Implementation of Big Data in E-Commerce to Improve User Experience

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ABSTRACT

Technological developments have grown rapidly and very affect human life. In this fast-paced era, more and more data is circulating, one of which is about E-Commerce. Different personalizations for each person and certain habits help generate the use of big data technology in improving the user experience. The purpose of writing this scientific paper is to explain the application of big data in E-commerce which will have an impact on increasing user experience in the E-commerce environment. The application of big data in E-commerce will result in efficient services based on the wishes from the user. This paper was written using a descriptive method, with various analyzes of the data collected from references on the internet. The expected result of writing this scientific paper is to create an E-commerce environment that can provide effective services that are oriented to all users in the E-commerce.

Keywords : E-Commerce, User experience, Big data.

1. INTRODUCTION

1.1. Background

The development of modern technology develops new habits such as online transactions in an E-commerce environment. Electric commerce or E-commerce is known as a means to conduct buying and selling transactions of goods or services online through internet intermediaries (A. Garg, 2020).

E-Commerce is generally used to meet various needs. Starting from the use to meet the needs of companies, individuals, and other needs. In this era that has developed like now, E-Commerce has become a favorite of internet users (Abdu'a & Wasiyanti, 2019). There are several problems encountered in the use of E- Commerce, such as the lack of development of user/client-oriented service implementations (Yoon & Ocenna, 2017). This makes it difficult for users to interact with the system and significantly reduces user satisfaction. In order to make E-Commerce more efficient, improve user experience, and increase user convenience. So big data needs to be implemented in all E-Commerce systems. Big data can use a lot of data to sort out and understand thoroughly all the potential and risks in marketing data-based products and produce solutions to the problem of low levels of customer satisfaction (Kauffman, 2015). Based on *Ilmiah Bijak*

Magazine (2018:127-137), The role of Big Data in increasing customer satisfaction is very large, businesses that are evaluated in the form of E- Commerce can utilize most of the data resources from users to be processed in the use of Big Data, because there will be many information data collected every day. Because with this data, E-Commerce can recommend products that match the buyer's interests and will be adjusted based on their search history. This will greatly assist users in meeting their needs.

Figure 1. E-Commerce overview

According to a study published by BARC, there are four main ways E- Commerce companies get the benefit from big data: strategic decision making (69%), improved operational process control (54%), better understanding of customers (52%), and cost reduction (47%). From this strategy we can understand what customers need, and can give users a better user experience. Here are some tools or software that can be used to help implement big data for E-Commerce.

There are many advanced software that can be used to adopt Big Data for E- Commerce implementation, such as cloudera, vertica, and pentaho. So the application of big data can be the right solution to be applied in E-Commerce, because big data makes it possible to predict existing trends, optimize prices, and also optimize customer service. This is the reason why big data plays an important role in improving user experience in online environments such as E-Commerce.

1.2. Problems

The formulation of the problem that we compiled based on the background is:

1. How can the implementation of Big Data in E-Commerce improve user experience?
2. What is the strategy for developing and implementing big data service models to users/clients?
3. How to optimize services that are right on target and oriented to the user?

1.3. Purpose

The purpose of writing this paper first is to find out how the application of big data in E-Commerce plays a role in improving user experience. Second, to explain the strategy for implementing big data in E- Commerce in achieving its goals.

1.4. Benefits

1. Can produce the right decision making based on big data analysis.
2. Provide insight into what products are of consumer interest.
3. Provide investment in data processing, namely increasing long- term profit and customer loyalty.
4. Improve the efficiency of processing a lot of data.
5. Increase innovation for the development of future trends.

2. RESULTS AND DISCUSSION

2.1. Analysis of E-Commerce Relationships, Big Data and User Experience

E-Commerce Business offers one method that allows users to shop online. Through internet intermediaries, buying and selling actors can communicate with each other regardless of time and distance. Therefore, the E-Commerce business can reach a wider range of users and spread to all regions.

E-Commerce presents many advantages for the community, business people, and E-Commerce management/ companies. Through E-Commerce, the buying and selling process can occur online without being limited by time and place. Although it presents many advantages, E- Commerce also has its own obstacles

Some of the obstacles encountered in implementing E-Commerce are the lack of a high level of trust in existing online shopping sites, complicated E-Commerce mechanisms that make it difficult for consumers to adapt, and limited information about the process of transactions in E-Commerce.

This is because there are still many frauds that occur when consumers shop online. In general, the prices listed on the E- Commerce market are non-negotiable. Unlike traditional markets, the transaction process goes through a bargaining process and can see the condition of the goods directly. Many users still don't understand how to use E-Commerce properly

Not only the public, business people and E-Commerce companies are still considered to lack understanding and mastering properly and correctly the concept and implementation of E-Commerce technology. Delivery services also still need improvement, so that in the future the process of sending goods takes a long time to reach the hands of buyers or consumers.

Big Data technology gives people the ability within the company to manage huge data resources, in a very fast period to get value from existing data. Big data can be used as an investment, where the real results of its use can only be felt if the research and interpretation process of big data has been operated properly and produces a business strategy that is easy to find solutions to every problem and is implementable in its implementation.

The benefit of using big data is that companies have the opportunity to make business decisions based on scientific and measurable data, therefore not from thoughts that do not have a clear basis such as general knowledge, reason, and only something practical.

Data resources for big data processing are taken from sources inside and outside the organization, including from social media, blogs, wikis, email, and others. All of these sources will provide more insight into employee and consumer engagement with the company. Big Data is widely used in all walks of life. As in the world of business, health, education, tourism, economics, social, culture, politics and others.

