

# Role of Ecommerce in Reducing Operational Cost

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## Abstract

E-commerce plays a predominant role in the process of buying and selling of goods and services over the Internet. It helps in establishing businesses and sales with a wide range of customers across the globe, offering the customers to shop online 24/7. This study helps to explore various aspects that contribute to the reduction of operational costs in ecommerce such as inventory management, automation of business processes, logistic and supply chain management, labor cost, warehousing, etc. Additionally, processing orders, payments, and customer services through automation, it helps business to gain more profit by reducing the costs associated with it. Through digital marketing, it can reach customers across the globe efficiently. Data analytics helps to make decisions effortlessly by providing valuable insights. The findings in the article help to understand how the adoption of e-commerce in businesses helps to achieve a significant reduction of administration costs, storage costs, shipping costs, etc by helping the business earn more profitability. The study looks at a number of important ways that e-commerce can save costs, such as through automating corporate processes, enhancing inventory control, requiring less physical infrastructure, having a worldwide reach and being scalable, streamlining communication, and producing less paperwork.

**Keywords:** E-commerce, 24/7 sales and services, Cost Reduction, Overhead Expenses, Global Reach, Automation of Services, Shipping and Logistics, Customer Services.

## 1. Introduction

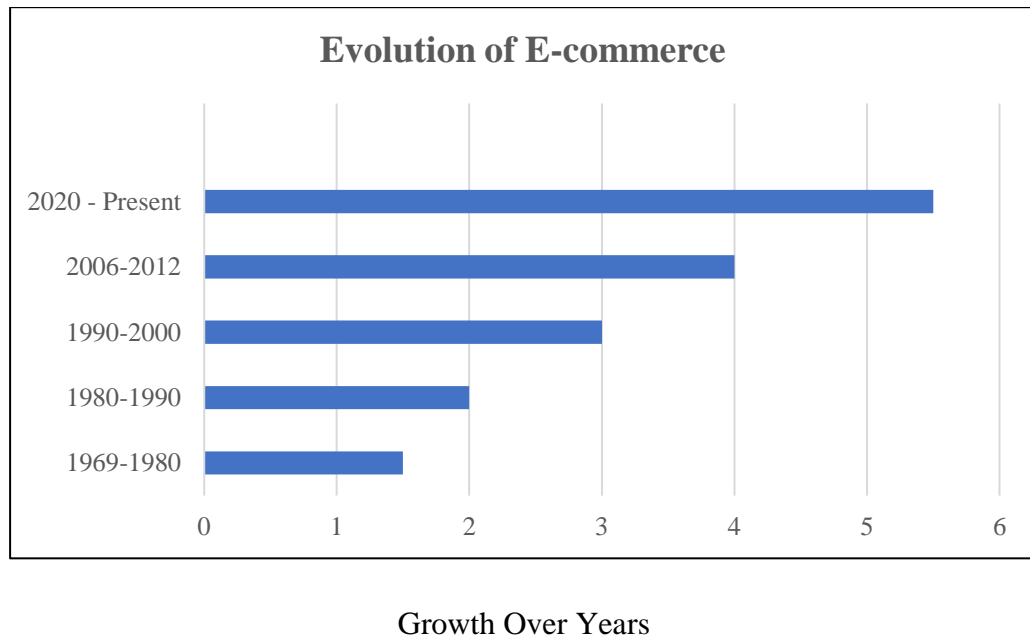
Electronic Commerce commonly known as E-commerce is the process by which selling of goods and services take place through the Internet. E-commerce has effectively

changed the way of shopping for customers by offering user-friendly online services. It helps the users to shop from the comfort of being at their place and there's no time limit to do the shopping or selling of goods by business firms as it is available 24/7 for both the buyer and seller. There are various e-commerce platforms to compare and buy products from. Though it has existed since the 1970s, its operations gained importance during the pandemic. When COVID-19 struck the entire universe, it was mandatory to stay indoors to prevent getting infected by the deadly disease. The e-commerce role during these periods was significant for humans to buy essential items online by enabling cashless transactions. All age category customers use e-commerce applications to shop online on a day-to-day basis. The ecommerce gained its popularity among youngsters to choose the right products by providing product reviews, comparing prices of the products among different applications, efficiencies, and effectiveness of the products. It saves a lot of time and money for both the buyer and seller as the processes are automated. There's no need to invest separately for the physical store setup, interiors, and infrastructures as it saves lots of space to establish a business, unlike the traditional brick-and-mortar store. Digital marketing helps an e-commerce business to reach a wide range of customers across the globe with less investment unlike for traditional trading. Data Analytics on the other hand provides valuable insights to take decisions effectively.

