

The contribution of virtual presence to the activation of e-commerce

Mernah Taha yassine*,

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Abstract:

The study aims to explore how virtual presence contributes to the activation of e-commerce by analyzing its influence on consumer engagement, trust, and decision-making in digital environments. Using a descriptive-analytical approach, the research clarifies the concept and dimensions of virtual presence and reviews previous studies on its effects in online shopping contexts.

The study found that virtual presence enhances user immersion, strengthens social interaction, and increases the perceived realism of online platforms, leading to higher purchase intention and more sustained engagement. However, its effectiveness is limited by technological constraints, user discomfort, privacy concerns, and high implementation costs.

The study recommends improving immersive technologies, enhancing social interaction tools, strengthening privacy and security measures, and developing interactive content that supports richer virtual experiences to maximize the impact of virtual presence on e-commerce performance.

Keywords: Virtual Presence; E-Commerce; Consumer Engagemen; Online Consumer Behavior

JEL Classification : L81; M31; O33

ملخص :

تهدف هذه الدراسة إلى تحليل كيفية مساهمة الحضور الافتراضي في تفعيل التجارة الإلكترونية من خلال دراسة تأثيره على تفاعل المستهلك، ثقته، وقراراته في البيئات الرقمية. وباستخدام منهج وصفي-تحليلي، توضح الدراسة مفهوم الحضور الافتراضي وأبعاده، وتستعرض نتائج الدراسات السابقة حول دوره في سياق التسوق عبر الإنترنت.

وتبين أن الحضور الافتراضي يعزز انغماس المستخدمين، ويقوي التفاعل الاجتماعي، ويرفع مستوى الواقعية المدركة للمنصات الرقمية، مما يؤدي إلى زيادة نية الشراء واستدامة التفاعل. ومع ذلك، فإن فعاليته قد تتأثر بقيود تقنية، وعدم راحة المستخدم، ومخاوف الخصوصية، وارتفاع تكاليف تطبيق التقنيات الغامرة.

وتوصي الدراسة بتطوير التقنيات الغامرة، وتعزيز أدوات التفاعل الاجتماعي، والاهتمام بأمن البيانات وخصوصيتها، وتصميم محتوى تفاعلي يدعم تجارب افتراضية أكثر ثراءً، وذلك لتعزيز أثر الحضور الافتراضي في تحسين أداء التجارة الإلكترونية.

الكلمات المفتاحية : حضور افتراضي؛ تجارة إلكترونية؛ تفاعل المستهلك؛ سلوك المستهلك عبر الإنترنت

* Mernah Taha Yassine, Faculty of Economic, Commercial and Management Sciences, University of Bouira, Bouira 10000, Algeria

1.Introduction

In recent years, the rapid development of digital technologies has transformed the global economic landscape, reshaping the way businesses operate and how consumers engage with products and services. The emergence of online platforms and digital marketplaces has created new avenues for trade, allowing transactions to occur across borders with unprecedented speed and efficiency. This digital shift has not only expanded the reach of businesses but also introduced novel forms of consumer interaction and engagement within virtual environments.

The concept of virtual presence, which refers to the perception of being “present” in a mediated or computer-generated environment, has gained increasing attention as part of the evolving digital experience. Advances in immersive technologies, such as augmented reality, virtual reality, and interactive online platforms, have made it possible for users to feel connected to digital spaces in ways that mimic real-world experiences. These technological developments highlight the growing importance of understanding how virtual environments influence user perceptions and behaviors.

As organizations continue to explore opportunities in the digital marketplace, it becomes essential to examine the broader implications of virtual presence for online engagement. By fostering more interactive and immersive digital spaces, businesses can create environments that attract attention, facilitate exploration, and support meaningful engagement with content. This introductory overview sets the stage for a more detailed exploration of how virtual presence operates within the context of e-commerce, shaping the ways in which users interact with digital platforms.

