

Introduction of Virtual Reality in the E-Commerce Business and its Impact of it on Growth

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Abstract

Introduction: By simulating the atmosphere and interpersonal connections of a brick-and-mortar store, virtual reality (VR) enables e-commerce enterprises to reproduce authentic shopping experiences. Virtual reality is being used to bridge the gap between consumers' online and offline shopping experiences. Companies which realise virtual reality may increase revenues have indeed changed their marketing and customer service.

Aim: To introduce virtual reality in the E-commerce business and its impact of it on growth

Material and Methods: The research topic has discussed several kinds of research methodologies that have been conducted in the research. The researcher has used the interpretivism research philosophy which is theoretical-based analysis. Along with this, the researcher has used secondary qualitative data collection methods which are helpful for the researcher to gather authentic information.

Results: The research study has elucidated the result and discussed part of the mentioned topic regarding the introduction of virtual reality in the E-commerce business and its impact of it on growth. Several graphs regarding the financial growth of the E-commerce business, especially regarding Amazon with the advent of virtual reality, have been illustrated.

Conclusion: The realisation by many businesses that every work that can be carried out in the real world can also be carried out in virtual reality. This includes a wide range of business operations, including marketing, retail sales, bookkeeping, human resource management, and more. It also looks at how virtual reality (VR) may improve shopping for customers.

Keywords

Digital business market, digital consumer experience, e-commerce platform, online businesses, Virtual reality (VR).

INTRODUCTION

The immersive experience of virtual reality (VR) is achieved through the use of pose monitoring and 3D near-eye displays. Virtual reality serves a variety of purposes outside of video games, including business, academia (for things like medical or military training), and the entertainment sector. Beyond VR, there are other technological advancements like augmented reality and mixed reality, often known as extended reality or XR, but the exact meanings of these categories are still being worked out. E-commerce is the term used to describe the exchange of goods and services online. On the information superhighway, the bustling downtown area or physical store is being transformed into zeros and ones. Virtual reality (VR) allows e-commerce businesses to replicate authentic shopping experiences by mimicking the same human interactions customers would have in a real store. By facilitating online shopping for all customers, virtual reality is bridging the difference between the physical and virtual worlds. Businesses that are adaptable enough to see how virtual reality could improve their bottom lines have already started to change their customer reach and customer-service methods. Here many things have been discussed like the research approach, research methodology, research philosophy, the outcomes, and lastly the conclusion on this topic.

REVIEW OF ARTICLES

Virtual reality (VR) is becoming increasingly significant in today's business world since it offers a multi-sensory experience. In this paper, "*The examination of virtual reality at the intersection of consumer experience, shopping journey and physical retailing*", this study investigates how the rapid adoption of head-mounted screens by customers and companies affects the foot traffic that retailers see within their stores. In addition to this, it investigates the potential for virtual reality (VR) technology to improve the customer's shopping experience in general. The researcher took a qualitative approach to the research, which consisted of conducting interviews with both industry professionals and end users. The findings indicate that the use of VR results in consumers having expectations that are distinct from what would be a standard in-store experience. It has been discussed that the creation of reasonably priced head-mounted displays has prompted marketers to use VR to engage customers [11]. A big impediment to its utilisation is the way companies are currently introducing VR to their clients without developing a corresponding comprehensive plan. It can be concluded that fast-moving companies are quickly adjusting their approaches to marketing and customer service to take advantage of virtual reality technology's potential impact on the bottom line.

Virtual reality has many uses besides video games, notably in commerce and the entertainment industry. The acceptance and use of augmented reality (AR) and virtual reality (VR) technology to improve the consumer experience in e-commerce is fairly restricted, despite favourable evaluations of the technologies and the rich user interactions they enable. In the article, *“Exploring factors influencing organisational adoption of augmented reality in e-commerce: an empirical analysis using technology–organisation– environment model”* it has been found that using the technology-organisation-environment (TOE) conceptual framework, the researcher highlighted several elements that, from an organisational point of view, influence the technology adoption of AR/VR [9]. Companies considering using virtual reality (VR) to improve their customers' e-commerce experiences should analyse their customers' reactions to other firms' use of VR. The findings highlight the importance of client preparedness, relative advantage, support from senior management, and technological knowledge when influencing an organisation's propensity to adopt VR for e-commerce. Using the results of the structural connection as a launching point, e-commerce enterprises can develop strategies centred on crucial factors including technological superiority, top-level management's backing, well-prepared customers, and a competitive edge [12]. The research gives empirical support for the suggested model based on the TOE framework and makes several suggestions for future studies on the adoption, implementation, and impact of a possibly beneficial AR/VR technology.

