU→PU	Supported	
			PU→AT	Supported	
2022	Fussell, S.G. & Truong, D.	New Technology Acceptance: Virtual reality	PEOU→AT	Supported	
			PBC→I	Supported	
			PE→FE	Supported	
			PE→CI	Supported	
2021	Linares et al.	New Technology Acceptance: Online Games	PEOU→PE	Supported	
			PU→I	Supported	
2022	Toraman Y.	Metaverse E-Commerce	PEOU→PU	Supported	
			AT→I	Supported	

Source: Toraman, Y. & Geçit, B.B., 2023. User Acceptance of Metaverse: An Analysis for e-Commerce in the Framework of Technology Acceptance Model (TAM), *Sosyoekonomi*, Vol. 31(55), p. 94 (work cited)

The AI-driven world and the immersive experience of metaverse in an unreal world, while deeply knowing consumers. The challenge of shaping how the technology will look

As shown by Wheeler (2023), the immersive experience of metaverse (seen as a creature of AI) in an unreal world will bring new challenges (both capabilities, and threats) for our digital future, these challenges coming to life in an AI-defined and AI-driven world in which various problems (of digital privacy, competition, and misinformation) will be spread by the metaverse through all parts of this world beyond people current experience. This is where the necessary attention on this transformational move (from observation to participation) comes from, making

it “imperative to reassert a role for public interest oversight of digital private interests. Such a prioritization becomes even more urgent as we watch the unsupervised creation of a new virtual world with unprecedented powers.”

In such a context it is not surprising that a Professor at Northwestern University, Dashun Wang, Director, Center for Science of Science and Innovation (CSSI, the first center world-wide dedicated to the field of the science of science) stated as follows: *“Now is the time to set policy for an immersive future... Companies and academia are still wrapping their minds around what the metaverse can be. With the metaverse still largely a solution in search of a problem... we have time to shape how the technology will look. We should use it”* (Parker, 2023).

According to McKinsey’s representatives (Buzzell et al., 2023), the boundaries of technology are being pushed by various metaverse initiatives but these initiatives often fail in achieving their aim with target consumers who need to be engaged with the most interesting use cases. A Metaverse Consumer Survey conducted by McKinsey in October 2022 revealed significant aspects such as: a greater interest expressed by consumers generally in experiences and products (across retail categories) augmenting the existing real-world experiences; in order to achieve a successful metaverse approach it is recommendable (according to views from McKinsey’s E-Commerce Global Initiative) to deeply know consumers (including where the target consumers are in their metaverse journey), to ground experiments in real-world applicability, connecting the physical and digital worlds and refining offerings accordingly.

Focusing greater attention on the paradigm shift in e-commerce and participating in it

To remain competitive in the market businesses are challenged to continuously adapt to changing consumer expectations and technological advancements driving the very quickly evolving e-commerce landscape. A paradigm shift in e-commerce is catalyzed by the generative AI and data fusion, the online shopping boundaries being redefined by responsibly valorizing these new technologies and deepening connections with customers and increasing engagement (Cassidy, 2023). The shopping journey is benefitting from the generative AI (and natural language processing, image recognition, and semantic understanding) powering chatbots deployed by e-commerce companies which are valorizing the conversational commerce based on interactive interactions facilitated by AI-driven chatbots and impacted by the fusion of first-party and third-party data (integrated into generative AI systems), making possible an intelligent customer engagement (customers’ product search and discovery being made more intuitive and efficient by the generative AI models). Valorizing the valuable actionable insights derived from data fusion (while ensuring transparency about data collection and usage practices, including algorithmic bias and privacy concerns) e-commerce companies can obtain a comprehensive view on their customers and build the right targeted marketing strategies.

There is no doubt about the advantages offered in using search for commerce by the disruptive technologies like the generative AI models which can be trained on extensive data (Spong, 2023), not only indicating what customers are interested in, but also suggesting, for instance, how to enhance the appearance of those customers if they are returning an item of clothing (based on incorrect sizing, considered the most common reason for returning an online order), meaning taking online personalization to the next level with the help of AI for commerce search. This kind of search is improving results' accuracy and relevance based on language processing models and deep learning techniques, offering customers precisely what they want, making them feel special and understood from their first visit, and solving the pressing problem of search abandonment.