Research Problem

Despite the rapid expansion of e-commerce and the increasing reliance of businesses on digital platforms, many organizations face challenges in fully engaging users in online environments. While virtual presence offers the potential to enhance user experience by creating immersive and interactive digital spaces, there is limited understanding of how this perception of “being present” in virtual environments influences consumer behavior, engagement, and willingness to interact with e-commerce platforms. This gap underscores the need to investigate the role of virtual presence in shaping digital interactions and the factors that may facilitate or hinder its effectiveness. On this basis, the following problem emerges: **To what extent does virtual presence contribute to the activation of e-commerce?**

Sub-questions

- What role does virtual presence play in shaping consumer trust and confidence in e-commerce platforms?
- How does virtual presence influence decision-making and exploratory behaviors during online shopping?
- What challenges or barriers limit the effectiveness of virtual presence in engaging users digitally?
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Significance of the Study

This study is significant because it addresses the growing importance of immersive digital experiences in contemporary e-commerce. By exploring how virtual presence influences consumer perceptions and behaviors, the research provides valuable insights for businesses aiming to optimize user engagement and improve online platform performance. Understanding these dynamics can help organizations design more effective digital environments, increase consumer interaction, and strengthen the overall competitiveness of e-commerce operations.

Study Objectives

- To examine the relationship between virtual presence and consumer engagement in e-commerce.
- To analyze how immersive digital environments affect user behavior and decision-making online.
- To identify the potential barriers that limit the impact of virtual presence on e-commerce activation.
- To provide recommendations for businesses on designing interactive virtual experiences that enhance online engagement.

Study Methodology

The study adopts a descriptive–analytical methodology, which relies on analyzing previous academic literature, theoretical concepts, and empirical findings related to virtual presence and its role in activating e-commerce. This method involves collecting, reviewing, and synthesizing scholarly works to clarify the conceptual foundations of virtual presence, identify its dimensions, and explore how it influences consumer behavior within digital environments. The descriptive aspect focuses on presenting definitions, models, and technological developments, while the analytical aspect examines relationships, implications, and challenges highlighted in prior studies.

2.Literature Review

2.1. Concept of E-Commerce

The concept of e-commerce has been defined in multiple ways, including the following: E-commerce is defined as the process of buying, selling, and exchanging products or services over electronic systems such as the Internet and other computer networks. It includes a wide range of activities, including online retail, electronic markets, and online banking (Laudon, K. C., & Traver, C. G. 2021).

Turban et al. (2022) describe e-commerce as “the use of the Internet and digital platforms to conduct business transactions, manage supply chains, and deliver services electronically, enabling firms and consumers to interact efficiently without physical constraints.” (Turban, E., Pollard, C., & Wood, G 2022)

According to Chaffey (2019), e-commerce refers to “all electronically mediated transactions between an organization and any third party,” including B2B (business-to-business), B2C (business-to-consumer), C2C (consumer-to-consumer), and C2B (consumer-to-business) transactions. (Chaffey, D 2019)

Kalakota and Whinston (1997) define e-commerce as “the digital enablement of transactions and processes within a firm, and the exchange of information and value with external stakeholders via electronic networks.” (Kalakota, R., & Whinston, A. B. 1997)

From the previous definitions, we can define e-commerce as the process of conducting commercial transactions and exchanging goods, services, or information through digital platforms and online networks, enabling businesses to reach global markets and consumers to shop conveniently from anywhere.

2.2 Concept of Virtual Presence

Virtual presence is defined as the subjective experience of being in one place or environment, even when the individual is physically situated in another. This definition emphasizes the psychological aspect of presence, where users perceive themselves as “being there” in a virtual environment despite their actual physical location (Witmer, B. G., & Singer, M. J 1998) .The sense of presence allows individuals to engage cognitively and emotionally with the virtual space as if it were real.

virtual presence — can be described as the “illusion of non-mediation,” where the medium becomes transparent, and the user perceives the virtual environment as “real” rather than mediated.

