
BIG DATA IMPLEMENTATION AND USE FOR BUSINESS

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ABSTRACT

KEYWORDS

Implementation;
benefits; big data;
business

The rapid development of information technology, especially in terms of collecting and storing large data (big data), has opened up new opportunities in various business fields. This research aims to analyze and describe the implementation and utilization of big data in the context of Shopee's e-commerce business. This research uses qualitative research methods. The data collection technique was carried out by literature study obtained from Google Scholar and observation of the Shopee platform. The data obtained was then analyzed using three stages, namely data reduction, data presentation and conclusion drawing. The results showed that big data can be implemented with Product Introduction and Personalization, optimization of offers and promotions, and inventory management. The benefits of this implementation include helping to identify patterns, trends, preferences, and user behavior. In addition, it creates a more personalized shopping experience and motivates more purchases. Big data also helps Shopee in optimizing offers, promotions, product discounts, item availability, and increasing sales conversions.

INTRODUCTION

Technological developments are currently experiencing rapid progress, and one of the real forms of this progress is e-commerce. E-commerce is the process of selling and purchasing goods electronically by consumers, which are business-to-business transactions with computer intermediaries, namely using computer networks (Pradana, 2015). In the realm of e-commerce, there are various activities that take place, such as online buying and selling transactions, interactions between customers and sellers through digital platforms, analysis of purchase data and customer preferences, as well as electronic payment systems. All of these activities produce digital footprints that are aggregated into big data.

Big data is a term that refers to very large and complex data sets that are difficult or even impossible to process using traditional data processing methods. This large-scale data involves various types of information originating from various sources, such as sensors, mobile devices, social media, business transactions, and so on (Santoso et al., 2022). Big data can determine and analyze a problem which is then used to minimize failures in the data storage process. The results of the analysis itself can be displayed directly or in real time (Melinaeka, 2022). Big data generated by e-commerce has invaluable value in analyzing consumer trends, improving customer experience, and providing important insights in informing business strategies, one of the e-commerce sites with many users in Indonesia is Shopee.

Based on data from SimilarWeb, Shopee is the e-commerce site with the most number of website visits in Indonesia in the first quarter of 2023. During the January-March period this year, the Shopee site achieved an average of 157.9 million visits per month, far exceeding its competitors. During the same period, the Tokopedia site received an average of 117 million visits, the Lazada site 83.2 million visits, the BliBli site 25.4 million visits, and the Bukalapak site 18.1 million visits per month (Ahdiat, 2023). Shopee provides an application that makes it easy for users to carry out buying and selling activities online. Not only can it be accessed via a computer device, this application is also available for smartphones. In addition to convenience, Shopee guarantees security in the shopping process. When a buyer makes a

payment for an order that has been made, the funds are not directly forwarded to the seller's account. On the other hand, the seller will receive payment after the goods reach the buyer safely (Hidayanti, 2021).

In previous research by (Sirait, 2016) big data was implemented in government institutions. Another research conducted by (Sedayu & Andriyansah, 2021) used big data at Public Service Agencies. Meanwhile, another study by (Solihin, 2021) examines the implementation of big data on social media as a government crisis communication strategy. There is no research that examines how the implementation and utilization of big data in business has become the joy of this research. The limitations of this research are businesses in the e-commerce sector at Shopee. This study aims to analyze and describe the implementation and utilization of big data in a business context.

RESEARCH METHOD

This study used qualitative research methods. According to (Sugiyono, 2018) the qualitative research method is a research method based on philosophy that is used to research scientific conditions (experiments) where researchers as instruments, data collection techniques and qualitative analysis put more emphasis on meaning. Data collection techniques were carried out using literature studies obtained from Google Scholar and observation on the Shopee platform. The data obtained was then analyzed using three stages, namely data reduction, data presentation and drawing conclusions.

RESULTS AND DISCUSSION

Data and business seem to be a complete package, the two cannot be separated. As a business that operates in the technological era, of course complete data with analysis is the most important part that can support policy direction in running a business. Complete data analysis is no longer just an important competency for corporate organizations, but as a determinant of market control and used as a reference for where the business will run and develop (Pujianto et al, 2018).