### **1.1 History of Ecommerce**

E-commerce has come a long way since its early foundations in the 1960s and 1970s, when the advent of Electronic Data Interchange (EDI) and teleshopping enabled businesses to conduct online transactions and share documents. The rise of the internet in the late 1980s and early 1990s paved the way for the emergence of online shopping, with pioneering companies like eBay and Amazon driving widespread consumer adoption, further boosted by the introduction of secure online payment methods. E-commerce experienced rapid growth in the 2000s with the spread of online marketplaces and the expansion of product categories, as businesses increasingly embraced e-commerce platforms to reach global audiences, a trend that accelerated with the rise of mobile commerce. Technological breakthroughs in the 2010s, including advancements in machine learning, AI, and data analytics, revolutionized e-commerce by optimizing supply chain management, enhancing customer service, and enabling more personalized shopping experiences, while the COVID-19 pandemic in 2020 dramatically accelerated the growth of e-commerce, leading to the development of innovative features like voice commerce, same-day delivery, and augmented reality, as well as the emergence of direct-

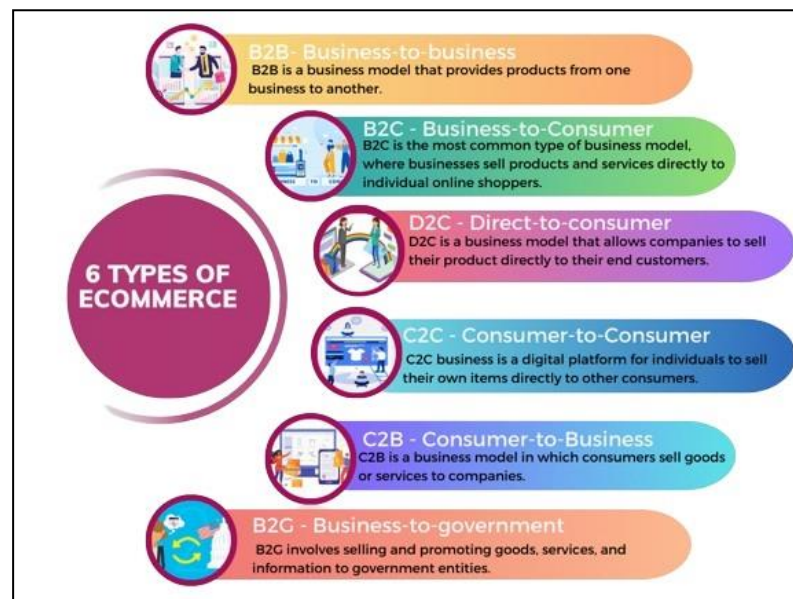
to-consumer brands and subscription business models [21]. Figure 1 depicts the evolution of E-commerce.



**Figure 1. Evolution of E-commerce [22]**

## 1.2 Types of Ecommerce

There are 6 types of e-commerce business models with different characteristics. These business models are briefly stated in the Figure 2 below.



**Figure 2. Types of Ecommerce [23]**

## 2. Literature Review

A study by Grandon and Pearson (2004) found that e-commerce businesses can save up to 30% on overhead costs compared to traditional brick-and-mortar stores. The authors attribute this to the elimination of expenses related to physical retail space, such as rent, utilities, and maintenance [1].

Khouja and Stylianou (2009) demonstrate how e-commerce platforms with advanced inventory management systems can help businesses reduce inventory holding costs by up to 20%. The authors emphasize the importance of automated inventory tracking and replenishment in achieving these cost savings [2].

A study by Rahayu and Day (2017) found that e-commerce adoption can lead to a 25-30% reduction in overhead costs for small and medium-sized enterprises (SMEs). The authors attribute this to the elimination of expenses related to physical retail space and associated infrastructure [3].