(Jayesh S. Pillai, Colin Schmidt, Colin Schmidt,Simon Richir 2013)

virtual presence refers to the subjective psychological state in which a user experiences a mediated or computer-generated environment as a “real place,” such that the user feels “present” in this virtual environment — to the extent that the medium becomes transparent to his/her perception and the user treats the virtual environment as a perceptually “real” space. (Arthur Manouvrier and al 2020)

Another perspective conceptualizes virtual presence as the “illusion of non-mediation,” where the technological medium becomes transparent, and users perceive the virtual environment as real rather than mediated. This view highlights how immersive technologies can make digital spaces feel authentic, encouraging users to interact with them naturally (Lombard, M., & Ditton, T 1997)

Expanding on the concept, Slater (2021) describes virtual presence as the total response to being in a place, including being in a place with other people. By combining “place illusion” and “plausibility illusion,” users feel as though events in the virtual environment are actually happening to them. This definition emphasizes not only spatial presence but also social and emotional engagement within the virtual setting (Slater, M 2021)

This sense of “being there” includes spatial presence (feeling located in a virtual space), social presence (feeling co-present with others or with their representations), and a sense of immersion that can affect emotions, behavior, and memory similar to real-world experiences.

Contemporary studies also define virtual presence as the “sense of being in a non-physical world,” which is facilitated by sensory and environmental cues that enable immersion and evoke cognitive and neural responses similar to real-life experiences. This approach underlines the importance of sensory richness and interactivity in creating compelling virtual environments (MDPI 2024)

Based on the previous definitions, virtual presence can be defined as the degree of familiarity, exposure, and perceptual immersion a consumer has toward digital/virtual environments — including awareness of online platforms, virtual content, interactive digital experiences, and the virtual presence created by technology — that shapes their understanding, trust, and readiness to engage in e-commerce.

2.3 Dimention of virtual presence

There are several dimensions to virtual presence, including:

- **Spatial Presence:** Spatial presence refers to the user’s perception of being physically located within a virtual environment, despite being situated elsewhere in the real world. It reflects the psychological experience of “being there,” allowing

- users to perceive the digital environment as a tangible space and interact with it as if it were real (Slater, M 2021). This dimension is crucial in creating immersive experiences where the user feels situated within the virtual context rather than merely observing it.
- **Social Presence:** Social presence concerns the sensation of being with others in a virtual space. This includes interactions with avatars, other users, or virtual representations of people. A strong sense of social presence enhances engagement and interactivity, as users feel they are part of a shared environment and can communicate or collaborate effectively (Witmer, B. G., & Singer, M. J 1998). Social presence plays a key role in online platforms where interpersonal interaction influences satisfaction and user commitment.
 - **Self-Presence / Self-Identification:** Self-presence, or the degree to which users perceive their own identity within the virtual environment, is another critical dimension. It typically involves the representation of the user through avatars or digital profiles, allowing them to feel that their virtual self accurately reflects their real-world identity. High self-presence increases the psychological investment of users and contributes to more natural and engaged interactions within virtual environments . (Witmer, B. G., & Singer, M. j 1998)
 - **Immersion / Sensory & Psychological Involvement:** Immersion represents the extent to which the virtual environment can engage the user's senses and attention, creating a feeling of total involvement. High immersion reduces awareness of the physical surroundings and heightens responsiveness to the virtual space. This dimension is achieved through high-quality sensory inputs, interactivity, and environmental fidelity, enhancing the overall experience of presence (Lombard, M., & Ditton, T 1997).

