

Analysis of E-commerce Growth in the Industrial Age 4.0 in Indonesia

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Abstract: Trading transactions that were initially conventional began to change to the digital economy along with technological developments and the industrial era, which is starting to enter the 4.0 period. Scheme E-commerce transactions between buyers and sellers occur through a digital platform, assisted by courier services. Revolution Industry 4.0, where IoT, Big data and cloud will integrate every industrial activity. A SWOT analysis consisting of four components, namely Strengths, Weaknesses, Opportunities, and Threats, will outline the points and the growth of the world of E-commerce in the future industrial era 4.0, expected to open up new business opportunities for the younger generation in particular.

Keywords: Technology, Industry 4.0, E-Commerce, Digital Platform, SWOT

Introduction

Trade transactions have experienced a very rapid transition which was originally still manual, where the seller and buyers had to meet somewhere to do transactions, currently shifting to the use of E-commerce technology, or electronic commerce ([Saridakis, Lai, Mohammed, & Hansen, 2018](#)). Seller and Buyer do not have to meet in person but take advantage of an online platform for trade transactions or marketplaces. There is a system transformation trade that started from the barter system, developed into traditional markets, modern markets, and today entering the era of digital markets or E-commerce ([Ho, Kauffman, & Liang, 2007](#)).

The industry is currently entering the 4.0 era where it is changed to work processes that were initially still using human energy and mind in specific sectors began to be changed to automation and utilization of the Internet of Things (IoT) in all series of processes to produce an output ([Guo, Jin, Zhao, Wang, & Zhao, 2022](#)). Most opinions regarding the potential benefits of Industry 4.0 are speed improvements, production flexibility, customer service, and increased income. Realizing potential benefits will positively impact a country's economy ([Ji, Xu, & Zhang, 2023](#)). Like E-commerce, Industry 4.0 has also experienced an increase in technology based on IoT, where all work processes have been automated, using sensors and

cloud-based data storage (Wang, Li, Lin, & Wei, 2023). This paper will explain the influence of the revolution of Industry 4.0 on the growth of E-commerce, especially in Indonesia, to analyze and analyze the extent of the impact of industry 4.0 on activities of digital trade (Gornostaeva, 2023). Researchers reviewed several related sources and journals that discuss E-commerce and industry 4.0. The machine learning method is expected to collect, analyze, elaborate and display data from related sources (Wan, Yang, & Teng, 2022). The e-commerce scheme can be described as follows:

Digital Commerce

A simple scheme of transactions in E-commerce is as follows.

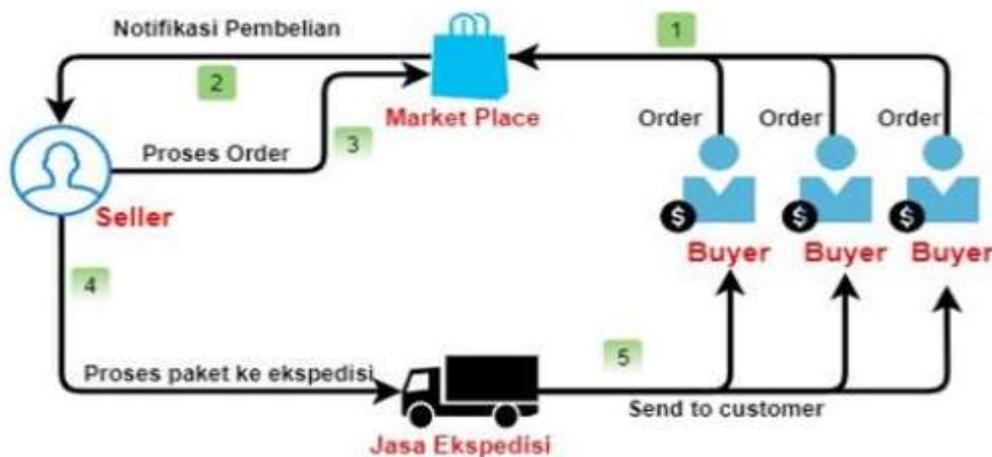


Figure 1 E-commerce Transaction Scheme

Based on the process flow in figure 1, it can be explained that transaction order includes:

1. Buyer processes orders and payments through marketplace platforms
2. Marketplace forwards to the seller and delivers notification that there is a product order;
3. Seller receives notifications and processes products ordered by the Buyer
4. The seller sends the product ordered through the service expedition
5. The expeditionary party delivered products to respective destination addresses

From the process, it appears that there are no meetings between sellers and buyers; all activities are done only through the marketplace application connected by an internet network (Taufik Hidayat, Sari, & Azzery). Besides some of The benefits of this E-commerce, there are also challenges or things to watch out for in activities of digital trade, such as:

- a. There is theft of user data
- b. Fraud, meaning products that have been ordered by the Buyer and not shipped

- c. Abuse of access rights
- d. Hacking or hacking. That is what the side is for network security needs improvement to protect privacy data from buyers and sellers.

Industrial Revolution and E-commerce Era 4.0

The development of the industrial world today has reached the 4th stage, where an industrial activity will be carried out integrated through IoT-based technology devices, wireless, Big data, and cloud as a means of storing data. Various opinions about the industrial revolution 4.0 mainly regarding speed improvement, flexibility production, customer service improvement, and increased revenue. Realization of potential benefits will positively impact a country's economy ([Zheng, Zhang, & Song, 2022](#)). In the future, all manufacturing activities from upstream to downstream will be automated by a system, monitored by sensors, and connected to an internet network. Data will be stored in the cloud. The industrial revolution 4.0 triggered storage technology data or cloud to grow continually, and the storage capacity required is even more significant because of data complexity. So is the case with E-commerce which requires data storage capacity as database products or catalogues displayed in the application marketplace. Various products can be sold only by uploading pictures and giving specifications. Service products can be offered through various online platforms ([Chih-Yi & Bou-Wen, 2021](#)).

Research Method

SWOT analysis

To analyze the growth of E-commerce in the era of Industry 4.0, researchers use SWOT Analysis (SWOT analysis). In general, SWOT analysis can be divided into two categories, namely internal factors and external factors ([Elia, Giuffrida, Mariani, & Bresciani, 2021](#)). The internal include Strengths and Weaknesses (Weaknesses), while external factors include Opportunities (Opportunities) and Threats (Threats). The destination of the SWOT analysis is to use knowledge of the organization's internal and external environment and to formulate a strategy according to the desired goals ([Hosseini, Paydar, & Triki, 2021](#)). SWOT analysis compares external factors' opportunities and threats with internal strengths and factors' weaknesses. Internal factors are included in the internal strategy factor matrix or IFAS (Internal Strategic Factor Analysis Summary). External factors are entered into the factor matrix external strategy EFAS (External Strategic Factor Analysis Summary ([T. Hidayat, Mahardiko, & Alaydrus, 2021](#)).

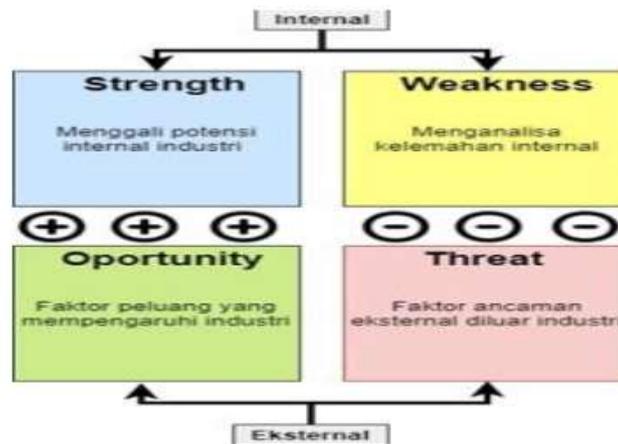


Figure 2 SWOT Analysis Internal and External Factor Matrix

SWOT Analysis Model

The SWOT analysis model is divided into four components, namely:

Strength

This is the component used for displaying the Strength of a situation or condition of the object researched. The points earned from Strength are always positive because the aim is to dig proportion or Strength (Chock et al., 2022). Here are some questions about E-commerce that can explore the strength factor under study:

- What advantages does E-Commerce have if compared to the traditional market?
- Factors that make E-Commerce more desirable to the current consumer?
- Do you sell products through the marketplace in the E-commerce industry more profitably?
- What is the influence of the industrial revolution 4.0 on the increase in E-commerce consumers?

