

## ***DIGITAL TRANSACTION TREND TOWARD TO SUPPORT SUSTAINABILITY THROUGH E-COMMERCE PLATFORMS***

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### **ABSTRACT**

The rapid growth of e-commerce businesses has sparked concerns about environmental impacts and the sustainable measures taken by companies. This research aims to review the positive values of e-commerce activities, the current application of sustainability principles in the Indonesian e-commerce industry from digital transactions carried out by consumers. The method used in this research is a scoping review using data from articles, reports, and data relevant to sustainability aspects in the e-commerce sector. Descriptive analysis was conducted to explore the information obtained from these articles, reports, and data. Subsequently, an argumentative analysis was conducted to provide arguments regarding the implementation of policies that are suitable for the conditions of environmental impacts generated from e-commerce activities using digital transactions in Indonesia. The results of this study show that digital transactions in the e-commerce sector have a positive impact, especially on environmental aspects, such as reducing packaging waste, reducing carbon emissions from shipping activities, and optimizing the supply chain by connecting all stakeholders, information sources, and inputs into an integrated ERP system within the e-commerce data server. This research provides recommendations to the government as a regulator to implement binding regulations for e-commerce actors by considering sustainability aspects.

**Keywords:** digital transaction, e-commerce platform, sustainability, policy recommendation

### **INTRODUCTION**

The rapid development of technology and digitalization has given rise to a digital economy characterized by a high growth of technology-based businesses and trade transactions. The use of this technology can help businesses optimize their operational activities (Malik et al., 2023). One business that has undergone a transformation from conventional to technology-based is the trading business (e-commerce). The use of technology in e-commerce provides convenience for both sellers and buyers. E-commerce allows sellers to reach a wider market share, while buyers are provided with many conveniences, ranging from product search, price efficiency, and ease of shopping.

E-commerce has become increasingly popular and is rapidly growing worldwide. In South Korea, online sales have reached 37% of all retail activities. This is due to South Korea's well-developed payment infrastructure and logistics. E-commerce in South Korea is projected to increase by up to 45% from 2022 to 2026 (Standley, 2022). A similar trend is occurring in the United States. E-commerce in the United States is projected to reach 31% of sales by 2026, up 23% from 2022. This is due to the closure of many physical stores and consumers being more comfortable with online shopping transactions. In Indonesia, e-commerce is growing very rapidly. Based on the e-Conomy SEA 2022 research released by Google, Temasek, and Bain & Company, the digital economy value in Indonesia reached USD 77 billion. Of the total value, USD 59 billion or 76% came from the e-commerce sector. This data is also supported by the Ecommerce in Southeast Asia 2023 report, which states that

Indonesia's e-commerce business revenue in 2022 was the highest among other Southeast Asian countries. The report calculated the revenue of Southeast Asian e-commerce businesses through the accumulation of purchases, often referred to as Gross Merchandise Value (GMV).

Shopee ranked first in its contribution to Indonesia's total GMV with a value of 18.6 billion, followed by Tokopedia with a value of 18.1 billion, and subsequently Lazada, Bukalapak, TikTok Shop, and Blibli with values below 6 billion each.

While many analyses have found negative environmental impacts caused by e-commerce, this research delves deeper into the positive aspects and benefits gained from the rapid growth of e-commerce in Indonesia. This study also provides recommendations to the government as a regulator to implement binding regulations for e-commerce players, taking into account sustainability aspects

## LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

### E-commerce

In the early 1990s, the rapid commercialization of the internet created the potential for millions of customers to be acquired through the internet, thus giving rise to the term e-commerce. (Widagdo, 2016). The concept of e-commerce emerged from the modernization process of traditional markets which have a physical form and are located in specific geographic positions (Firmansyah, 2018). E-commerce refers to transactions generated through the internet, including sales, purchases, services, and information through computer networks or the internet (Kumar, 2022).

