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# Impact of E-Commerce on the Sustainable Development Goals

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## Abstract

*Achieving sustainable development goals is the responsibility of all countries, both developed and developing. In 2015, 193 UN states adopted the 2030 Agenda with 17 SDGs to advance global well-being and sustainable consumption-production. At the same time, almost all countries are moving to a digital economy, with the core of e-commerce. The study aims to identify the connections between these two areas and analyze the effects that may arise as a result. The analysis showed that e-commerce is linked to 10 of the 17 UN Sustainable Development Goals. These effects are usually beneficial. However, to achieve the most positive impact, the interest of both Internet companies and consumers is required. Governments also push the digital economy, where e-commerce is rapidly expanding, led by China and accelerated by COVID-19. While concerns exist on packaging and last-mile emissions, online retail can reduce emissions, depending on consumer choices.*

**Keywords:** sustainable development, e-commerce, digital economy, United Nations, dimensions.

## Introduction

During the United Nations General Assembly in New York on September 25, 2015, 193-member states unanimously approved the "2030 Agenda for Sustainable Development," which calls for global change by 2030. This plan includes 17 goals and 169 assignments [1]. This program aims to improve the prospects for the future and the well-being of all people. Facilitating the transition to sustainable methods of production and consumption is a primary goal of sustainable development. Key components of sustainable consumption and production include encouraging the effective use of resources and energy, creating sustainable infrastructure, guaranteeing access to necessary social services, securing reasonable and green jobs, and improving everyone's quality of life. This involves educating and teaching people on sustainable lifestyle choices and consumption. All countries should be involved in the implementation of the action plan for switching to sustainable production and consumption practices, according to the UN framework, with industrialised nations setting the example while taking into account each nation's capabilities and level of development. The digital economy has a significant impact on many facets of society, and governments around the world are working to promote it at the same time. A key component of sustainable purchasing patterns is the digital economy. Today's digital economy relies heavily on internet retail. Online shopping has become a major part of the global retail system in recent years. The number of online shoppers is steadily rising every year as internet connectivity spreads throughout the world. Over 2.8 billion people shopped online in 2025, with nearly 6.8 trillion USD in worldwide online retail sales anticipated [2].

The marketing, purchase, and exchange of goods and services via the internet is referred to as online retail. E-commerce is growing in all countries, but it is developing especially quickly in emerging economies. China has emerged as the world's biggest source of e-commerce revenue in recent years [3]. Delivering and selling goods and services online is referred to as e-commerce. Although product delivery is the cornerstone of e-commerce, an increasing variety of services are now provided online. E-commerce has exploded as a result of the pandemic, especially in industries like healthcare and education. Discussions concerning the drawbacks of this change are growing as more and more customers shop online. However, the positive aspects of this shift are often overlooked [4, 5].

E-grocery buying, for example, may be more ecologically beneficial than traditional shopping, according to study, with emissions being decreased by 10–30% [6]. A lot of academics talk about how e-commerce has a negative effect on product packaging. A greater focus on environmental sustainability, improved life cycle management, a greater range of materials for packaging, and higher standards for product security—such as more packaging for each item, better life organization, environmental friendliness, etc.—are all required to meet the demands of e-commerce. Many studies concentrate on the environmental impact of the last mile, or the last leg of delivery. Research suggests that shopping within a 5-kilometer radius of a retail establishment is a more ecologically beneficial way to make purchases. However, the emissions from the automobiles required to get to the store are predicted to be greater than those from the carrier as the distance between the store and the cars increases, making online shopping more environmentally friendly. Last-mile logistics are becoming more and more important as e-commerce grows, which is causing major changes in urban operations. One ought to be aware of unintended consequences [8, 9]. Online businesses and customers may have an important effect on e-

commerce [10]. Post-purchase emissions of greenhouse gases will be affected by their shipping, packaging, and fitting selections. The purpose of this article is to determine the possible contribution of e-commerce to the achievement of sustainable development goals and to determine the positive or negative impact of e-commerce.

**Research Methodology:**

The data for the study were open sources of information on the Internet and research presented in the scientific literature. We used statistical and comparative analysis; data analysis using methods of grouping, generalization, methods of classification, induction, deduction, analogy, comparison, formalization.