The concept of Big Data describes an important role in digital technology that operates independently, which causes data to vary and change quickly, or even multiply into countless numbers and is difficult to handle traditionally. Support for Big Data includes several aspects, including 1) Accurate, referring to the information data sought by searching for the source of the information itself. 2) Accessibility, including database capability to store and collect data, which once collected can be managed. 3) Analysis, focusing on finding data information through various analyzes such as prediction, exploration, regression, data mining, and perspective analysis. 4) Applications, after the analysis is completed, the data requires software and hardware to provide analysis services. This approach makes it easier for companies to provide analysis services for various government agencies, the mining industry, aviation, health, and central and regional forums (Sedayu & Andriyansah, 2021). Big data is generally divided into three main aspects, namely (Hapsari, 2020):

- 1) Volume refers to the size of the data that can accommodate a very large capacity. Efforts to run the process on a large scale can provide a better understanding.
- 2) Velocity which shows how fast the data can be transferred. This factor affects the efficiency and stability of the data transmission process. Big data has the ability to be received in real time, so data processing can run at high speed.
- 3) Variety which includes various types of data, both traditional and more structured. There are three types of data formats:
 - a) Structured data such as relational database (RDBMS)
 - b) Semi-Structured data like XML, JSON

- c) Unstructured data such as documents, metadata, videos, images, audio, text files, ebooks, email messages, social media, journals and others.

In the realm of e-commerce, big data has a crucial role in analyzing consumer behavior, operations, market potential, and even product innovation. This data analysis process provides a comprehensive framework for describing consumer profiles and opportunities that can be explored as part of a business development strategy. One of the implementations is to collect consumer data from their interactions on e-commerce platforms, then analyze it to optimize strategies to increase sales conversions.

The implementation and utilization of big data on the Shopee platform involves several stages and strategies to optimize user experience, improve operational efficiency, and make better business decisions. The following is an overview of the implementation and utilization of big data at Shopee:

1) Data collection

Shopee collects data from various sources on the platform, such as transaction history, product searches, clicks, reviews, user preferences and other interactions. This data is collected in real-time and stored in a large and structured database.

2) Data Processing and Analysis

The collected data is then processed and analyzed using big data algorithms. This analysis helps identify patterns, trends, preferences, and user behavior. The processing of this data provides valuable insights that can be used to make better decisions.

3) Product Introduction and Personalization

Based on data analysis, Shopee can provide product recommendations that are relevant and interesting to users. This product recognition is based on user preferences, transaction history, and previous shopping behavior. This creates a more personalized shopping experience and motivates more purchases.

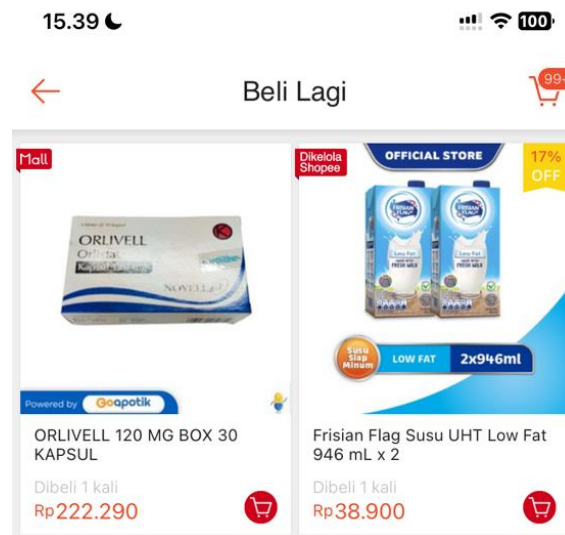


Figure 1. Product Recommendations from Transaction History

Product recommendations from transaction history in Figure 1 shows that Shopee looks at transaction history and previous shopping activities, this shows that Shopee has collected and stored data related to shopping activities to provide relevant recommendations.