Papert and Pflaum (2017), in their study demonstrate how e-commerce platforms with advanced inventory management systems can help businesses reduce inventory holding costs by up to 15%. The authors highlight the importance of real-time inventory visibility and automated replenishment in achieving these cost savings [4].

A study by Falk and Hagsten (2015) shows that e-commerce businesses can reduce their labor costs by up to 20% through the use of automated tools and features. The authors emphasize the benefits of automated order processing, customer service, and marketing in reducing the need for manual labor [5].

Mangiaracina et al. (2015), in their study, found that e-commerce businesses can negotiate better shipping rates with logistics providers due to the volume of their orders. The authors also note that integrated shipping solutions offered by e-commerce platforms can help businesses optimize their shipping processes and reduce overall delivery costs by up to 18% [6].

### 2.1 Traditional Commerce vs E-Commerce

Trading in the early days involved traditional commerce by setting up a physical store which is quite different from E-commerce. Both types of commerce have several advantages and drawbacks compared with each other. Some of the key aspects are listed below in Table 1.

**Table 1.** Difference between E-commerce and Traditional Commerce [24 and 25]

Different Categories	E-commerce	Traditional commerce
Mode of operation	E-commerce is available only over the internet/online.	Traditional commerce has a physical retail store for sales.
Accessibility	It can be accessed by the customers 24/7.	The operating hours are limited and vary depending on the locality.
Audience targeted	E-commerce helps businesses to reach across the globe	The reach is limited to its locality.
Overhead Expenses	The overhead expenses such as rent, manpower, etc are lower.	The overhead expenses are quite high compared to e-commerce.
Display of Products	In this mode of sales, the products are described in detail, and videos and several images of the products are attached for a better understanding.	Traditional commerce allows the customers to see, touch, and feel the products.
Marketing and Selling of Products	The marketing is done over Emails, advertising the products online, and various promotions across different websites or applications.	This can be done by promoting the products in-store, signage, and in exhibitions or events that are organized in their locality.
Shipping and Delivery of Products	Shipping of goods plays a crucial role in e-commerce to deliver the products from the seller to the consumer.	The Products purchased are handed over directly to the customer post-payment.
Transactions	E-commerce transactions are mostly done through online payment for the purchase of goods.	The consumers pay in person to the seller.
Return and Support	The return processes in e-commerce are streamlined.	The customer can return the products in person to the seller if returning the sold products is required.

Customer reach	It can reach consumers across the globe efficiently.	The reach is quite low compared to ecommerce and it's within the locality.
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## 2.2 Types of Costs in E-commerce

Following are the important types of costs involved in businesses when operated online.

**Fixed Costs:** Certain expenditures, such as rent, insurance, and software subscriptions, are fixed and do not vary based on sales volume.

**Variable Costs:** Variable costs, like shipping, transaction fees, and cost of items sold, are subject to change in response to sales.

**Direct Costs:** Direct costs, such as labor and raw materials, are directly related to the production of a good or service.

**Indirect Costs:** Administrative personnel and utilities are examples of indirect expenditures that support corporate operations but cannot be directly connected to a particular product.

**Cost of Goods Sold (COGS):** COGS is the total of all direct expenses, like labor, raw materials, and shipping to the warehouse, incurred in sales of goods.

**Operational Costs:** Operational costs are the expenses that are essential to running a business administrative costs, technological costs, customer support, and marketing.

**One-time Investment Cost:** One-time costs such as website development, equipment purchases, and incorporation fees are essential for the startup of a business.

**Recurring Costs:** These expenses happen frequently to run a business such as website maintenance, web hosting, transaction fees, and software update fees [10, 11, 12, and 13].

## 3. Methodology

### 3.1 Operational Costs

Regular tasks, maintenance, and management of a firm are related to operating costs. Direct costs of goods sold (COGS) and other operating expenditures (often referred to as selling, general, and administrative, or (SG&A) comprise raw materials and maintenance costs

in addition to rent and other overhead. Non-operating financing-related charges like interest, investments, and foreign exchange transactions are not included in operating costs. Some of the examples of operational costs include rent, payroll, bank charges, utility expenses, sales and marketing costs, repair and maintenance costs of equipment, etc [15].