In this paper, *“An innovative e-commerce platform incorporating metaverse to live commerce”* The limits of traditional internet shopping are overcome by the unique business model of a new electronic commerce network that combines real-time commerce with metaverse utilising digital twin technology. The suggested business model is shown in depth using the business model canvas and the illustrative core business operations. Live commerce is a fresh approach to internet shopping that is now gaining popularity and expanding swiftly. Existing live commerce, however, has flaws including uninteresting content, little opportunity for face-to-face interaction via chatting, a small space for vendor live broadcasting, and consumers who are unfamiliar with brands and products [3]. Customers can use their metaverse personas to explore the product and engage with it however they like. Retailers can use the program to create a concept area and provide original material for the metaverse to increase brand recognition and loyal fan bases. The convenience of purchasing online with virtual reality can also be advantageous to those who prefer to purchase offline. A new platform that provides advantages both on and offline needs to be created. This makes purchasing a more satisfying experience overall.

In the article *“The Impact of Mobile e-Commerce on GDP: A Comparative Analysis between Romania and Germany and how Covid-19 Influences the eCommerce*

Activity World “, the writer has explained that with the advent of e-commerce in the business world, the whole concept of business has changed. The idea of trading has changed from labour-driven and human-oriented to machine-oriented. Virtual reality has impacted business to a great extent. In the current scenario of virtual business, business processes are getting automated and shorter. Automation in business processes is leading to fewer errors and better time management. Mobile phones, tablets and other portable devices and smart devices are also increasingly used by the masses as these devices give an optimised and more user-friendly (4). Various mobile applications and software are being used these days by leading e-commerce platforms to do digital marketing, advertisement as well as buying and selling. Technological advances have made it possible to trade online. It is also the responsibility of the organization to ensure that the protection of the customer is maintained in the online websites while doing online transactions.

In the article *“Role of Augmented and Virtual Reality Marketing in Organizational Development”*, the writer has studied various literary works and has described how e-commerce has revolutionised the concept of business. E-commerce has made the world a better connected and easier place to trade in. The author believes that it is much easier to order a product and complete the cycle till the product is received. The need for virtual reality arises from the demand from the public as newer and better services are provided and competition is on the rise [8]. Virtual reality can help businesses reach more widely and attain a more detailed analysis of the market. Organisations are constantly working on improving the interface and bringing in new changes that will contribute to a user-friendly experience. It has been observed by the author. The interference of virtual reality has helped even during the times of the Covid-19 pandemic. Virtual reality has contributed to the growth of GDP and has supported the economy of the country during times of crisis.

Table 1: Competitive analysis of e-commerce business platform

Companies	Financial growth
Amazon	\$356 billion
Alibaba	\$12.36 billion
eBay	\$10.42 billion
Walmart	\$572.75 billion

(Source: Satista.com, 2022)

“The traditional store has been enhanced in the e-commerce business by AR technologies”. During the past few years, the traditional store has become an e-commerce store at present and it is an essential part of the worldwide retail framework. Therefore, many industries have experienced a significant change observing the source of the internet, and thanks to the rapidly upgraded digital transformation of modern life, people from virtual reality in

each nation now benefit from the bonuses of digital transactions. On the other hand, the Covid-19 pandemic is another reason for transforming traditional stores into e-commerce retail stores [3]. AR technology helps online consumers feel as if they are in a “brick-and-mortar” shop interacting with products or goods.

Online access and adoption are continuously growing globally and with close to \$5b world internet users. The number of people purchasing from e-commerce is ever-increasing. Therefore, the data has estimated that e-commerce sales have reached 5.2 trillion U.S. dollars globally in 2021 and this figure is solely anticipated to achieve further measurements in the future years. Throughout the analysis, the smartphone AR applications and the capacity to which they contribute to trendy retail sets have discovered user dignity to be rather increased and that digital technology usage delivers experiential e-commerce advantages, including better efficient or more useful importance shopping, additional entertainment and better visual reality demanding shopping [16]. Furthermore, this analysis of AR in a retail context mostly involves digital e-commerce stores operated in steady laboratory circumstances. Therefore, there are a growing e-commerce market and the option to execute an investigation in this certain realistic-world context. Online users can select from different digital media to browse, reach and purchase products or services, which have needed (1,12,4).

