

Rise of Augmented Reality and the impact of Virtual commerce on Consumer behavior and decision making

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الملخص:

مع انتشار التسوق عبر الإنترنت و التسوق في المتاجر الافتراضية إلى جانب البيع التقليدي، يتغير عالم التجارة بشكل كبير. تبحث هذه الدراسة في كيفية تأثير التسوق في المتاجر الافتراضية والتسوق التقليدي على نوايا المستهلكين لإجراء عمليات شراء وتكشف كيف تؤثر هذه العوامل على مواقف العملاء وأفعالهم في السوق المتغيرة. تتمتع كل من التسوق في المتاجر الافتراضية والتسوق التقليدي بمزايا وعيوب كبيرة عندما يتعلق الأمر بتلبية احتياجات العملاء. وجد البحث فجوات في المعرفة حول كيفية تأثير عدد من المتغيرات على نية الشراء في البيئة المزودة للتجارة الافتراضية والتسوق التقليدي من خلال استكشاف وصف المشكلة. و قد أجريت الدراسة باستخدام أساليب مختلفة لاختبار تأثير التسوق الافتراضي و تأثير التسوق التقليدي و الفرق بينهم في تلبية احتياجات العميل و نيته في الشراء. في البداية، خضع عشرة مشاركين لمقابلات شخصية، خمسة منهم عملاء يعملون مع شركات التجزئة في مصر وخمسة منهم خبراء، ثم تم جمع بيانات خاصة بعدد ٣٩٥ عميل من خلال استبيان تم نشره و تم استخدام البرنامج الإحصائي SPSS-V.24 لتحليل البيانات، وكانت أبرز الاستنتاجات التي تم التوصل إليها البحث هو أن العلامات التجارية للبيع بالتجزئة في مصر يجب أن تولي مزيدا من الاهتمام

للمجمع بين استخدام التجارة الافتراضية وقنوات التجارة المادية ، مع العلم أن كلاهما لا يستبعد أحدهما الآخر بل يكمل الآخر.

الكلمات المفتاحية: التسوق في المتاجر الافتراضية، نية الشراء، سلوك المستهلك، رؤية البيع بالتجزئة.

Abstract

With the rise of online shopping & virtual commerce along to traditional physical retail, the world of commerce is changing dramatically. This study investigates how virtual commerce and offline shopping affect consumers' intentions to make purchases and explores how these factors influence customer attitudes and actions in the changing marketplace.

Both Virtual commerce and offline shopping have significant advantages and disadvantages when it comes to satisfying customer needs, as the study indicates. The research finds gaps in knowledge about how a number of variables affect purchase intention in the dual environment of virtual commerce and offline shopping by exploring the problem description.

A mixed-method approach is used in the study to test the conceptual model. Initially, ten respondents, five of whom were customers who work with retail companies in Egypt and five of whom were experts were subjected to qualitative interviews.

A quantitative research methodology was then used, and the survey contained 395 useful respondents. Data from a broad consumer sample, including a range of demographics and purchase preferences, was gathered through surveys. With the

use of SPSS (Statistical Package for the Social Sciences), the survey data was examined.

Results of the study indicate that retail brands in Egypt should give more consideration to combining the use of virtual commerce and physical commerce channels, knowing that they both are not mutually exclusive but rather they are complementary.

Keywords: Virtual commerce, Purchase intention, Consumer behavior, Retail landscape.

Introduction

Now, emerging information technologies like virtual and augmented reality, which similarly encode reality through programming language, are offering people ways to create, and investigate new realities, E-commerce facilitates not only online shopping but also the process of making purchasing decisions. Additionally, buyers are more likely to make a purchase if they find the decision-making process simpler (Dholakia & U.M. & Rego, 2010).

Researchers' investigation on consumer attitudes towards shopping are changing nowadays due to the existence of augmented reality and virtual commerce, and how these technologies impact consumer behavior, and how they might be used to enhance the entire customer experience. This new technology can also help us identify new opportunities for innovation and growth.