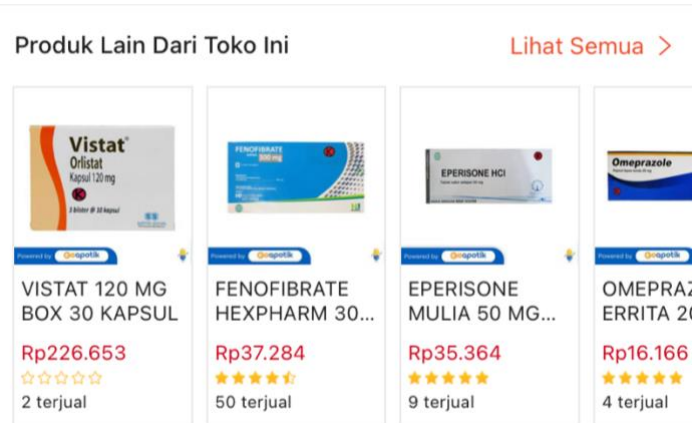


Figure 2. Introduction of Related Products

When viewing a particular product, Shopee often displays related or similar products that may be of interest to users, this indicates that Shopee uses data about shopping preferences to generate recommendations.

4) Optimization of Offers and Promotions

Big data helps Shopee in optimizing product offers, promotions and discounts, by analyzing sales data and user response to certain promotions, Shopee can determine the most effective promotional strategy to increase sales.

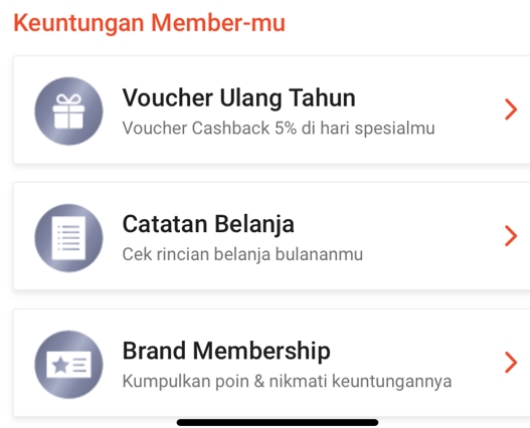


Figure 3. Special Offers

Shopee offers special offers or discounts that are only given to certain users, for example offers to platinum members. A platinum member is a member who completes 100 orders or a value of IDR 10,000,000 in 6 months. Special offers that are only given to platinum members are ShopeeFood vouchers, birthday vouchers, and priority CS. This shows that Shopee has information about users' profiles and shopping activities.

5) Inventory Management

Shopee uses big data to better manage product stock.

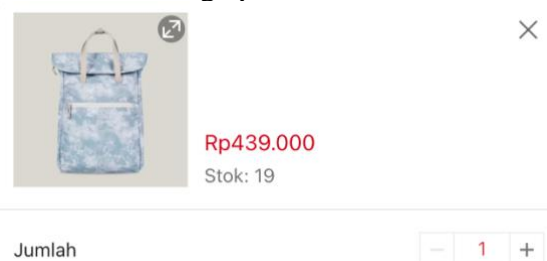


Figure 4. Product Stock

Figure 4 shows that for this item, there are 19 pcs of remaining stock. Data analysis helps forecast product demand and avoid over or under stock, this helps in maintaining timely product availability.

6) Increased Sales Conversion

Through big data analysis, Shopee identifies potential points in the transaction flow that can increase sales conversions. By understanding the most effective steps, Shopee can optimize the buying process and motivate more consumers to complete transactions.

7) Market Trend Predictions

Big data is used to forecast market trends and future product demand. Data analysis helps Shopee to understand changing consumer trends and plan promotional campaigns and business strategies accordingly.