### 3.2 Strategies to Reduce Operational Costs

Though there exist many types of costs, operational cost plays a predominant role in e-commerce business and it's essential to keep it under control to gain more profit out of businesses. Some of the aspects to reduce the operational costs are listed below in Figure 3.



**Figure 3.** Strategies to reduce Operational Costs

- **Reduced Overhead Costs:** One of the most significant ways e-commerce reduces operational costs is through the reduction of overhead expenses. Traditional brick-and-mortar stores require physical space, which involves costs related to rent, utilities and maintenance. Additionally, these stores need in-store staff to assist customers, manage inventory and handle transactions. In contrast, e-commerce businesses operate online, eliminating the need for physical retail spaces and the associated costs. This reduction in overhead can lead to substantial savings, allowing businesses to allocate resources more efficiently [7].

- **Streamlined Inventory Management:** Integrated inventory management systems are a common feature of e-commerce platforms, which assist companies in maintaining ideal stock levels. By offering real-time data on sales patterns, consumer demand and inventory levels, these systems help firms make well-informed decisions regarding inventory management and restocking. E-commerce companies can cut the expenses of overstocking, including storage fees and possible waste from unsold goods, by optimizing inventory management. Furthermore, effective inventory control reduces stockouts, guaranteeing that goods are available when consumers need them and preserving consumer satisfaction and loyalty [16].
- **Automation of Processes:** Automation is a key component of e-commerce that significantly reduces operational costs. Many e-commerce operations, such as order processing, payment handling, and customer service, can be automated using various software tools and technologies. For example, automated order processing systems can handle everything from order placement to shipping, reducing the need for manual intervention and the potential for human error. Payment gateways securely and efficiently process transactions, eliminating the need for manual payment handling. Customer service can be enhanced with chatbots and automated response systems that provide instant assistance to customers, reducing the need for a large customer service team. By automating these processes, e-commerce businesses can lower labor costs and improve operational efficiency [17, 18].
- **Efficient Supply Chain Management:** E-commerce enables better coordination with suppliers and logistics partners, leading to more efficient supply chain management. Online platforms facilitate communication and collaboration between different stakeholders in the supply chain, allowing for better planning and execution. For instance, e-commerce businesses can use advanced analytics and forecasting tools to predict demand and optimize inventory levels, reducing the costs associated with excess inventory or stockouts. Additionally, e-commerce platforms often integrate with logistics providers, enabling real-time tracking of shipments and more efficient delivery routes. This can lead to cost savings in shipping, warehousing, and product handling, as well as improved customer satisfaction due to faster and more reliable deliveries [19].



- Digital Marketing:** Marketing is an essential aspect of any business and e-commerce businesses can leverage digital marketing strategies to reach a broader audience at a lower cost. Traditional marketing methods, such as print advertising, billboards, and television commercials, can be expensive and may not always reach the target audience effectively. In contrast, digital marketing techniques, such as targeted online ads, social media marketing, and email campaigns, are often more cost-effective and can be precisely targeted to specific customer segments. For example, businesses can use data analytics to identify customer preferences and behaviors, allowing them to create personalized marketing campaigns that resonate with their audience. Additionally, social media platforms provide opportunities for organic marketing through customer engagement and user-generated content, further reducing marketing costs [8].
- Data Analytics:** The ability to gather and analyze enormous volumes of data about consumer behavior and preferences is one of e-commerce's key advantages. E-commerce platforms monitor a range of data, including consumer demographics, average order value, conversion rates, and website traffic. Businesses can make decisions based on data that optimize operations and cut costs by evaluating this data to obtain an insightful understanding of client requirements and preferences. Businesses can allocate resources more effectively by using data analytics, for example, to determine which items are most popular and which marketing methods work best. Predictive analytics can also be used by companies to improve inventory levels and estimate demand, which further lowers expenses associated with excess stock or shortages of products [20].
- Global Reach and Scalability:** E-commerce provides businesses with the ability to reach a global audience without the constraints of physical location. This global reach opens up new markets and customer segments, increasing sales potential and revenue. Additionally, e-commerce businesses can scale their operations more easily compared to traditional retail stores. For example, adding new products to an online store or expanding into new markets can be done with minimal additional costs. The scalability of e-commerce allows businesses to grow and adapt quickly to changing market conditions, reducing the risks and costs associated with expansion in traditional retail [7].