Furthermore, by understanding how Augmented Reality and virtual commerce influence consumer behavior, businesses can tailor their marketing and advertising strategies to be more effective in this new environment. As stated, (Vehhoef & Kannan & P.K. & Inman & J.J, 2015) With AR technology, digital content may be seamlessly integrated into the actual world by superimposing computer-generated pictures on top of the user's perspective of the real world.

Businesses looking to adjust to these changes and develop more efficient marketing and sales strategies in the virtual world may find this research to be quite insightful specially that the fundamental idea behind augmented reality (AR) is the real-time incorporation of digital data into the user's view of the real environment, such as text or 3D models (Pandey & Mishra, 2019).

In the end, researching how consumer behavior and decision-making are impacted by augmented reality and virtual commerce can help us better understand how these technologies are changing different business sectors and how businesses can utilize them to meet the changing needs and expectations of today's consumers.

Literature Review

Augmented reality (AR) is a vital and an important supporting technology in the Metaverse, as it can blend information from the real world and the virtual world to provide customers with a unique, memorable experience (Mystakidis, 2022).

The metaverse and augmented reality are not the same thing, but they share some a number of similarities in terms of providing users with an interactive experience, while on the other side, metaverse and Virtual commerce are closely linked together because virtual commerce is a significant component of the metaverse.

The phrase "metaverse" refers to a three-dimensional virtual environment where users may interact with each other and digital items (agarwa & Tandon & Sharma & Mishra, 2022). It is an extension of the existing real world. The Metaverse offers a chance for innovation and entrepreneurship as organizations and individuals try to develop new uses for the technology, where it will be a frequent subject of future legal technology writings (Dixon, 2023).

The purchasing and selling of products and services in the virtual world is referred to as virtual commerce, sometimes known as E-commerce in virtual settings. Basically, virtual commerce is a movement in the retail industry toward digitalization, with transactions taking place online from product browsing to checkout and delivery (Zhang & Wang, 2017).

Virtual commerce, which lets users buy virtual products including accessories, and digital products, is an important component of the economy in the metaverse.

These digital items may be purchased and sold using digital money that only exists in the metaverse, such as crypto currencies.

Virtual commerce is expected in the future to increase in popularity as the metaverse develops and grows, and future versions of the metaverse are probably going to allow a wide range of virtual business activities, such as digital advertising, online markets, and virtual auctions. The virtual world, where ease of use, accessibility, and customized experiences come together to completely change the retail environment, is where business is headed in the future. (Chen & Huang, 2021).

AR is of significant importance in today's digital age. According to a number of researches, augmented reality (AR) can help consumers make better decisions and save valuable time (Hilken & Ruyter & Mahr & Keeling, 2017). With the increasing of AR technology in various industries, including retail, entertainment, and education, it has become essential to explore how it affects consumer decision making and their behavior.

Augmented reality (AR) provides consumers with an immersive, interactive experience by placing virtual information onto the real world. AR has the potential to transform the way consumers interact with products and services, providing a more immersive and personalized experience. By understanding the effects of AR on consumer behavior, businesses and organizations can create more effective marketing strategies and enhance customer engagement.

To understand consumers' responses to virtual commerce in comparison to offline shopping and how this influences the customers' intention to purchase, it is necessary to define the

terms used to describe virtual commerce, as well as the benefits and drawbacks associated with each topic. Additionally, the various forms, functions and applications of the augmented reality for both consumers and businesses must be discussed, along with the potential risks and challenges associated with its implementation.

Theoretical frame work

Impact of virtual commerce on offline shopping and vice versa

The internet and digital technology have enabled the growth of virtual commerce, which has completely changed the retail industry by providing customers with high levels of ease, customization, and flexibility.

Customers' perceived internet confidence and desire to search for product information provided by an online retailer were significantly predicted by their trust in the online store. Customers' confidence in a business can go a long way toward assuaging their concerns about shopping online (Chaudhuri and Holbrook, 2001).