One of the most common forms of e-commerce is online shopping. In this platform, buyers can purchase goods and services from sellers via the internet. (Chueamuangphan et al., 2020) explains the business process that occurs in a single purchase cycle within e-commerce. Initially, potential buyers visit the seller's website, select the goods or services they want to purchase, and place an order. Next, they make an electronic payment for the goods or services they want to purchase and wait for the goods to be delivered to their desired location. In the process from ordering to delivery, a series of activities are also involved throughout the entire supply chain, starting from warehousing or packaging goods and transportation until the goods are delivered to the buyer. An illustration of this process can be seen in the figure below



Figure 1. Purchasing business process in e-commerce

### Sustainability in E-Commerce

The concept of sustainability emerged in the 1980s. Sustainability refers to a company's ability to meet the needs of the present without compromising the ability of future generations to meet their own needs (Ben-Eli, 2018). In the context of environmental issues, sustainability is further linked to three dimensions: environmental, economic, and social. These three dimensions, also known as the 3Ps (profit, people, planet), are the key to the concept of sustainability (Suprpto et al., 2023). A company's

sustainability is assessed based on whether all of its processes and activities contribute to environmental preservation, empowering and improving the welfare of society, and maintaining profitability (Mulya, 2017). In the sustainability dimension, e-commerce companies have their own impact on the environment.

Research in the field of transportation related to e-commerce has found that e-commerce has both positive and negative impacts on the environment in terms of congestion, vehicle fuel, and emissions (Carrillo et al., 2014; Chueamuangphan et al., 2020). The positive side of e-commerce helps to conduct business activities without having to travel. This can help reduce CO<sub>2</sub> emissions by enabling working from home and online shopping, thus positively impacting the environment. Amazon has announced that they plan to offset their massive greenhouse gas emissions and make Amazon carbon neutral by 2040. Sustainability can also encompass more than just delivery practices and product layout, but the overall business practices, including how offices and warehouses operate. Making simple changes like turning off equipment when not in use, investing in energy-efficient lighting, and reducing office temperatures can significantly reduce electricity bills.

### **Digital Transaction**

According to Antara News (2023), digital transactions will continue to grow positively and increase. This is influenced by changes in people's behavior from offline to online, thus driving sustainable growth in the adoption of digital financial services, including digital transactions which in 2023 have reached 50% of the total transaction value. Digital transactions and e-commerce play a role in driving Indonesia's economic growth.

The development of technology is increasingly rapid, especially in the financial sector. The banking world is utilizing this technological advancement by offering convenience for conducting financial transactions, making it easier for people to make digital payments. Digital payments have become more massive since the Covid-19 pandemic, including bank transfers via mobile banking, digital wallets, and QRIS (Quick Response Code Indonesian Standard). Digital payments have become a lifestyle for the people along with the growth of marketplaces (platforms used for online shopping). Digital payments have advantages and benefits for the public, including fast processes (no longer need to carry physical cash and no need for change), flexibility (payments can be made anytime and anywhere, simply with a cellphone and internet network), and transparency (users can track transactions that have been made). These advantages of digital transactions have encouraged the government to develop digital payment methods to facilitate the payment of state bills, and to create marketplaces so that the smallest government units, known as working units, can carry out procurement transactions of goods and services.

### **RESEARCH METHOD**

The methodology used in this research is a scoping review conducted through a systematic literature review focusing on the collection and analysis of data from articles, reports, and other relevant data related to sustainability aspects in the e-commerce sector. Subsequently, the data is used as a basis for conducting descriptive analysis to explore the information obtained. In addition, argumentative analysis is conducted to provide arguments regarding the implementation of policies that are appropriate to the conditions of the environmental impact generated from e-commerce activities in Indonesia

### **RESULTS**

Sustainability in e-commerce refers to a company's ability to survive and continue to grow in the long term. This involves not only environmental aspects but also social and economic aspects. In an effort to reduce environmental impacts, many e-commerce companies have adopted sustainable practices. This includes the use of environmentally friendly packaging, the use of renewable energy sources, and more efficient supply chain strategies. Considering these aspects can help companies create a positive image and reduce risks associated with environmental issues (Haryanti & Subriadi, 2022). Social sustainability involves a company's involvement in the local community, fair wages, and adherence to ethical standards. E-commerce companies committed to social sustainability can build



better relationships with customers, employees, and business partners, which in turn supports long-term growth. The economic aspect of sustainability involves creating a business model that generates consistent profits. This requires sustainable strategies for product development, market share growth, and prudent financial management. E-commerce companies must be able to adapt to market changes and create long-term value.

The concept of Big Data in e-commerce platforms requires an IoT dimension consisting of a network of customers and client computers, then connected to the online sales system before finally the database server sends data to the inventory management system. The Big Data system platform on e-commerce is illustrated in Figure 2 below.