Through the implementation and utilization of big data, Shopee can optimize its operations, provide a better shopping experience for users, and make more informed and strategic business decisions. The results of this study are in line with previous research conducted by (Pujianto et al, 2018) which states that a number of benefits have been felt from using Big Data, especially in the business world, including to gain insight into people's responses to products through sentiment analysis on social media platforms. In addition, this technology helps companies make more precise and accurate decisions based on existing data, improve the company's image in the eyes of customers, and plan their business by understanding customer behavior.

The application of Big Data Technology helps companies to understand customer behavior through shopping transaction data. The data for each transaction contains information about the product combination purchased, the number of items, and the price. All of these transaction data are then analyzed to identify shopping patterns, such as combinations of two or three products that are often bought together by consumers. The results of this analysis allow interesting actions to be implemented, such as arranging shopping shelf placements so that these products are close together and easily accessible to consumers, as well as creating promotional packages at more affordable prices for these product combinations. These measures have proven to be effective in increasing sales significantly and reducing inventory problems thus, Big Data is a powerful tool to help companies respond to changes and improve business efficiency (Pujianto et al, 2018). According to (Maryanto, 2017) Companies in the business sector, which focus on achieving maximum profit, produce valuable information through Big Data to support the decision-making process of company leaders. Following are some of the benefits that can be obtained from Big Data:

- 1) Identifying public responses to products issued through sentiment analysis on various social media platforms.
- 2) Strengthen the precision and accuracy of corporate decision making based on available data.
- 3) Increase the company's positive image in the eyes of customers.
- 4) Planning business strategy by understanding consumer behavior, as is the case in telecommunications and banking companies.
- 5) Recognize market trends and customer desires to support product or service development.

The role of big data in the trading industry sector has several quite specific roles including showing price distribution, protecting consumer privacy, forecasting stock prices, digging potential taxes, as management of corporate value creation, connecting business value to marketing strategy. All of these roles function in improving quality performance for both companies and other sectors related to the trade industry (Septa & Hoirul, 2022).

The collection of data on a large scale, known as Big Data, has the potential for significant privacy and security concerns. Companies need to take serious steps to ensure that the collection, processing and use of this data complies with applicable privacy regulations and does not violate consumer privacy rights. The first challenge is ensuring that the data collected

has obtained permission from the individual or party concerned. Companies must be transparent in informing the purpose of data collection, the type of data collected, and how the data will be used. Users must provide clear and revocable consent to the collection and use of their data. Furthermore, companies need to protect collected data from cyber security threats. Big data stored in the system can be a potential target for cybercriminals. Therefore, strong security measures, such as data encryption, active monitoring, and attack prevention measures must be implemented. In addition, the company must also ensure that the data is not misused or accessed by unauthorized parties. This involves limiting access to data to only those individuals or departments who need the information to carry out their tasks. It is important for companies to comply with applicable data privacy regulations in the jurisdictions in which they operate. For example, in various countries, such as the GDPR in the European Union or the CCPA in California, companies are required to strictly safeguard the privacy of consumer data, granting consumers the right to access.

CONCLUSION

The results of the research show that big data has the potential to be implemented in various aspects, including Product Introduction and Personalization, optimization of offers and promotions, and inventory management. This implementation brings a number of significant benefits to Shopee. One of the main benefits of implementing big data is its ability to identify patterns, trends, preferences, and user behavior. By analyzing big data, Shopee can get a deeper understanding of how users interact with the platform, products and promotions. This information can help companies make better decisions in planning business strategies and improving customer experience. In addition, the implementation of big data is also able to create a more personalized shopping experience for users. Through data analysis, Shopee can arrange product recommendations according to each user's preferences and shopping history. This can motivate users to make more purchases and increase customer loyalty. In terms of offers and promotions, big data helps Shopee optimize the product offers, discounts and promotions presented to users. Analytics data allows companies to identify which products are most in demand by users and when is the right time to provide special offers. This can increase the effectiveness of promotional campaigns and result in increased sales conversions. Finally, big data also supports Shopee in inventory management. Data analytics can help companies monitor stock availability, predict demand, and optimize inventory levels. Thus, Shopee can avoid excess stock or lack of goods, which in turn can improve operational efficiency and customer satisfaction.

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