Customers who shop online with a brand they trust feel more secure about their purchases and are probably going to use the reliable company's website to do online information searches where they anticipate that the business, they can rely on will give them the best information possible and finally allay their fears over online transactions (Lee and Johnson, 2002).

According to Hahn, Kim (2009) In a multi-channel retailing, there were significant relationships between consumer trust in a traditional retailer, perceived confidence in shopping at the online store, intention to search for information at the online store, and behavioral intentions toward the online retailer run by the online retailer.

Impact of Virtual Commerce on customer shopping experience

The increasing number of online shoppers is driving up sales through the Internet and customers are moving to online shopping due to the competitive prices and discounts, time savings, ease of shopping at any time and place, availability of a wide range of products, ability to compare different models and brands, and thorough information about products and services offered by online retailers.

According to Katta & Patro, 2017, online shopping has increased significantly throughout the last decade due to best options and ways for purchasing, where online shopping offers different methods of comparison between products within prices, different range of products.

One of the main issues with offline shopping has to do with effort, and forcing customers to physically try on clothing is not always a fun experience. They are rather clear about why they are shopping, rather than being unsure about whether they want to buy or not. They want to interact with the goods, or they have a

certain product in mind (Schulze, 2020). For this reason, online shopping is undoubtedly frequently favored. By offering a fun experience, AR is anticipated to resolve these problems and improve the overall experience.

In addition to enhancing customer satisfaction, AR and VR are making firms more visible in congested marketplaces, which boosts client loyalty and engagement as well as bottom line results.

Impact of offline shopping on customer shopping experience

The difficulty of shopping offline is rising. Customers are either in need of a service or they are not. They are rather clear about why they are shopping, rather than being unsure about whether they want to buy or not.

It is evident right away that the retail sector will operate in an Omni channel environment. Online shopping is quickly overtaking offline shopping in terms of importance, even if offline shopping still accounts for the majority of merchants' worldwide sales. Customers use both channels in accordance with their requirements (Morgan, 2020).

The time and spatial distance between customers and products is a significant distinction between online and offline shopping (Levin & heath, 2003). The requirements for adding an online or offline presence vary depending on the product. Nonetheless, prolonged exposure to internet buying by consumers could alter the present perception and reduce anxiety surrounding online purchases.

In conclusion, there are perceptions that the online and offline buying experiences have different qualities. For instance, people find that online buying offers a wider variety and faster access to information, but offline shopping is thought to offer more personal attention and the opportunity to view, touch, and handle the goods (Levin & heath, 2003).

Figure 1 illustrates the above-described process between online and offline channel, on the purchase intention

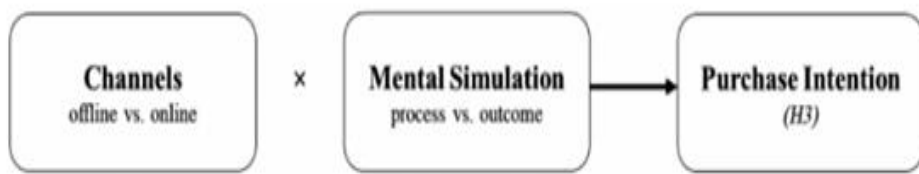


Figure 1: The effect of shopping channel (online vs offline) on consumer decision process and firm's marketing strategy (Xu & Park & Lee, 2021)

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Impact of customer shopping experience on purchase intention

The consumer experience when shopping has been significantly impacted by the exponential expansion of new innovative technologies in recent years, and a wide range of innovative technologies have caught the interest of academics

and industry professionals. A customer's purchasing experience is influenced by three key elements, channel selection; value dimensions pertaining to enjoyment and convenience; and social connection. Each component affects the others and is deeply interconnected Ylilehto, Komulainen and Ulkuniemi (2021).