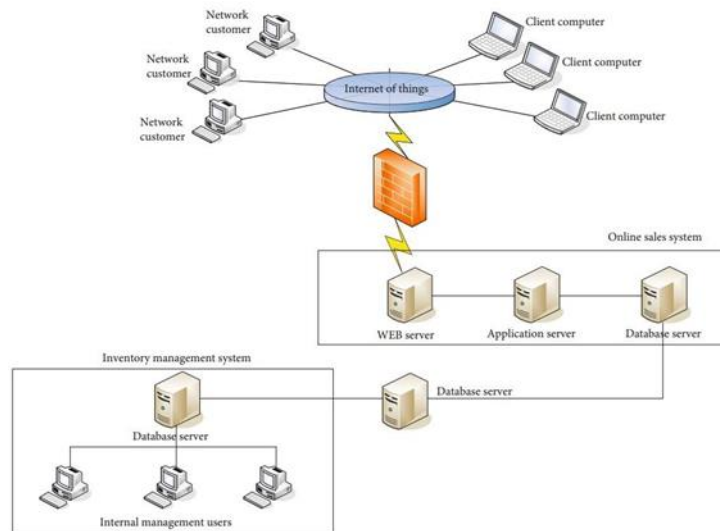


Figure 2. Big Data System Platform in E-commerce

The Big Data ecosystem in e-commerce necessitates a multitude of devices, ranging from IoT devices, online sales systems, database servers, and inventory management systems. As the number of devices increases, so does the energy consumption. To address this data server challenge, e-commerce companies should employ more energy-efficient server hardware, including energy-efficient processors, cooling systems, and data storage devices. Companies can also leverage renewable energy sources such as solar, wind, or hydro power to operate their data servers. Alternatively, cloud computing technology can be utilized, optimizing resource and energy usage. Furthermore, e-commerce companies should carefully consider the location of their data centers. Placing data centers in regions with cooler climates, such as underwater, in highlands, or in countries with cold climates, can serve as a sustainable resource, utilizing natural cold air to cool their servers.

The government has issued Government Regulation Number 80 of 2019 concerning electronic transactions. However, this regulation still discusses the scope of trade in general, ranging from actors, requirements, implementation, business obligations, transaction evidence, electronic advertising, offers, acceptance, and electronic confirmation, electronic contracts, personal data protection, payment, delivery of goods and services, exchange of goods or services and purchase cancellations, dispute resolution, as well as guidance and supervision, but has not yet regulated sustainability. This results in the implementation of sustainability being highly dependent on the level of awareness of each company. Therefore, this has become a concern for the government as a regulator to create binding regulations for e-commerce actors by considering sustainability aspects.

## DISCUSSION

E-commerce or electronic commerce has provided numerous benefits to humankind in recent years. On one hand, e-commerce allows us to shop online with ease. Moreover, technological advancements enable consumers to make purchases anytime and anywhere, without being bound by time and location constraints. The use of e-commerce also provides

easier access to products and services from all over the world, creating healthier competition among sellers and giving consumers more choices. However, e-commerce also has negative impacts that need to be considered.

## **CONCLUSION, LIMITATION, SUGGESTION**

The use of technology in e-commerce businesses provides convenience for both sellers and buyers. E-commerce allows sellers to reach a wider market, while buyers benefit from easier product searches, price efficiency, and convenient shopping experiences. E-commerce can also boost a country's economic value through increased Gross Merchandise Value (GMV). However, on the other hand, e-commerce activities have negative impacts, especially on the environment. The environmental impact of e-commerce shipping activities depends on shipping distance, return rates, spending allocation, population density, and the mode of transportation used. To address the various environmental problems arising from e-commerce activities, various efforts are needed, starting from reducing e-commerce waste by reducing excessive packaging, increasing the use of environmentally friendly packaging materials, and using innovative new technologies. Reducing greenhouse gas (GHG) emissions generated by e-commerce data servers can be achieved through more energy-efficient server hardware, using renewable energy sources, utilizing cloud computing technology, and considering the location of e-commerce data servers. Further research is recommended to further collaborate on the positive and negative impacts of e-commerce activities from a sustainability perspective. The aspects used as a reference are not limited to environmental aspects, but also discuss economic and social aspects. This is done so that future research is more comprehensive and better represents the actual conditions of e-commerce in Indonesia. Furthermore, it is recommended that the government, as a regulator and policymaker, create binding regulations for e-commerce actors by considering sustainability aspects

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