

Leveraging e-commerce and big data analytics in the post-covid era: a comprehensive analysis to health care sector

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Abstract

The post-COVID era has prompted a transformative surge in the healthcare sector, compelling a strategic integration of big data analytics to address unprecedented challenges. This research delves into the comprehensive role of big data analytics in reshaping healthcare delivery, from disease surveillance to personalized patient care. By leveraging vast datasets, healthcare professionals can glean real-time insights, optimize resource allocation, and enhance clinical decision-making. This paper explores recent case studies that exemplify successful implementations of big data analytics, underscoring its pivotal role in fortifying the resilience and efficiency of healthcare systems post-COVID. The analysis not only illuminates the current landscape but also provides a forward-looking perspective on the evolving intersection of big data analytics and healthcare, offering valuable guidance for healthcare practitioners, policymakers, and researchers navigating the complexities of the post-pandemic healthcare paradigm.

INTRODUCTION:

“Big data is at the foundation of all of the megatrends that are happening today, from social to mobile to the cloud to gaming.”

With this quote we can see that a giant event is able to yield good results which are happening today over the internet domain and other platforms is only due to effective synchronization of data.

A collection of unprocessed, raw facts and details is called data. Text, observations, figures, symbols, and object descriptions are all possible inclusions. Data is meaningless on its own and lacks a specific purpose. Hence data started to play a role in competition. All areas, businesses, and industries are impacted by digitization, though to varying degrees.

Digital platforms facilitate economically advantageous transactions between various user groups by means of the Internet. The volume and caliber of placements increase with the amount of user data these platforms have gathered. Consequently, these platforms acquire supplementary data that they can utilize to enhance the services they provide, thereby rendering them appealing to other users.

INTERRELATIONSHIP BETWEEN BIG DATA AND E-COMMERCE:

The term "big data" describes the enormous amounts of data that are produced every second by a variety of sources, such as social media, online commerce, research, and more. This data is characterized by high velocity, volume, and variety -often referred to as the 3 Vs—and can be organized, semi-structured, or unstructured.

Big Data use in e-commerce has become essential for retailers and brands looking to grow and maintain their competitiveness. When properly analyzed, big data—basically, enormous amounts of data gathered from multiple sources—reveals actionable insights that have the potential to greatly enhance e-commerce platform operations and strategies. The use of big data in e-commerce is extensive and revolutionary, ranging from comprehending consumer behavior to streamlining inventory control. Organizations can use this extensive data collection to help them make more informed decisions. Due to the volume of data they gather on a daily basis, e-commerce businesses stand to gain the most from the use of big data.

Numerous large retailers recognize the importance of this data and provide a plethora of options for customers to choose from when they shop online. Big Data analytics are used to generate all of these preferences. When utilizing this tool, customer preferences truly have no bounds.

The two forms of valuable information that make up big data are structured and unstructured. Names and addresses are examples of regular information that is part of structured data. The likes, tweets, clicks, and videos that are gathered from social media platforms are examples of unstructured data. The valuable information that e-commerce businesses can use to optimize customer service is this data.

CLOUD-BASED E-COMMERCE PLATFORM USING BIG DATA:

The traditional mode of operation for e-commerce has changed with the rise of cloud computing and big data platformization. Numerous small and medium-sized e-commerce businesses quickly construct e-commerce platforms by leasing different services from providers of data centers and cloud services. Cloud computing's powerful computing capacity can better foster collaboration and sharing among e-commerce enterprises while also meeting the customized needs of various e-commerce users.

UTILITY OF E-COMMERCE AND BIGDATA IN HEALTH CARE SECTOR:

With the development of E-health along with the AI and data science the study carefully looks at how the healthcare industry can overcome a variety of obstacles and gain more industry recognition in light of the growth of healthcare eCommerce.

With the explosion of e-commerce in the healthcare sector over the last two years, it is reasonable to assume that e-healthcare has become the most popular online industry.

The importance of medical ecommerce has been highlighted by the recent coronavirus outbreak, which has also increased healthcare costs. Tech giants like Google and Amazon recognized the potential of the healthcare e-commerce market even before the COVID-19 pandemic.

The best example in E-Commerce in Healthcare could be decades ago, Amazon started experimenting with the health e-commerce market. In the healthcare sector, e-commerce has many applications. Online nursing, patient care, retail healthcare, electronic healthcare record management, and e-medical services are a few of these.

HEALTHCARE E-COMMERCE WITH AI AND DATA ANALYTICS: TRANSFORMING HEALTHCARE DELIVERY:

The combination of technology and healthcare in the modern era has produced creative solutions that are changing the way healthcare is delivered. The combination of data analytics and artificial intelligence (AI) in the context of health e-commerce is one of the most significant developments. This combination is not only changing traditional healthcare procedures but also completely changing how patients obtain and use medical care.

Within the larger e-commerce sector, a growing area known as "health e-commerce" is devoted to the online sale of goods and services related to healthcare. This industry has grown significantly, encompassing everything from wellness products and virtual doctor consultations to medication and medical devices. The efficiency, accuracy, and accessibility of these services have all improved thanks in large part to the integration of AI and data analytics, which has had a revolutionary effect on the way healthcare is delivered.