Purchase intention is significantly influenced by the customer experience in a variety of businesses. Higher purchase intentions have always been associated with positive experiences, which are defined by elements like emotional connection, perceived value, and satisfaction (Lemon & Verhoef, 2016).

Customer perceptions are shaped by interactions across several touchpoints—both online and offline—which in turn affects their propensity to make a purchase (Kumar & Reinartz, 2018).

Research Conceptual Model

The emergence of virtual commerce in recent times has brought about a dramatic transformation in the Virtual commerce environment, as transactions take place via digital platforms. This paradigm change has affected offline retail experiences in addition to changing how customers shop. Businesses looking to prosper in the digital era must comprehend how online and physical buying interact and how this affects customer behavior overall. The objective of this conceptual model is to shed light on the complex connections that exist between online and offline shopping, consumer shopping experience, & purchase intentions.

Effect of Offline Shopping on Customer Experience: The views and preferences of customers are greatly shaped by their offline shopping experiences. The entire shopping experience is influenced by elements including ambient, customer service, in-store interactions, and store layout.

Effect of Customer Experience on Purchase intention: Delivering extraordinary experiences that not just meet but beyond client expectations is a top priority for businesses in an era where consumers have a number of options and easy access to a wealth of information. Companies have to acknowledge that customer experiences are holistic, involving several touchpoints, and make it a priority to provide smooth, tailored encounters that appeal to their target market.

In conclusion, this conceptual model offers a thorough framework for comprehending the complex relationships that exist between Virtual commerce and offline shopping, consumer shopping experiences & purchase intention. Businesses can develop focused strategies to enhance consumer experiences, and influence purchase decisions in a retail environment that is becoming more interconnected by clarifying these relationships.



Figure 2: Proposed Conceptual Model for the impact of Virtual Commerce & offline shopping on Purchase intention

Research Methodology

Research Design

In the process of attempting to understand the complex relationships between Virtual Commerce and offline Purchase, the research design is essential for directing the research, gathering the relevant details, and producing insightful conclusions. In order to fully capture the complex aspects of consumer behavior and preferences in the digital age, this section explains the comprehensive study design that was used. This design includes both exploratory and conclusive research approaches.

The qualitative interviews functioned as a basis for formulating hypotheses, focusing study goals, and pinpointing relevant factors for additional examination via quantitative analysis.

Consumer-Based Experimental Design:

To build on the understanding obtained from qualitative interviews, a qualitative interview and an experimental design was utilized to acquire deeper understanding into customer attitudes, interests, and decision-making procedures in the contexts of online and physical retail. In the experimental investigation, 10 consumers who represented a range of demographic characteristics, shopping references, and technological understanding were included in the sample.

Quantitative Questionnaire:

Building upon the discoveries made during the investigation stage, the study moved into the final stage, which was marked by the distribution of a numerical survey to a more extensive consumer sample. The quantitative questionnaire is a reliable tool that may be used to measure, analyze, and validate hypotheses generated from the exploratory phase in a systematic manner, improving the findings' generalizability and reliability.

Research Population & Sample Size

The research population and sample size must be carefully considered while designing a successful research study. The people in Egypt who are relevant to the research topic—which is examining how offline and virtual commerce - online shopping affect consumer behavior are included in the research population.

In this research, 399 people have already responded to the researcher's questionnaire; 395 of them have finished it and meet the requirements to be included in the analysis.

Data Collection

In summary, the research study's data gathering tactics in the Egyptian retail sector incorporate a mixed-methods strategy that combines quantitative surveys and Experimental design, qualitative interviews. The goal of the study is to present a thorough understanding of how offline shopping and virtual commerce affect consumer behavior and purchase intention by utilizing both qualitative and quantitative data. Strategic decision-making in the retail industry is informed by the research's thorough data collecting and analysis, which advances knowledge in the field of business administration.