MATERIALS AND METHODS

The researcher has used this “interpretivism research philosophy” to conduct this research to gather individual concepts or beliefs. The scientific theory-based research topic presents the standpoints of the method that must be used to collect evidence, interpret and utilise the research topic. It does not use any regard to the theoretical -orientation, framework, or paradigm, in words of understanding the evidence that has been done. Moreover, the advantage of the “interpretivism philosophy” is so helpful for the researcher to discuss thoroughly related to the research topic by including essential findings [10].

The researcher has followed the “deductive research approach” to complete the current discussion regarding the research topic. Therefore, this research process is represented as the group of plans of action as methods that have been adhered to and observed by the researcher while originating and driving this research. Throughout this process, the researcher has been able to discover the relationship between the research study as well as the research method. This “deductive research approach” has helped the researcher to excessively use any data and produce appropriate information from the available data group [17]. The usage of this deductive research approach by the researcher is beneficial for explaining the connection to the research objectives. Moreover, the researcher has used this research approach to verify the relevance of the researcher in equipping the enabled information as per the research topic.

This research methodology defines the total method executed in a research strategy from a theoretical research background to information collection and analysis. The researcher has adopted the deductive research approach to collect information as well as understand the several ways to obtain suitable results which have been collected from the research analysis. The benefit of the “explanatory research design” is to understand the objective of the research topic which has been executed through this research process by the researcher [14]. This “explanatory research design” is effective for the researcher that has helped to meet successfully all criteria of the research questions. On the other hand, this effective research design is successful in the phase of obtaining suitable results and understanding them throughout the significant cases.

The qualitative data collection method has been used for this research paper which has played an important role in collecting high-quality results and data through the appropriate path of the research actions. This qualitative research strategy is an ideal option for the researcher to collect information as well as explain the research questions and answers through the secondary data collection process. The researcher has used a variety of data collection methods such as observational, and visual analysis including journal books or articles, and interviews [3]. On the other hand, the researcher is obtaining the relevant information regarding the research topic with the usage of the observation-based “qualitative data collection method”.

The researcher has followed a “secondary data collection source” to find the objectives of the research topic. To sustain “accuracy” it is so important for the researcher to collect evidence as well as gather information from online data sources. Furthermore, the secondary data collection methods consist of the research topic “qualitative analysis” conceivable through different online journals, websites, research articles, statistic data sources, blogs, publications and more. Therefore, this data collection source is effective for the researcher that has collected information as well as saves time consumptions and money. Moreover, it is possible to easily collect a lot of information needed for the entire research topic.

Convenience sampling determines a non-probability sampling process that is selected for inclusion in the sample due to it is easiest for the researcher to access. The researcher has gathered pertinent and appropriate data and evidence regarding the research topic the entire review and compiled information must be shorted observing an appropriate sampling method [18]. In order to drive this research topic, the convenience sampling method focused on collecting information from pertinent sample information and relevant data sources. Throughout, this sampling process, the researcher is to collect a bulk amount of data and attributes with a minimum investigation action that has saved time consumption as well as money.

Table 2: Inclusion and exclusion criteria

Inclusion criteria	Exclusion criteria
Throughout this inclusion criteria, it has been identified that it is reliable and consistent and it is helpful for the researcher to investigate the information [19]. Therefore, the researcher has collected information from 2019 to 2023 to obtain information and theoretical data for this research study.	The population that has been selected for this research topic is excluded by the exclusion criteria features. To make this research topic and create it conform to all exclusion criteria [7]. Furthermore, all the in-depth peer studies of data and specifics are collected by the researcher throughout the secondary data collection process.

The researcher has implemented the “thematic analysis” for this secondary qualitative data collection process which is compiled to define the essential factors of the online data collection method. Therefore, “thematic analysis” has been helpful for the research to mitigate the research objectives which are appraised in the research report. By gathering several journal articles, magazines, research papers, and websites, this data analysis process assists in providing a structured finding to the research investigation [11]. The themes consist based on the objectives of the research topic which is to help the researcher to explain the research purpose through analysing the data.

To ensure any type of legal requirements on which the investigation measure authorizes its validity about the multiple information, subjects, and data that have been received. The research principles are followed by the research process. The researcher also follows all of the research's ethical considerations such as transparency, reliability, and correctness [7]. Therefore, this "Data Protection Act" is so beneficial for the researcher to facilitate the methods of collecting information, storing, and processing evidence while attaching to the research entire research process which has been observed actively.

RESULTS

The virtual reality (VR) industry is expanding at a high speed. The international virtual reality market size is predicted to increase from less than 12 billion U.S. dollars in 2022 to more than 22 billion U.S. dollars by 2025.