3. Growth of E-Commerce and Its Impact on Consumer Behavior

Recent years have witnessed a remarkable surge in global e-commerce, reshaping the retail landscape and transforming how consumers shop. According to recent industry data, worldwide online consumer spending exceeded US\$4.12 trillion in 2024, marking a significant increase from previous years. (theglobalstatistics 2025) This rapid expansion reflects both broader internet penetration and the growing adoption of digital payment systems, mobile commerce, and cross-border online retailing. (ystats 2025)As more consumers gain access to reliable internet and convenient digital platforms, the base of online shoppers continues to widen substantially, including demographics previously underrepresented in e-commerce usage. (Mekarssi 2025)

This growth has deeply influenced consumer behavior, altering not only where people purchase goods but how they evaluate, choose, and engage with products and services. Research shows that e-commerce platforms are no longer mere transactional venues; they

now serve as interactive environments where consumers compare alternatives, read reviews, assess perceived value, and make decisions shaped by convenience, trust, and perceived risks. As a result, online consumer behavior diverges in meaningful ways from traditional offline shopping — for instance by offering greater information access, reducing geographical constraints, enabling easier price comparison, and providing personalized experience.

Moreover, the expansion of e-commerce has shifted consumer expectations: convenience, speed, flexibility, and digital trust have become core determinants of purchase decisions. This shift challenges traditional retailers to adapt or risk losing relevancy. In addition, the increased reliance on online platforms — including social commerce and mobile shopping — affects habitual shopping patterns, frequency of purchases, and even product categories: consumers are more willing to buy a broader range of items online, from electronics to everyday goods. (gropulse 2025)The net effect is a transformation in consumer behavior, expectations, and engagement — creating fertile ground for innovations, such as immersive digital experiences, that may further influence how consumers interact with e-commerce platforms.

4. Linking Virtual Presence to E-Commerce: A Review of Previous Studies

Virtual presence, often conceptualized as the psychological sensation of “being there” in a mediated environment, has been increasingly recognized as a critical factor influencing consumer engagement in digital platforms. In the context of e-commerce, this presence can be created through immersive interfaces, social interactions, or interactive content, all of which enhance users’ perception of the shopping environment and can affect their purchasing decisions .

Several empirical studies have examined the role of social presence, a dimension of virtual presence, in shaping online consumer behavior. For example, (Chen, L.-R., Chen, F.-S. & Chen, D.-F 2023)investigated live-stream e-commerce platforms and found that higher levels of social presence increased consumers’ engagement and identification with the platform, which directly contributed to higher purchase intention. Similarly, research by (Oh, C. S., Bailenson, J., & Welch, G. F 2018) highlighted that social presence strengthens users’ awareness of others in the environment, enhancing trust and interactive behaviors such as reviews, recommendations, and social sharing — all of which are crucial for activating e-commerce engagement.

Other studies have extended these findings to virtual experiential marketing and immersive shopping contexts. For instance, a 2021 study on virtual reality (VR) store experiences demonstrated that immersive virtual environments enhanced consumers’ emotional states and the perceived attractiveness of the store, which could lead to greater willingness to

explore products and engage in purchase-related behaviors. Furthermore, research on social commerce and live video commerce shows that social and virtual presence cues significantly influence not only immediate purchase intentions but also longer-term engagement and loyalty in online platforms

Collectively, these studies indicate a positive relationship between virtual presence and e-commerce activation, mediated through enhanced immersion, social interaction, emotional engagement, and perceived authenticity of the online shopping environment. While the methodologies and contexts vary, the consistent finding is that designing e-commerce platforms to incorporate elements that foster virtual or social presence can significantly improve consumer engagement, intention to purchase, and overall satisfaction.

5. Challenges Limiting the Effectiveness of Virtual Presence in Engaging Users Digitally

Despite the potential of virtual presence to create immersive digital experiences, several challenges can limit its effectiveness in engaging users:

- **Technical Limitations and Infrastructure:** High-quality virtual environments require advanced hardware, reliable internet connectivity, and realistic sensory feedback. Limitations in device capabilities, graphical fidelity, or latency can reduce the sense of presence and decrease user engagement (Slater, M 2021).
- **User Safety and Situational Awareness:** Fully immersive environments may reduce users' awareness of their physical surroundings, potentially causing safety risks or discomfort. This can deter prolonged use and limit engagement, particularly in virtual reality applications (Jerald, J. 2015)
- **Psychological and Physiological Effects:** Some users experience cybersickness, disorientation, or discomfort in virtual environments. Negative psychological responses such as anxiety, stress, or social unease can reduce the willingness to remain engaged (Kourtesis, P., Collina, S., Doulmas, L. A., & MacPherson, S. E 2019)
- **Privacy and Security Concerns:** Users may hesitate to fully engage in virtual environments if they perceive risks regarding data privacy, personal security, or financial transactions. Lack of trust can undermine the effectiveness of virtual presence in digital interactions (Oh, C. S., Bailenson, J., & Welch, G. F 2018)
- **Content and Interaction Quality:** The perceived value of virtual presence is heavily influenced by the quality of content and interactivity. Poorly designed environments, low interactivity, or shallow social experiences can limit immersion and engagement (Bailenson, J. N. 2018).

- **Cost and Accessibility:** The high cost of VR devices, content creation, and platform development can limit access, reducing the potential audience for virtual presence-driven experiences (Slater, M 2021)

Conclusion:

In light of the growing integration of digital technologies into commercial activities, understanding the role of virtual presence in shaping online consumer experiences has become increasingly important. As e-commerce environments evolve toward more interactive, immersive, and socially rich platforms, virtual presence emerges as a key concept that helps explain how users perceive, interact with, and respond to digital spaces. This study sought to explore the theoretical foundations and practical implications of virtual presence within the context of e-commerce, emphasizing its relevance in enhancing user experience and redefining the dynamics of online engagement. The discussion presented throughout this work provides a foundation for deeper inquiry into how virtual presence can be strategically utilized to support the development of more effective and engaging digital marketplaces. The study reached several conclusions, some of which can be mentioned as follows:

- The study finds that virtual presence strongly enhances consumer engagement by increasing the level of immersion and interactivity users experience in digital shopping environments. Immersive interfaces, such as VR, AR, and interactive media, create a more realistic and stimulating atmosphere that motivates consumers to explore products, spend more time on platforms, and develop stronger emotional involvement.
- Results show that social presence—such as real-time communication, live-stream shopping, and user-to-user interaction—significantly strengthens consumers' trust in e-commerce platforms. This heightened trust leads to higher purchase intention, greater willingness to interact with content, and increased confidence in the overall shopping process.
- Virtual presence contributes to a stronger perception of authenticity and realism in online stores. When users feel “present” in a digital environment, the shopping experience becomes closer to a real-world scenario, improving product evaluation and reducing perceived risk. This effect ultimately increases user satisfaction and platform credibility.
- The study reveals that virtual presence does not only influence immediate purchase behavior but also fosters long-term engagement and loyalty. Platforms that provide immersive and socially rich environments encourage repeated visits, continuous interaction, and greater customer retention over time.
- Despite its advantages, the study identifies several barriers that limit virtual presence effectiveness. These include technical constraints (such as poor

connectivity or low-quality interfaces), physiological discomfort (such as cybersickness), privacy concerns, and the high development cost of immersive technologies. These barriers need to be addressed to fully maximize the impact of virtual presence in e-commerce systems.

Recommendation:

Based on the results obtained through this study, the following recommendations can be proposed:

- Enhance the quality of immersive technologies used in e-commerce platforms to strengthen virtual presence and improve user experience.
- Increase social interaction features—such as live chat, real-time support, and community engagement tools—to reinforce social presence and build trust.
- Develop high-quality interactive content, including 3D product views, AR try-on features, and virtual store experiences, to increase user immersion.
- Prioritize user comfort by designing virtual environments that minimize cybersickness, cognitive overload, and visual fatigue.
- Strengthen data privacy and security measures to build user confidence and encourage deeper engagement with virtual environments.
- Reduce technological and financial barriers by adopting scalable and cost-effective solutions, especially for small and medium-sized enterprises.
- Integrate virtual presence strategies into broader digital marketing plans to enhance customer loyalty and long-term engagement.
- Continuously evaluate user behavior and feedback to refine virtual features and ensure that digital environments remain relevant and engaging.

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