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Digital avatars and consumer behaviour in the era of artificial intelligence: A theoretical framework based on TAM and UTAUT

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Abstract
The rapid growth of artificial intelligence (AI), metaverse technologies, and immersive digital platforms has changed the way consumers interact with brands. Digital avatars are now becoming an important part of online shopping, gaming, education, healthcare, and social media platforms. These avatars are AI-powered virtual representations that can act as influencers, assistants, customer support agents, or even digital brand ambassadors. Although the use of digital avatars is increasing rapidly, research explaining their impact on consumer behaviour is still limited and fragmented. Therefore, the present paper develops a conceptual framework to explain consumer acceptance and behavioural intention toward digital avatars by integrating the Technology Acceptance Model (TAM) and Unified Theory of Acceptance and Use of Technology (UTAUT). The study reviews existing literature from artificial intelligence, digital marketing, technology adoption, and consumer behaviour to identify the major factors influencing avatar adoption. The proposed framework highlights perceived usefulness, perceived ease of use, social influence, trust, anthropomorphism, perceived enjoyment, and facilitating conditions as key determinants of behavioural intention and actual usage behaviour toward digital avatars. The paper also discusses theoretical implications, managerial implications, and future research directions for researchers and practitioners working in AI-driven markets.

Keywords: Digital avatars, artificial intelligence, consumer behaviour, TAM, UTAUT, metaverse, virtual influencers, behavioural intention

Introduction

The modern digital economy is rapidly changing because of artificial intelligence, machine learning, extended reality, and metaverse technologies. One of the most important developments in this digital transformation is the emergence of digital avatars. Digital avatars are virtual or AI-generated representations of humans that interact with users in digital environments such as gaming platforms, social media, e-commerce websites, virtual classrooms, and metaverse ecosystems. These avatars may exist as personalized identities, virtual influencers, AI customer assistants, or hyper-realistic virtual agents designed to communicate like humans.

The growing adoption of digital avatars is mainly driven by advances in AI-powered personalization and immersive digital experiences. Companies are increasingly using avatars to improve customer engagement, provide personalized communication, reduce operational costs, and create emotionally interactive experiences (Gursoy *et al*., 2019) [6]. The rise of virtual influencers such as Lil Miquela and AI-powered assistants further highlights the growing commercial importance of avatar technologies.

Consumer behaviour has also changed significantly in AI-enabled environments. Earlier, consumers mostly interacted with human employees during shopping and service experiences. Today, many interactions happen through chatbots, virtual assistants, and digital avatars. This shift has raised important questions related to technology acceptance, trust formation, social influence, behavioural intention, and emotional engagement in AI-driven environments.

Previous studies have explained technology adoption using frameworks such as the Technology Acceptance Model (TAM) developed by Davis (1989) [4] and the Unified Theory of Acceptance and Use of Technology (UTAUT) proposed by Venkatesh *et al*. (2003) [15]. TAM explains that perceived usefulness and perceived ease of use are the main factors influencing technology acceptance. UTAUT further extends this understanding by including social influence and facilitating conditions.

Although many studies have examined AI adoption, virtual influencers, metaverse technologies, and human-computer interaction separately, very few studies have integrated TAM and UTAUT to explain consumer behaviour toward digital avatars. Existing research still lacks a comprehensive framework explaining how technological, psychological, social, and experiential factors collectively influence behavioural intention toward avatar adoption.

The present paper attempts to fill this gap by developing a theoretical framework that integrates TAM and UTAUT constructs to explain consumer behaviour toward digital avatars. The study combines insights from previous literature and proposes a conceptual model explaining the major determinants influencing acceptance and usage behaviour toward digital avatars.

Literature Review

1. Digital Avatars and Artificial Intelligence

Digital avatars are virtual representations created using artificial intelligence, computer graphics, machine learning, and behavioural analytics. These avatars can simulate human communication, emotions, gestures, and interactions in digital environments. The integration of AI into avatar systems has significantly improved their realism, responsiveness, and personalization capabilities.

According to Russell and Norvig (2016) [11], artificial intelligence enables machines to imitate human intelligence through learning, reasoning, and adaptive interaction. AI-enabled avatars use natural language processing, predictive

analytics, and emotional recognition systems to improve user interaction and engagement. The development of generative AI has further accelerated the growth of hyper-realistic avatars capable of personalized communication.

Digital avatars are now widely used in several industries such as e-commerce, gaming, healthcare, virtual education, customer service, and metaverse platforms. The increasing popularity of the metaverse has further expanded the importance of digital avatars because consumers now interact with brands and other users through virtual identities.

2. Consumer Behaviour in AI-Driven Environments

Consumer behaviour refers to the processes involved in selecting, purchasing, using, and evaluating products and services. The growing use of AI technologies has transformed traditional consumer decision-making processes. AI-enabled systems now influence product recommendations, personalized advertising, search optimization, predictive purchasing, and customer engagement.