**Results and Discussion:**

In contemporary literature, there are various methods for evaluating and categorising the 17 UN Sustainable Development Goals (SDG). As a case study, the goals are divided according to the "facets" of sustainable development [11], the SDGs due to their commercial significance [12], and so forth. After investigating how e-commerce and attaining the Sustainable Development Goals are related, we proposed the following classification

**Table No. 1: The connection between e-commerce and achieving development goal**

<p><b>E-commerce can impact the achievement of the SDGs</b></p>	<p><b>Goal 1:</b> End poverty in all its forms everywhere.  <b>Goal 2:</b> End hunger, achieve food security and improved nutrition and promote sustainable agriculture.  <b>Goal 3:</b> Ensure healthy lives and promote well-being for everyone at all ages.  <b>Goal 4:</b> Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all.  <b>Goal 5:</b> Achieve gender equality and empower all women and girls.  <b>Goal 8:</b> Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all.  <b>Goal 10:</b> Reduce inequality within and among countries.  <b>Goal 12:</b> Ensure sustainable consumption and production patterns.  <b>Goal 13:</b> Take urgent action to combat climate change and its impacts.  <b>Goal 17:</b> Strengthen the means of implementation and revitalize the global partnership for sustainable development.</p>
<p><b>The SDGs can affect the development of e-commerce</b></p>	<p><b>Goal 9:</b> Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation.</p>
<p><b>SDGs and e-commerce are not linked</b></p>	<p><b>Goal 6:</b> Ensure availability and sustainable management of water and sanitation for all.  <b>Goal 7:</b> Ensure access to affordable, reliable, sustainable and modern energy for all.  <b>Goal 11:</b> Make cities and human settlements inclusive, safe, resilient and sustainable.  <b>Goal 14:</b> Conserve and sustainably use the oceans, seas and marine resources for sustainable development.  <b>Goal 15:</b> Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss.  <b>Goal 16:</b> Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels</p>

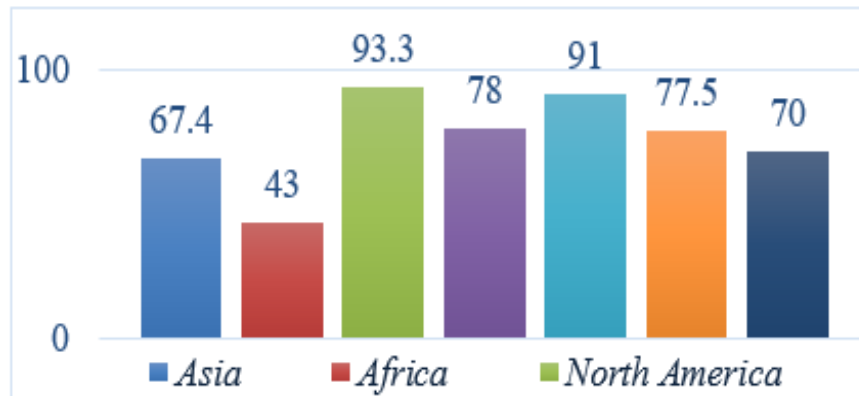
We have identified a single one goal, the attainment of which is essential for the advancement of e-commerce and the expansion of the e-market is

Goal 9. Advancements in innovation and technological progress permeate every facet of human existence. The Internet and mobile

communications have become essential for nearly everyone on Earth. These two forms of communication form the foundation of e-commerce technologies. In the year 2019, there were 96.5 % occurrences global population was connected to at least one network of the 2G standard, and over sixty percent were online internet users. [13] The expansion of e-commerce is intricately connected to the rise in internet users, the acquisition of

digital competencies by those who have not yet ventured onto the internet, and the integration of new technologies into the operations of internet businesses. Lacking sustainable infrastructure and innovation, the future of e-commerce will be weak. We confront evident disparities in infrastructure advancement today. Thus, the accessibility of the Internet varies across different regions of the worlds.

**Fig. No. 1: Accessibility of internet across different regions in the world**  
**Accessibility of internet across different regions in the world (%)**



A look at these 10 goals affecting e-commerce shows that these effects can be both positive and negative.

**Goal 1:** This might be accomplished by internet firms giving people new employment. You must also pay for things like the Internet and communication gadgets in order to benefit from e-commerce. Most frequently, those living in poverty also have the digital skills and knowledge required to fully engage in e-commerce.

**Goal 2:** By providing food security and greater access to more nutritious food for everyone, the second Sustainable Development Goal aims to eradicate hunger and advance sustainable agriculture. Businesses and consumers have equal access to an e-commerce marketplace. The public now has timely knowledge regarding market food prices on the Internet.

**Goal 3:** The third SDG is to provide universal access to high-quality healthcare, including essential medical services and affordable, effective, and safe medicines and vaccines. The COVID-19 pandemic has changed how people buy things online, especially when it comes to prescription drugs. Consumers are increasingly buying health-related products from online sellers these days. Doctors' use of technology to provide precise diagnoses has boosted demand for early illness detection, patient monitoring, and educating healthcare workers. Health clinics are also offering more online services.

**Goal 4:** This includes both well-known platforms like Coursera and smaller, more focused projects like training children to sketch. The COVID-19 epidemic caused e-commerce initiatives in this

sector to grow more quickly. Companies without internet connection have to either close or switch to online instruction and new instructional methods. Even when the epidemic ends, it is anticipated that this area of the internet economy would continue to grow quickly. The children and students of today are likely to continue learning online for the rest of their life since they are used to it. The advantages of online learning are also acknowledged by higher education institutions. For example, e-commerce initiatives will be used more often if there are no restrictions on the number of pupils and no need for additional classrooms or printed materials. This will help achieve Goal 4, which is to provide high-quality, inclusive, egalitarian education and to promote opportunities for lifelong learning across all.