The Data Analysis and Results

Findings of the Study

The combination of internet sales platforms and physical retail locations is a challenging situation. Managers revealed a variety of techniques when discussing how they balance investments between the two domains. While some highlighted a more complex approach, others stressed a unified stock strategy, in which products are not divided between online and offline.

Managers emphasized the usage of "Voice of Customer" tools in measuring customer satisfaction. Customers can share

their experiences in real-time by using these applications as direct channels for feedback. Companies can quickly fix any problems or concerns thanks to the quick feedback application, which shows that they are committed to improving the overall buying experience. In a time where customer expectations are always rising, this customer-centric approach is essential.

Strategies for influencing and persuading prospective buyers to make a purchase were investigated. The managers underscored the significance of marketing initiatives, especially those conducted near shop entrances, as effective tool in shaping consumer buying behavior. These promotional events function as gateways for connecting with consumers and are created to highlight particular companies and items. Additionally, the impact of salespeople was emphasized, highlighting the significance of tailored interactions in assisting clients in making purchases.

The correlation between Offline shopping, Virtual Commerce shopping, customer shopping experience, and purchase intentions were investigated by correlation analysis.

The analysis's results showed a number of important conclusions.

First, a somewhat favorable correlation between offline shopping and virtual commerce—online shopping—was found ($r = 0.381$) above the significance level of 99.9% ($p < 0.001$), this suggests that people who shop offline are probably also internet

shoppers to some extent. But they represent different consumer patterns even if they are related.

Additionally, Positive correlations were found between customer shopping experience and offline shopping ($r = 0.291$), virtual commerce ($r = 0.254$). These findings suggest that people who have a positive shopping experience are more likely to shop both offline and online and to feel comfortable making decisions.

Furthermore, a strong positive correlation was found between purchase intention and a number of shopping-related variables. Purchase intention showed moderate to strong positive correlations with the following:

- customer shopping experience ($r = 0.563$)
- Offline shopping ($r = 0.444$)
- Virtual commerce ($r = 0.454$)

These correlations suggest that people with higher purchase intentions are more likely to engage in shopping activities, enjoy their shopping experiences, feel at ease making purchases, and support businesses.

In conclusion, these discoveries broaden our knowledge of consumer preferences, behaviors, and motives and offer useful insights for companies looking to improve customer pleasure, loyalty, and satisfaction.

Conclusion:

With convenience, accessibility, and a wide selection of goods at their fingertips, virtual commerce has grown to be of an added value of consumers' life, where Customers purchasing habits have changed due to the ease of shopping whenever and wherever they choose, with an increasing preference towards online platforms. The capacity of virtual commerce to operate beyond geographic borders is one of its main benefits.

Virtual commerce offers firms more affordable options than traditional conventional physical store setups. Businesses are able to maintain strong profit margins and competitive pricing when overhead costs are decreased. Online platforms' adaptability also makes it possible to quickly adapt to changing consumer tastes and market trends.

Limitation of the research

While the research has investigated the effect of various study variables, but still there are a number of limitations that need to be acknowledged:

- The study concentrated on a particular set of factors associated with virtual commerce, online shopping and purchase intention. But there were also other variables which could be studies later including individual preferences, economic situations, and cultural variations. This might restrict the ability to fully comprehend how consumers behave.

- Response bias may be introduced by depending more on participant self-reported data. The dependability of the results may be impacted by participants reporting their behaviors incorrectly or giving socially acceptable answers.
- The study's conclusions are relevant only to the period and setting in which it was carried out. Future relevance and applicability of the findings may be affected by shifts in customer tastes, market trends, or technology.
- Due to limited data on this topic especially in Egypt, the study depended on previous studies and researches within the context of the study.
- The adoption of a convenience sample technique instead of random sample. Convenience sampling can cause selection bias and limit the generalization of findings to a larger population, despite the fact that it has practical benefits in terms of accessibility and speed. By using random selection strategies to guarantee a more representative sample, future studies should try to lessen this constraint.

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