According to Kotler and Keller (2016) [8], consumer behaviour is influenced by psychological, social, personal, and cultural factors. In AI-enabled environments, technological interaction has also become an important behavioural determinant. AI systems capable of personalization and predictive communication strongly influence consumer trust, satisfaction, and loyalty.

Gursoy *et al*. (2019) [6] explained that consumers' acceptance of AI technologies is significantly influenced by perceived intelligence, usefulness, trustworthiness, and emotional comfort associated with the technology. Similarly, Wang *et al*. (2018) [16] found that smart technologies with human-like interaction positively influence consumer engagement and purchase intention.

3. Relevance of TAM and UTAUT in Understanding Consumer Behaviour

The Technology Acceptance Model (TAM) is one of the most widely used frameworks for understanding consumer acceptance of AI technologies. The model explains that consumers are more likely to adopt technologies when they perceive them as useful and easy to use (Davis, 1989) [4]. In the AI era, TAM has been widely applied to study consumer interaction with AI-powered systems such as chatbots, recommendation engines, virtual assistants, and digital avatars.

Research by Venkatesh and Davis (2000) [14] showed that perceived usefulness significantly improves behavioural intention toward emerging technologies, while perceived ease of use enhances user comfort and acceptance. Similarly, Gursoy *et al*. (2019) [6] found that consumers are more willing to interact with AI-enabled service systems when they perceive functional benefits and convenience. Studies by Dwivedi *et al*. (2021) [5] further emphasized that AI adoption in digital marketplaces depends strongly on consumer perceptions related to efficiency, personalization, and usability.

The Unified Theory of Acceptance and Use of Technology (UTAUT) provides a broader explanation of consumer behaviour by including social and infrastructural factors affecting technology adoption. Venkatesh *et al*. (2003) [15] explained that performance expectancy, effort expectancy, social influence, and facilitating conditions significantly affect behavioural intention and technology usage.

In the AI era, consumer adoption decisions are increasingly influenced by digital communities, online reviews, social media trends, and technological accessibility. Research by Tussyadiah and Miller (2019) [13] found that consumers show greater acceptance of AI technologies when they perceive social benefits and supportive technological environments. Similarly, Shin (2022) [12] highlighted that immersive technologies such as metaverse platforms require strong facilitating conditions and active social participation to improve user engagement.

4. Trust in Avatar Adoption

Trust plays a very important role in AI-mediated consumer interaction. Since digital avatars operate as AI-enabled entities, consumers often evaluate their reliability, transparency, credibility, and authenticity before interacting with them.

According to McLean and Osei-Frimpong (2019) [9], trust positively influences behavioural intention in AI-powered service environments. Human-like interaction, emotional responsiveness, and personalized communication significantly improve trust formation.

Anthropomorphism refers to giving human characteristics to non-human entities. Digital avatars with facial expressions, voice interaction, emotional intelligence, and conversational realism are more likely to improve user engagement and emotional connection.

5. Perceived Enjoyment and Immersive Experience

Perceived enjoyment refers to the pleasure and entertainment users experience during technology interaction. Digital avatars often create immersive and interactive experiences that improve user satisfaction and engagement.

Conceptual Framework and Hypotheses Development

Based on TAM and UTAUT models, the present study proposes an integrated conceptual framework explaining consumer behavioural intention toward digital avatars.

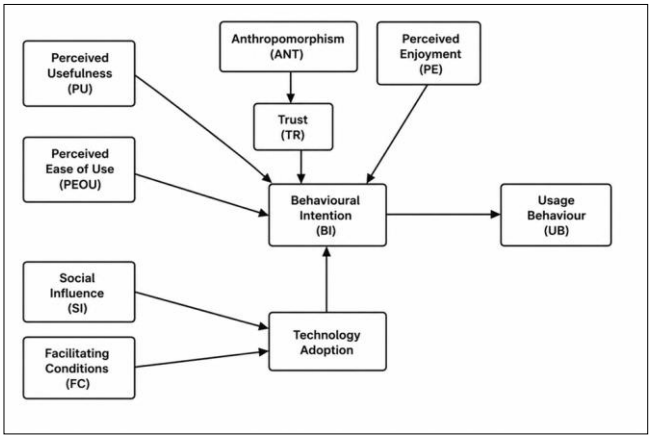

Fig 1: Conceptual Framework

Theoretical Implications

The present study contributes significantly to the growing literature on AI-driven consumer behaviour and technology adoption.

First, the study extends TAM and UTAUT models into the context of digital avatars and metaverse technologies. Existing literature predominantly focuses on chatbots, AI systems, and smart technologies independently, whereas the present study integrates multiple determinants influencing avatar acceptance.