1. **Personalised Suggestions:** AI systems are able to examine a great deal of patient data, including lifestyle choices, medical histories, and preferences. Health e-commerce platforms can meet individual needs by offering personalised recommendations for goods and services based on this data. This improves customer satisfaction while guaranteeing that patients receive solutions that are tailored to their individual needs.

2. **Efficient Inventory Management:** Maintaining the availability of necessary pharmaceuticals and medical supplies depends on the appropriate management of healthcare products. E-commerce platforms can optimise their inventory management by using AI-powered analytics to forecast demand patterns. Thus, a more stable and consistent healthcare supply chain is created by preventing shortages and reducing waste.

3. **Tele-medicine:** The revolution in telemedicine has been driven by the combination of AI and data analytics. AI-driven diagnostic tools have improved the accuracy and efficiency of virtual doctor consultations. Even from a distance, these tools help medical professionals diagnose and treat patients accurately by evaluating their medical histories and symptoms.

4. **Fraud and security detection:** Managing sensitive personal and medical data is a part of health e-commerce. Security systems with AI capabilities can keep an eye on user behaviour and transactional data to spot any anomalies that might point to fraud or illegal access. This promotes trust throughout the digital healthcare ecosystem by guaranteeing that patient data is secure and confidential.

5. **Predictive Analytics for Public Health:** Data analytics and artificial intelligence can be used to manage public health in a proactive manner. Through the examination of trends in health-related information, these technologies are able to forecast disease outbreaks, pinpoint possible hotspots, and streamline the distribution of resources for efficient disease prevention and control.

6. **Understanding Behavior to Improve Health:** Patient behavior data can be used to derive behavioral insights through AI-powered analytics, empowering people to make knowledgeable decisions about their health. Health e-commerce platforms have the ability to track patterns in physical activity, food habits, and medication adherence and then offer tailored recommendations to improve overall well-being.

7. **Research Advancement:** Medical research can benefit from the large datasets created by health e-commerce platforms. AI-based examination of this data can reveal relationships, trends, and possibly ground-breaking findings that support progress and creativity in the medical domain.

Unquestionably, the use of AI and data analytics in health e-commerce is changing the way that healthcare is delivered. These technologies are improving customer experiences, streamlining operations, and promoting better health outcomes. Examples of these technologies include predictive analytics, telemedicine advancements, and customized recommendations and inventory management. In order to deliver healthcare products more quickly and affordably, Health mug uses AI systems, which helps them stay competitive.

To guarantee that consumer privacy and data security continue to be of the utmost importance, it is necessary to strike a balance between technical breakthroughs and ethical considerations as the industry develops. We are getting closer to a future in healthcare that is more customer-focused, efficient, and easily accessible by accepting these revolutionary changes.

TRENDS IN HEALTH CARE E-COMMERCE:

The size of the worldwide e-commerce market for healthcare has enormous potential; by 2027, it's predicted to reach \$732.3 billion. Thanks to Amazon's self-induction into the medical e-commerce space and the rise of digitally driven B2B demands, the healthcare industry is about to undergo a significant disruption. The healthcare industry has long faced challenges from legacy models, regulatory restrictions, and a de facto reliance on the traditional supply chain for everything from pharmaceuticals to medical supplies and everything in between.

According to a recent survey, 74% of executives in the healthcare industry said they would be more likely to invest in or increase the use of patient access technology.

1. Amazon will keep gaining ground in the online healthcare market:

E-health and Amazon have a long history of working together. Since 2014, Amazon has been conducting covert, experimental projects in the field of digital healthcare (with an emphasis on utilising artificial intelligence in particular). You've probably heard rumours of one project or another if you've heard of Amazon X, The Amazon Grand Challenge, or 1492.

Amazon's entry into the e-healthcare space has encompassed both short-term, pragmatic solutions, such as facilitating online sales of basic medical supplies, and long-term, ambitious initiatives, such as using machine learning to prevent and cure cancer.

Even though a lot of these concepts might seem unrealistic, Amazon is the internet giant with the best chance of succeeding. Additionally, Amazon is making very conscious efforts to make the most of its partnerships with industry leaders to bring some of these more concrete projects to reality in recent years.

2. More online capabilities are being demanded by B2B healthcare buyers.

Customers of B2B medical supply are now actively looking to conduct more online research and make purchases. Customers' need for essential online information, such as product details, pricing information, stock availability insights, and online access to quotes and invoices, has a significant impact on this drive. According to recent studies, 90% of consumers of medical equipment find suppliers online.

From a business perspective, companies that deal in medical supplies are looking to e-commerce not only to fulfil these demands but also to boost internal customer satisfaction, expedite the purchasing process, and cut down on administrative costs. Direct-to-consumer (D2C) internet sales are a component of this solution.