**Goal 5 & Goal 8:** E-commerce plays a factor in the employment market in reaching Goal 8 and, to a lesser extent, Goal 5. Equal access to employment possibilities is one way that e-commerce may impact these objectives. The e-commerce industry is expanding rapidly, and there is a great need for additional employees, including couriers and programmers. Every day, job search websites list new openings for professionals who offer products and services online. The demand for professionals is higher than the supply of labor since many young specialists have not yet grasped this new subject. SMM marketers, web designers, and web analytics are just a few of the new jobs brought forth by e-commerce. Internet marketing, social media

marketing management, performance advertising, loyalty programs, and buying are among the most in-demand professions.

**Goal 10:** Minimize disparities both inside and across nations. A number of variables influence inequality between nations, and it frequently has historical roots. Through targeted development centered on institutions, technology, and raising the standard of living for the populace, developing nations are attempting to catch up to industrialized nations. National leaders are concerned about inequality inside and between nations. Social conflicts are brought up by this imbalance, which also increases the risk to vulnerable groups. E-commerce presents an opportunity to make important services accessible to everyone, both domestically and internationally. But for this e-commerce to succeed, fair access to infrastructure and technology is necessary. Different parts of the Indian States have differing degrees of Internet penetration. Different degrees of digital proficiency are also seen in other parts of India. Similarly, e-commerce growth is uneven.

**Goal 17:** As said before, the e-commerce industry is not limited by time or place. Any company or individual in any country with Internet connectivity may access it every day of the week, around the clock. Electronic commerce has the potential to boost exports from developing countries and ensure that the least developed countries have timely access to markets, as required by the World Trade Organization. Goal 17 states that e-commerce may assist in renewing and improving the Global Partnership for Sustainable Development. Experts say that the most significant contribution of e-commerce is to achieve goals 12 and 13, which are interconnected: Sustainable consumption and production aim to do more and better with fewer resources, break the link between economic growth and environmental harm, improve resource use, and promote more sustainable lifestyles. The primary sources of carbon emissions from online shopping are the distribution, packaging, and return of online goods; online retailers and consumers must take action to make online shopping greener. Each product delivered from an online store comes in its own packaging, typically a plastic bag, and frequently in multiple bags. Customers receive distinct packaging for each size of the same product if they purchase it in several sizes. These things are delivered to clients daily by thousands of trucks and automobiles, which also return unclaimed, unpacked goods. Tons of carbon emissions are produced throughout this process. Online retailers need to take accountability for the kind and quantity of packaging they use, giving reusable packaging first priority. Zara, for instance, discontinued using plastic and paper packaging a few years ago.

Instead of packing each item separately, they now send them in recyclable boxes, which significantly cuts down on waste. You may simply recycle these boxes or use them again for storage. Product packaging should also use boxes of the right size. By lowering CO2 emissions, new technologies like additive manufacturing and 3D printing can assist improve packaging's size and shape. Given how little e-commerce packaging has changed over the past few decades, we may use contemporary technologies to completely reevaluate the approach. [15] Over 10 billion things are sent by Amazon annually. About 85% of Denmark's and Switzerland's carbon dioxide emissions last year came from its 44.4 million metric tons of emissions. The packaging used for online shopping makes for to one-third of the solid waste generated in the US. Amazon took emissions from each of its operations into account when calculating its carbon footprint. This includes the energy required to manufacture Kindles, Echo gadgets, and other things, as well as the aircraft it pilots. Additionally, Amazon examined consumer visits to Whole Foods, its supermarket chain.[16]

#### **Conclusion:**

Development goals are relatively high. E-commerce can help achieve 10 of the 17 SDGs in various ways. It positively impacts sustainable development in individual countries and the world. This impact is particularly clear in the labor market. The number of internet companies is growing, and with them, the number of jobs is increasing. Most job openings require some qualifications. However, in 2020, we saw growth in areas like courier delivery, which does not require additional education. E-commerce provides equal access to education and health services from anywhere in the world. Often, these online services are cheaper. This includes primary and additional education, training, and medical consultations from specialists in other countries. On the downside, e-commerce can harm the environment. Searching, packaging, shipping, and returning items purchased online all contribute to carbon emissions. E-companies can be reduced their carbon footprint by using smarter packaging and shipping methods, even if it costs more. They can also promote sustainable consumption by educating customers about eco-friendly practices and ways to lower environmental impact. E-companies can play a significant role in improving progress toward sustainable development goals.

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### Conflicts of interest

The authors declare that there are no conflicts of interest regarding the publication of this paper.

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