Second, the study introduces anthropomorphism and perceived enjoyment as critical behavioural determinants within avatar ecosystems. These constructs explain the emotional and experiential dimensions of AI-mediated interaction.

Third, the study contributes to the literature on virtual consumer ecosystems by explaining how AI-generated identities influence behavioural intention and actual usage behaviour.

Finally, the framework establishes a foundation for future empirical studies employing Structural Equation Modelling (SEM), Partial Least Squares (PLS-SEM), or machine learning approaches in analysing digital avatar adoption.

Managerial Implications and Suggestions

The proposed framework provides important implications for marketers, AI developers, e-commerce firms, and metaverse platforms. The study suggests that consumers are more likely to adopt digital avatars when they perceive them as useful, easy to use, trustworthy, and enjoyable. Therefore, organizations should focus on improving the functional and experiential value of avatar technologies.

First, businesses should enhance the perceived usefulness of digital avatars by integrating personalized recommendations, intelligent assistance, and faster customer support systems. According to Fred Davis (1989) [4], technologies that improve user performance and convenience significantly increase behavioural intention. Similarly, Dogan Gursoy *et al*. (2019) [6] found that consumers positively respond to AI systems that provide efficient and personalized services.

Second, companies should design user-friendly avatar interfaces to improve perceived ease of use. Simple interaction systems, voice-enabled communication, and intuitive navigation can reduce technological anxiety and improve customer engagement. Viswanath Venkatesh and Fred Davis (2000) [14] explained that easy-to-use technologies improve consumer acceptance and usage behaviour.

Third, organizations should leverage social influence through virtual influencers, online communities, and social media campaigns. AI-generated influencers and digital brand ambassadors can shape consumer attitudes and increase technology adoption. Studies indicate that peer influence and digital communities strongly affect behavioural intention toward emerging technologies (Venkatesh *et al*., 2003) [15].

Fourth, firms should strengthen trust by ensuring transparency, ethical AI practices, and data privacy protection. Consumers are more willing to interact with digital avatars when they perceive them as secure and reliable. Gerard McLean and Osei-Frimpong (2019) [9] found that trust significantly influences consumer engagement with AI-enabled communication systems.

Fifth, businesses should develop more human-like and emotionally interactive avatars. Anthropomorphic features such as facial expressions, conversational realism, and emotional intelligence increase social presence and customer attachment. Research by Donghee Shin (2022) [12] highlighted that immersive and interactive technologies enhance user participation and engagement in virtual environments.

Finally, organizations should improve facilitating conditions by ensuring technological accessibility, device compatibility, and internet support systems. Consumers are more likely to adopt avatar technologies when adequate digital infrastructure is available (Venkatesh *et al*., 2003) [15].

Limitations of the Study

The present study is conceptual and theoretical in nature. The framework has not been empirically tested using quantitative or qualitative data. Future studies may validate the proposed relationships using empirical techniques such as Structural Equation Modelling (SEM) or Partial Least Squares-SEM (PLS-SEM).

Second, the study primarily focuses on TAM and UTAUT models. Other important behavioural theories such as the Theory of Planned Behavior (TPB), Stimulus-Organism-Response Model (SOR), and Social Presence Theory were not fully integrated into the framework.

Third, the study discusses digital avatars in a general context without focusing on a specific industry. Consumer perception toward avatars may differ across industries such as healthcare, gaming, education, banking, and e-commerce.

Fourth, cultural and demographic differences were not considered in the proposed framework. Prior studies suggest that age, gender, technological literacy, and cultural background significantly influence technology adoption behaviour (Venkatesh *et al*., 2003) [15].

Finally, the rapid evolution of artificial intelligence and metaverse technologies may continuously change consumer perception and behavioural patterns. Therefore, the framework may require modification as AI technologies become more advanced and immersive.

Conclusion

Artificial intelligence is transforming the modern consumer ecosystem. Digital avatars are becoming an important part of online interaction, virtual commerce, customer service, and metaverse environments. These AI-powered virtual agents influence the way consumers communicate, engage, and make purchase decisions in digital platforms.

The present study developed a theoretical framework explaining consumer behaviour toward digital avatars by integrating the Technology Acceptance Model (TAM) and Unified Theory of Acceptance and Use of Technology (UTAUT). The framework identified perceived usefulness, perceived ease of use, social influence, facilitating conditions, anthropomorphism, trust, and perceived enjoyment as major determinants influencing behavioural intention and actual usage behaviour.

The study contributes to existing literature by extending technology adoption theories into AI-driven and metaverse-based environments. The framework also highlights the growing importance of emotional interaction, immersive experiences, and human-like communication in understanding consumer behaviour in the AI era.

The findings suggest that organizations should focus on trust-building, user-friendly interfaces, social engagement, and immersive avatar experiences to improve consumer acceptance. As AI technologies continue to evolve, digital

avatars are expected to become central components of future marketing and consumer interaction systems.

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