3. Consolidating the supply chain and adopting direct-to-consumer (D2C) sales, healthcare suppliers

The business models of suppliers to the healthcare sector still largely rely on distributors and the personal touch of sales representatives. The additional expense associated with maintaining this model is high but doable for large suppliers. Yet this is an unsustainable model at far higher costs for their clients, particularly smaller practices and hospitals.

However, the bulk of medical supplies are still acquired by 73% of hospitals and health systems from distributors. Between 22 and 24 percent of their total expenses come from this alone. It makes sense to look for ways to reduce these expenses through e-commerce, both for suppliers and end users. Additionally, a lot of suppliers have already begun.

There is a huge disparity between supply and demand in the healthcare industry for both basic supplies purchased online and more specialised products in general. But it's one that selling direct-to-consumer goods online can, at least in part, fill. But the industry is still plagued by uncertainty about how to effectively sell direct-to-consumer in medical e-commerce. The solution will depend on taking a data-centric and future-ready approach.

4.A stronger emphasis on technology, automation, and data:

Any healthcare organisation that must adhere to temperature or licencing requirements is on a deadline. This year, organisations must comply with the Drug Supply Chain Security Act (DSCSA), which mandates that they capture and manage their transaction detail data throughout the supply chain. Beyond just guaranteeing compliance, this data can assist suppliers in anticipating inventory requirements and getting ready for future modifications to their goods flow.

Due to the vastly different regulations across the globe, even details like the buyer's location—which are crucial for personalisation but not mission-critical in many other industries—have a significant impact on the healthcare sector.

Keeping track of all this data appears to be both a significant challenge and an opportunity. Suppliers who are able to master this sooner rather than later will benefit greatly from it.

5. AI dependence and integration for customization:

The e-commerce trends that are currently popular in other industries also apply to the healthcare sector. Customer trust is the cornerstone of a profitable online sales channel in the medical field. The application of personalisation can serve to strengthen and solidify this. This has included a growing reliance on AI in 2023 to make product recommendations that allow for cross-selling and upselling while demonstrating a thorough understanding of your target market.

Customised and strategically timed communication is another way to effectively target your customers with a personalised touch. Compared to buyers in other industries, healthcare buyers should be especially aware of low stock levels. With a single source of truth that is updated in real time, an integrated ERP e-commerce solution can be helpful in this situation.

Ultimately, personalisation has shown to be helpful in the complex and frequently variable pricing landscape of healthcare e-commerce. This guarantees that B2B purchasers have the most up-to-date pricing for their purchase orders and are constantly aware of their credit limits.

HEALTH CARE INDUSTRY POST COVID:

COVID 19 has been conducting an unannounced campaign of social and economic destruction on the fronts of hygiene and health. The human race was simply unprepared for a pandemic of this scale. This has made the basic weaknesses in how people live, eat, drink, work, and clean their surroundings visible on a global scale. In the midst of all of this, however, the world is promoting traditional Indian customs like Namaste, or greeting with folded hands. To improve the health system, many Indian recipes are being brought back to life and practiced.

CHALLENGES THE HEALTHCARE E-COMMERCE INDUSTRY FACES:

While there is a lot of potential in the healthcare eCommerce market, success in this field requires overcoming a number of challenges. Let's discuss some of the most common issues you might run into in this industry:

1.Security: Data security is an essential requirement that cannot be disregarded, regardless of the nature of e-commerce. Health eCommerce is governed by a number of laws, including HIPAA regulations. To stay out of legal trouble, you have to follow all the guidelines set forth by the authorities. Therefore, it is imperative that all sensitive information, including medical histories and client or patient data, be kept completely private, discreet, and encrypted. If you disregarded these rules—intentionally or not—you might end up paying a heavy price.

2.Visibility and Reporting: Providing customers with comprehensive information about when their purchase will be ready for shipping and any delivery issues is essential if you want to succeed in the healthcare eCommerce industry. If you sell necessities, you might have to tell customers exactly when you plan to restock them if they run out of stock. You have to stay fully visible and transparent to all of your stakeholders.

3.Compliance for any hazardous material: If your company uses radioactive, flammable, or any other hazardous chemicals, automating the complex paperwork for these items may be the largest headache. Reducing costs, boosting output, holding onto current, and avoiding returned shipments and fines all significantly improve compliance.

CONCLUSION:

Overall, e-commerce has a largely positive effect on the healthcare sector. A happier and healthier population has resulted from increased efficiency, increased access to healthcare, and increased technological growth. To have a better and more promising future, there are a few obstacles to be overcome. Many challenges have been brought about by the corona virus pandemic for developed nations, and if the number of infected cases increases, these challenges will only get worse for developing nations like India.

As a result, it is our duty to use healthcare resources wisely in order to safeguard our frontline warriors. The world is currently experiencing a severe shock and a number of difficulties. In order to properly restart the economy, the government must strike a balance between lives and livelihood.

The above-mentioned steps will significantly lessen the strain that the private healthcare sector and society at large are experiencing. The development of safe infrastructure and treatment support, as well as the defence of health warriors, depend heavily on non-fiscal measures.

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