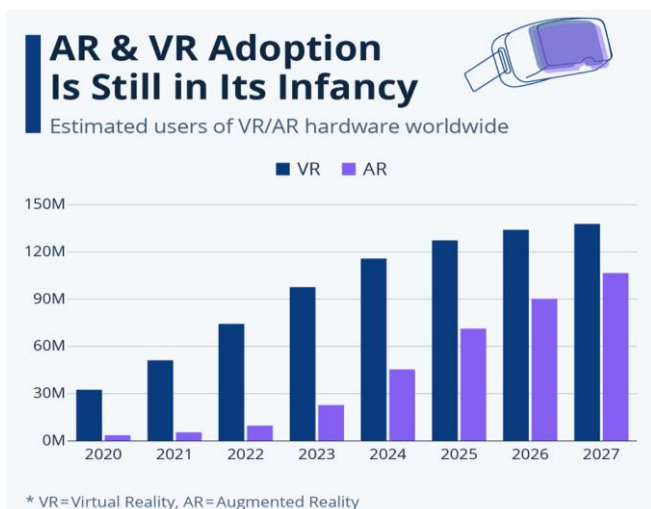


Figure 1: Estimated users of AR and VR worldwide. (Source: statista, 2023)

It is clear that in 2020 the number of augmented reality and virtual reality users was not many, but the business growth expansion as late as 2027 was nowhere near the scale that will create mixed reality as the next computing platform now. It is estimated that 74 million will be utilizing virtual reality hardware this year while the user number of AR is nearly 10 million which is not so high. By 2027, both augmented reality and virtual reality are anticipated to have exceeded 100 million users internationally, even so, that figure is much less than that of billions of smartphone users all over the world. Augmented and virtual reality technology has become progressively approachable and extensively utilized over the last few years and it is considered to be expanded in terms of approval [13]. The virtual reality market is predicted to reach 26.9 billion dollars by 2027.

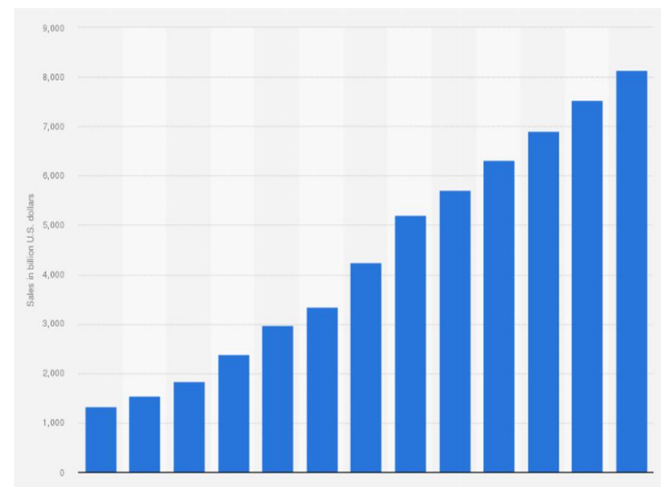


Figure 2: Retail e-commerce sales worldwide from 2014 to 2026 (in billion U.S. dollars) (Source: statista, 2023)

Global retail E-commerce sales are expected to reach about 5.2 trillion dollars in 2021, according to estimates. According to estimates, this sum and related data will increase by 56% over the following several years to reach over 8.1 trillion dollars by 2026. From 2020 to 2027, the global e-commerce industry is projected to grow at a compound annual growth rate of 14.7%, reaching a value of USD 27, 147.9 billion. Annual U.S. e-commerce revenues climbed exponentially by about five times between 2011 and 2021. Retail sales growth on a global scale will continue to rise and expand its market share in a particular retail market segment [6]. Online retail sales will approach 6.51 trillion dollars by 2023, with E-commerce websites consuming

22.3% of net retail sales. After the pandemic, E-commerce has experienced an increase in the number of new consumers and activities. E-commerce activities are changing with the introduction of virtual reality in this business and affecting global retail sales. Within the next five years, it is expected that E-commerce sales would steadily increase in the UK market by \$85.7 billion, translating to a 42.88% increase in retail sales [8]. Traditional two-dimensional e-commerce websites are designed to provide simple browser-based user interfaces that allow customers to look for the goods and services they need. Virtual reality has made it possible to display products and services realistically and has accelerated company growth, particularly in the wake of the worldwide epidemic [10]. The execution of virtual reality and augmented reality in the E-commerce business has improved consumer satisfaction in the last few years. Both the E-commerce business and the customer segment, encompassing the enhanced business growth in the virtual reality gaming enterprises are anticipated to become profitable from the prediction of business expansion internationally.