Weaknesses

Used to display or display the weakness of the object under study (Ni et al., 2022). Weaknesses can also illustrate the current negative influence as well as in the future. Here is a question that shows the weakness of the growth of E-Commerce in the era of industry 4.0:

- What should things be improved from E-Commerce in industrial era 4.0?
- What if there is theft of customer data from marketplace users?
- How to ensure the stability of the internet network in transactions in E-commerce?
- What things to watch out for in an inter-competition marketplace company?

- e. Is access to complaints available? Consumer if there is a purchase transaction problem?

Opportunities

It is a positive external factor that can influence decision-making. Opportunities is a situation or condition that is an opportunity or opportunities outside the company or organization that can provide opportunities for development in the future; here are some questions related to opportunities:

- How is the development of technology in the current 4.0 era affect the growth of E-Commerce?
- What external tools can support the performance marketplace to make it better?

Threats

Like opportunity, threats also come from external factors that can affect an organization or industry, hindering industrial growth. Some questions that show the threat of the external E-commerce industry:

- What industries are experiencing problems then it will hinder the growth of Ecommerce
- To what extent do traditional markets pose a threat to the sustainability of E-Commerce in this era of industry 4.0?

Result and Discussion

SWOT Analysis Results

Analysis based on the SWOT method of the growth of E-commerce in the industrial era 4.0 can be explained as follows:

Table 1 Result of SWOT Analysis

SWOT Category	Analysis Results
Strength	The growing eCommerce, especially in Indonesia, significantly impacted changing economic patterns in trade, which was previously conventional, and began to switch to the digital economy concept. E-commerce market, especially in Indonesian: <ul style="list-style-type: none"> • 51.8% internet penetration in Indonesia. • 98.6% of internet users know that the Internet can be used to buy and sell. • 63.5% of internet users have transacted online
Weakness	<ul style="list-style-type: none"> • Internet network connection sufficient; add a satellite palapa ring to expand connection area and maximize connection via fibre optic;

	<ul style="list-style-type: none"> • The government needs to make regulations on competition in the online industry so that it does not happen monopoly of one party; • Created complaint access in real-time so that consumers harmed or deceived by the seller can immediately find a solution.
Opportunity	<ul style="list-style-type: none"> • Reduced rate unemployment because with Ecommerce's rapid growth, the industry can open new jobs that are not binding on time and at minimal cost; • Emergence of various innovations new business for the young generation, especially in the absence of distance and time limitations; • Increasing the country's competitiveness

Discussions

Analyze with the SWOT method used by researchers can provide an overview and exposure that E-commerce growth in the industrial era 4.0 is increasing increases if the existing components can fulfil and executed accordingly. The E-commerce industry still has the potential to be developed with other methods because, in this digital economy, there are no distance and time restrictions like in the traditional industry. Utilization of IoT, Big Data and Cloud can support the E-commerce industry in terms of technology and storage of user data, both buyers, sellers or related parties. One is using sensors that can be applied to the marketplace to identify product types and databases stored in the cloud.

Conclusions

The growth of E-Commerce in the industrial era 4.0 provides excellent benefits for the people in Indonesia because many new opportunities that arise and provide broad opportunities for the younger generation to develop potential and business ideas in the field of ICT supported by a vast internet network that has reached almost all regions in Indonesia. In addition, business opportunities can reach various parts of the world without distance and time constraints. Everyone can access it from anywhere as long as they are connected to the Internet. With the selected SWOT analysis, researchers can review and explore data related to E-commerce Growth in the industrial era 4.0, divided into four components Strengths, Weaknesses, Opportunities, and Threats.

Various questions from the elaboration of these components can be used as a reference that the E-commerce industry is experiencing a positive growth trend supported by the increasing development of technology in the industrial era 4.0. Things to watch out for from E-Commerce growth focus on user data security, privacy assurance, and ensuring no data theft can be exploited by irresponsible parties. From the government side also has to guarantee the

network infrastructure available, and make a regulation governing the rights and obligations of sellers and buyers, so that competition occurs fair and beneficial business for all.

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