- **Enhanced Customer Experience:** E-commerce platforms offer various features that enhance the customer experience, leading to increased customer satisfaction, and loyalty. For example, online stores provide detailed product descriptions, customer reviews, and high-quality images, helping customers make informed purchasing decisions. Additionally, e-commerce platforms often offer personalized recommendations based on customer browsing and purchase history, creating a more customized shopping experience. By providing a seamless and convenient shopping experience, e-commerce businesses can reduce customer acquisition costs and increase customer retention, ultimately lowering operational costs [8].
- **Flexibility and Convenience:** E-commerce offers flexibility and convenience for both businesses and customers. Online stores are accessible 24/7, allowing customers to shop at their convenience without the limitations of store hours. This increased accessibility can lead to higher sales and revenue. For businesses, e-commerce provides the flexibility to operate from anywhere with an internet connection, reducing the need for fixed physical locations. Additionally, e-commerce platforms offer various tools and features that allow businesses to manage their operations efficiently, such as mobile apps for order management and customer communication. This flexibility and convenience contribute to lower operational costs and improved business performance [7].
- **Environmental Benefits:** E-commerce can also contribute to cost savings through environmental benefits. By reducing the need for physical stores and minimizing transportation requirements, e-commerce businesses can lower their carbon footprint and reduce costs associated with energy consumption and waste management. For example, centralized warehousing and efficient logistics can lead to fewer transportation emissions and lower fuel costs. Additionally, e-commerce businesses can implement sustainable practices, such as using eco-friendly packaging and reducing waste, which can result in cost savings and positive brand perception among environmentally conscious consumers [8].

### 3.3 Unique Strategies Implemented to Reduce Operational Cost by Different Firms

Many E-commerce firms across the globe follow different strategies to keep the operational cost under control, which eventually helps the businesses to gain more profit. Some of the unique strategies followed by the top 10 e-commerce firms are stated below in Table 2.

**Table 2.** Unique Strategies followed by Ecommerce Firms

E-commerce Firms	Prime Focus	Strategies
Amazon	Customer Loyalty and Fulfillment	Prime Membership, Extensive Product Range, Optimization of Fulfillment Centers, and Personalized Recommendations
Alibaba	Global Marketplaces	Wholesale and Retail, Cloud Computing, AI Integration, and Cross border Shipping.
eBay	Consumer-to-Consumer Sales	Auction Model, Global Marketplace, Buyer/Seller Protection
Walmart	Omni-Channel Retail	Competitive Pricing, Physical and Online Presence, and In-store pickup
Shopify	SMB [Small and Midsize Business] Platform	Customizable Solutions, Extensive App Ecosystem, and Dropshipping
Rakuten	Membership and Financial Services	Marketing Solutions, Global Expansion
Flipkart	Local Market Dominance	Exclusive Product Launches, Competitive Pricing, and Smart logistics
MercadoLibre	Latin America Focus	Marketplace and Payment Solutions, Credit Services
JD.com	Direct Sales	Advanced Logistics, Technology Integration

Zalando	Fashion and Lifestyle	Personalized Shopping, Sustainability Initiatives, and Dropshipping
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#### 4. Challenges and Discussion