Of course, as robots do not have feelings it is also necessary to think carefully about employees' and customers' emotional aspect, when deciding or judging the co-working with AI applications, considering what is happening at the intersection of emotion and intelligence (Mohadjer, 2023).

Instead of conclusions: *The new AI space race and the tangible value that will come with AI, maintaining humans in the loop*

In February this year we underlined the fine linkage between e-commerce acceleration and advancing marketing technology stake, making reference to valuable conversations about AI (from Dall-E to ChatGPT) and its impact on digital marketing, generative AI & personalization and so on (Purcarea a, 2023) A month later, we made reference to digital marketers' need to learn from the many use cases concerning ChatGPT, generative AI, e-commerce profitability improvement based on immersive product imagery and so on (Purcarea b, 2023).

According to Maxwell (2023), within the context of a true “high-stakes technology arms race” in bringing “ChatGPT-inspired products to the market”, will emerge “more capable ChatGPT alternatives”. On the other hand, Patel and Wong (2023) recently stated as follows: *“Over the next few years, multiple companies such as Google, Meta, and OpenAI/Microsoft will train models on supercomputers worth over one hundred billion dollars. Meta is burning over \$16 billion a year on the “Metaverse”, Google waste’s \$10 billions a year on a variety of projects that will never come to fruition. Amazon has lost over \$50+ billion on Alexa. Cryptocurrencies wasted over \$100 billion on nothing of value. These firms and society in general can and will spend over one hundred billion on creating supercomputers that can train single massive model. These massive models can then be productized in a variety of ways. That effort will be duplicated in multiple counties and companies. It’s the new space race. The difference between those prior wastes and now is that with AI there is tangible value that will come from the short term from human assistants and autonomous agents...”*

On the other hand, very recently, Weng, Goel and Vallone (2023) stated on OpenAI blog that: *“We are actively exploring further enhancement of GPT-4’s prediction quality, for example,*

by incorporating chain-of-thought reasoning or self-critique. We are also experimenting with ways to detect unknown risks and, inspired by Constitutional AI (Bai et al., 2022), aim to leverage models to identify potentially harmful content given high-level descriptions of what is considered harmful. These findings would then inform updates to existing content policies, or the development of policies on entirely new risk areas... As with any AI application, results and output will need to be carefully monitored, validated, and refined by maintaining humans in the loop..."

Also very recently, the President of the global e-commerce platform Shopify, Harley Finkelstein (Roth, 2023), underlined among other aspects that: *"What we're trying to do is not only make sure that the things you want to do right now on Shopify are available and robust and world-class, but also that the things you may want to do years from now are also available, whether it's AI-based commerce, or Web3, or augmented reality. We're working on those things now, not because people want them right now, but because we anticipate in the future they may. And if we think in the future they may, we have to make small bets now in order to qualify for that later... We've been integrated with Google Shopping and YouTube for many years, and when you see live shopping inside of Google, people posting products underneath the video on YouTube, that's all powered by Shopify... Everyone's talking about AI now, but we've been experimenting with it for a very long time for product descriptions, knowing that at some point AI is going to get so good that all you will need to do is take a photograph of a product and the algorithm will write you the most amazing, highly converting product description out there..."*

Allow us to end by making reference to what a Member of the Board and an Honorary Member of the Romanian Distribution Committee (Greu, 2016) wrote in our RDC Magazine seven years ago, in April 2016, with regard to "Tomorrow's Paradox": *"The exponential development of ICT (Information and Communications Technologies) in IS (Information Society) context toward KBS (Knowledge Based Society) and the natural limits of humans create the premises of strange evolutions of the inherent interactions between humans and ICT smart machines, along the complex and dynamic processes of generating knowledge and refining knowledge. Our analysis revealed the detailed mechanism which could lead to abnormal or paradox situations when ICT smart machines could/should replace humans."*

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