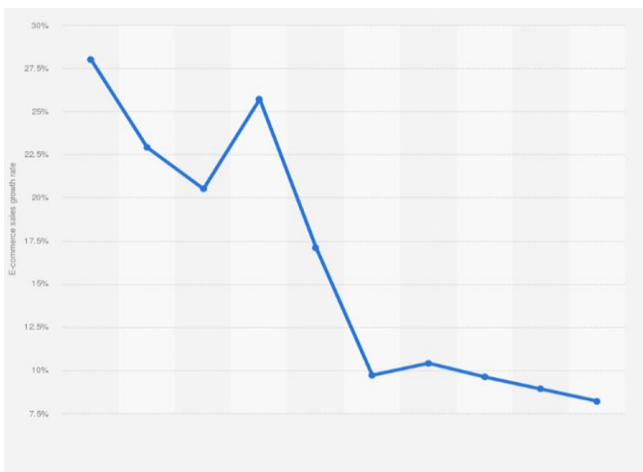


Figure 3: Global growth rate of retail e-commerce sales predicted by 2026.
(Source: statista, 2023)

Compared to the year before, 2020, foreign E-commerce sales increased by 17.1% in 2021. E-commerce companies were predicted to account for roughly 19% of all retail sales globally during that period. E-commerce has grown significantly over the past several years and now plays a significant role in the global retail system. Due to the advent of virtual reality and ongoing digitization, the retail framework has undergone significant change, much like many other industries. This has had an impact on the global expansion of e-commerce businesses [18]. In 2020, the hardware and software segments of the consumer virtual reality market generated 2.6 billion dollars in revenue. This market is predicted to expand more in the next few years, increasing to surpass 5 billion U.S. dollars by 2023. When considering the top E-commerce companies all over the world, as contrasting to the major E-commerce countries, Amazon is the chief market leader possessing a market cap of

more than one trillion U.S. dollars recorded in June 2022 [19]. Moreover, this Seattle-originated multinational organization is now the majorly visited online marketplace all over the world with nearly 5.7 billion monthly visits also estimated. Several forecasts also predicted that South Korea and China were placed first and third ranks consecutively in the list of countries possessing the greatest share of retail sales estimated to occur online in 2022. Hence, it is clear that Asian countries are also growing their E-commerce business and are growing their business globally with the advent of virtual reality [20].



Figure 4: Amazon's incredible long-term growth.
(Source: statista, 2023)

Since 1997, when Amazon started its journey the multinational retail company has experienced huge long-term growth through 2021, the revenue and net income have improved after the global pandemic, and become a major E-commerce business internationally [18]. The business expansion of Amazon is speedy, since its launch, it has reached 180,000 consumer accounts by December 1996 just after one year of complete business operations. Its revenue of Amazon has recorded 502.191 billion dollars on September 30, 2022. Even so, just after the COVID-19 pandemic, the yearly revenue of Amazon has been estimated at 469.822 billion dollars which has increased by 21.7% from 2020 [9]. In the last quarter of 2021, the total income growth of Amazon was just 3% in a year-over-year differentiation from the last quarter of 2020. However that may be, it is clear that the e-commerce business of Amazon has expanded hugely right after the pandemic [20]. Furthermore, the yearly revenue of Amazon for 2020 was 386.064 billion dollars which implies an increase in business growth of 37.62% from 2019. The U.S. E-commerce market has reached more than 904.9 billion dollars in 2022, slightly more than China's [6]. Following China and the U.S., the UK became the third largest E-commerce market and has possessed 4.8% of the market share of retail E-commerce sales. Japan has taken up 3% and South Korea 2.5% of the retail market share worldwide following the UK.

CONCLUSION

From the above discussion it can be concluded that every task that can be completed in the real world through Virtual Reality. This encompasses numerous operational facets of a company, such as advertising, retail sales, bookkeeping, personnel management, as well as more. As a bonus, it explores how virtual reality (VR) could enhance retail for customers. The literature review discussed that when consumers utilise virtual reality, they have expectations that are different from what they would have with a traditional in-store purchase. It has also been argued that the introduction of cheap head-mounted displays has encouraged businesses to embrace virtual reality (VR) to attract and retain customers. There are certain unfavourable aspects, such as concerns regarding the safety of the customers. Customers' financial information is kept safe on websites that offer online payment processing. The process of enhancing user interfaces and implementing novel concepts that will result in an enhanced user experience is an ongoing focus for many companies. It has been speculated that the use of virtual reality has been beneficial even during the Covid-19 outbreak. The whole economy of the country has been helped tremendously by virtual reality, which has led to an increase in GDP.

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