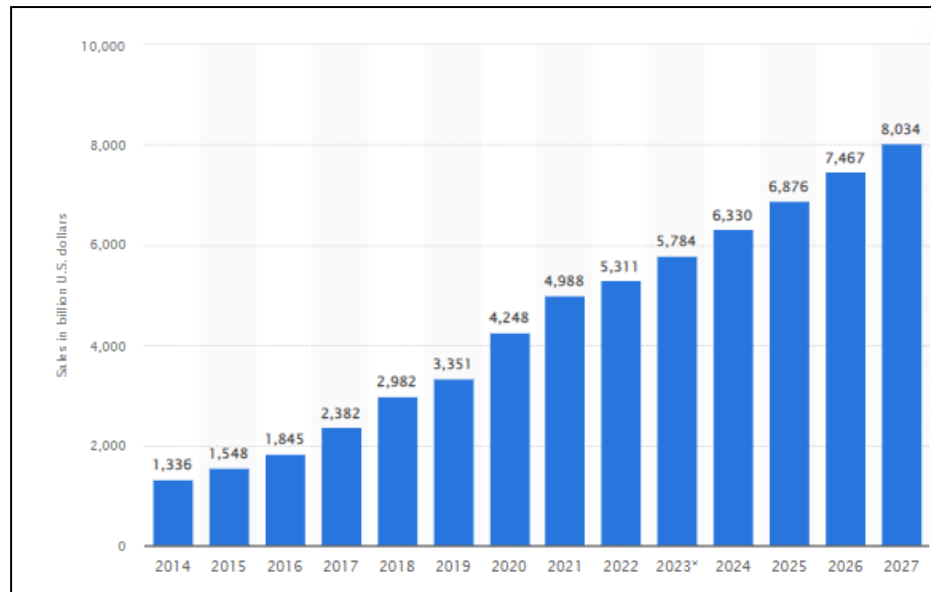
Consumers in this modern period rely on both types of commerce (E-commerce and Traditional commerce) according to their requirements and preferences. There are many differences in both as stated earlier. Some of the factors that influence the consumers to prefer e-commerce are stated below.

Customers can shop from anywhere at any time, which is particularly beneficial for those with busy schedules or limited access to physical stores. E-commerce platforms often offer a larger selection of products compared to physical stores, allowing customers to find exactly what they need. Customers can easily compare prices from different sellers, helping them find the best deals and save money. E-commerce businesses can reduce expenses associated with physical storefronts, such as rent and utilities, which can lead to more competitive pricing. E-commerce platforms can use data analytics to provide personalized recommendations and marketing, enhancing the shopping experience.

Though there are many benefits in e-commerce trading, there are some drawbacks associated with it that consumers are sometimes holding back from using E-commerce. Some of these factors are discussed below.

Customers cannot see, touch, or try products before purchasing, which can lead to dissatisfaction if the product does not meet expectations. Online transactions can be susceptible to fraud and data breaches, leading to the potential loss of sensitive information. Additional costs for shipping and the potential for delays can be a drawback compared to immediate purchase and possession in physical stores. Websites can experience downtimes, slow loading times, or other technical problems that may affect the shopping experience. The lack of face-to-face interaction can diminish the personalized customer service experience that some shoppers value [25].

Figure 4 shows how the sales that is happening over E-commerce were nearly 5.8 trillion in 2023. This number is expected to increase by 39 percent over the next several years and reach 8 trillion dollars by 2027 [14].



**Figure 4.** Global Ecommerce Sales Over the Years [14]

## 5. Conclusion

E-commerce firms deploy a variety of strategies to reduce operational costs, customized to their specific business models and strengths. Common themes include the use of automation, data-driven decision-making, and strategic partnerships to streamline operations and cut unnecessary expenses for gaining more profit in businesses. These factors collectively contribute to lower operational costs, increased efficiency, and improved profitability for e-commerce businesses. There will still be issues for the e-commerce firms in reducing the operational costs completely as the preferences, requirements, and needs and wants of consumers are quite unstable. Business in general, face ups and downs as the preferences of consumers varies from region to region, and E-commerce firms should consider stocking up products in the warehouses depending upon the preferences so that the shipping can be made easy by reducing the cost for it. Dropshipping can be adopted for startup e-commerce firms as the need for a warehouse is not mandatory to stock things up. Business/E-commerce firms should study the market changes every now and then and make decisions wisely so that the expenses can be reduced and can yield more profit. In future, e-commerce is expected to continue evolving with the adoption of new technologies like Blockchain for secure transactions, expansion of omnichannel retail strategies, increasing the importance of sustainability in e-commerce practices, integrating AI to automate inventory management and to understand consumer preferences, and adopting Cloud-based infrastructure to reduce the

cost of hardware and software maintenance. Additionally, Data analytics tools can be used effectively to make decisions and Augmented Reality (AR) and Virtual Reality (VR) technologies can be adopted to enhance customer experiences for the virtual demonstration of products.

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