User Experience is obtained from a person's perception and response from the use of a product, system, or service. User

Experience assesses the standard of someone's satisfaction with something, for example a real product or service. The principle of building User Experience is ageneral standards in the level of satisfaction of each customer. Therefore a User Experience depends on the intended customer. E-Commerce can develop into a broad market because of the advantages it offers. In reaching many users in the market, E-Commerce has several obstacles, which include user experience constraints.

The development of the digital and mobile world makes the User Experience more complex and multidimensional. In this modern era there are so many platforms that can be used to access E-Commerce. Users can access E-Commerce applications and websites using a mobile or computer. The customer experience on one platform will certainly be different from other platforms. The form of User Experience between the Web and Mobile will definitely be different from one another. Likewise, the media displayed will be more diverse with the presence of social media. For this reason, User Experience is one of the most important factors for an E-Commerce business.

To be able to provide a good experience for E-Commerce users, Big data is the right solution to the existing problems. E-Commerce generates a lot of user data every second, a lot of data that comes in every time a user performs a search, transaction, or other behavior. In addition to collecting data from the E-Commerce environment, a lot of data supply also comes from outside, such as social media. By utilizing information from these data, big data technology can determine user personalization, user habits and accurately predict user needs. Things like that are very crucial to grow the level of user experience, which is the right solution needed for all E- Commerce businesses.

2.2. The Role of Big Data in Improving User Experience

The development of technology encouraged online-based business ecosystems such as E-Commerce are growing rapidly, big data processing that deserves to be one of the main priorities for analysing the needs and making the right decisions. Proper data processing will provide high accuracy for predicting the market and how to find opportunities to develop the market.

Big data has an important role in E- Commerce for analysing customer habits, monitoring operational processes and market potential, and also innovating new products. This data analysis can provide an overall framework about consumer profile and possibilities can be explored as a business development strategy. We can implement it by utilizing consumer data collected from their interactions on E-Commerce website, which is analyzed to maximize sales conversion strategies. Therefore, this data processing also provides increased efficiency, because increasing efficiency thus also helps increasing profits. The services that pay attention to the consumers, also can increase their loyalty to the company.

Customer's satisfaction level is one of the most important factors in E-Commerce. Buying-Selling interactions in E-Commerce are processed through internet facilities. The transaction occurs online, so there will be limited information that can be received on the consumer side. Unlike when buying and selling actors meet directly in traditional markets and see the good's condition directly. Transactions in E-Commerce occur online, so that buyers can not directly see the goods. Therefore, it is very important for E- Commerce to be able to ensure consumers get the best user experience.

The important things to increase customer loyalty that is to provide a satisfactory User Experience. For example, when buyer visits E-Commerce, it will be recorded that certain habits of the buyer in choosing products. Thus processing the collected data, making the application of big data in E-Commerce that is provide recommendations for what products are suitable for consumers based on their search history. In addition, data analysis is also useful to see the flow of application usage by consumers, so that we can know the form of user-friendly applications are for these consumers. For example, buyers often use certain filter features such as what is the most often used, or the page form is clear to them, or there is still a need for certain guides for users and so on. To encourage consumers are getting a better user experience.

The application of big data in E- Commerce system is a solution to the problem of the low level user experience. The following are some data analysis that can be applied as a strategy to improve User Experience:

2.2.1. Personalizing Shopping based on Consumer Interest

To improve the shopping experience, the data collected in E-Commerce platforms is used for better promotional strategies. For example, the consumer search history is analyzed by big data to produce the most respected product. When there are certain promotions or shopping days that provide cheap discounts, it makes consumer behavior clearer. E- Commerce players can personalize to only provide discounts for consumers who frequently buy certain products. The most common channels for distributing personalized discounts are through social media, ads or notifications on mobile phone applications. By providing relevant promotions to certain consumers, the accuracy of target becomes the most effective strategy to maximize purchase conversions.

2.2.2. Improving E-Commerce security When online transactions increase

drastically, the massive data must be protected against various external attacks that are also increased. These attacks such as malware, viruses, or attack that take data and change the data must be considered, especially hackers who often make some companies go out of business

because of their actions. Losing customer data can destroy anyone's business reputation, alao financial losses. Big data helps in implementing a system that can maintain the security of the data properly.

2.2.3. Improving Customer Services

To improve customer services, chatbots can be implemented to help keep customer service available at all times and save employee budgets. With big data can provide product and service design that are in accordance with the personalization of certain customers, big data sourced from accurate data makes an analysis of what features are liked by customers and what features are liked by customers and what features they do not like.

2.2.4. Analyzing Consumers Sentiment

E-Commerce companies must prioritize the feelings of consumers when interacting with the company's business. With this can increase consumer satisfaction level. With big data that is implemented for analyzing costumer feelings and the system should do to deal with.

Big data deals with consumer sentiment, analyzed existing data and produces various solutions for business to be a head of the other competitors. Various companies spend a lot of their capital to keep their customers loyal to them.

2.2.5. Increasing E-Commerce Innovation Business innovation is very important

in order to keep up with trends that are always changing all the time. Innovation can help to analyze future market conditions and keep customers loyal to us. With big data analysis, E-Commerce can estimate the possibility that customers will act like at any given moment. This behavioral tendency is used to direct the innovations made by E-Commerce. For example, it used to be a conventional discount, now it is a ShoppePay cashback promotion or other cashback. Therefore this innovation is very important for E-Commerce to stay aware of consumer behavior in shopping all the time.

Big data's tools can be used to fulfill the above strategy is "whatagraph". Whatagraph can connect many complex data sets and analyze them in real-time. This means that various improvements to internal operations or user experience can be made instantly. Big data in E-Commerce is growing bigger everyday. E-Commerce business can take advantage of these data resources to increase customer satisfaction level in E-Commerce shopping environment. Whatagraph is one of the best big data tools that can meet all the needs of big data analytics in the scope of E-Commerce.
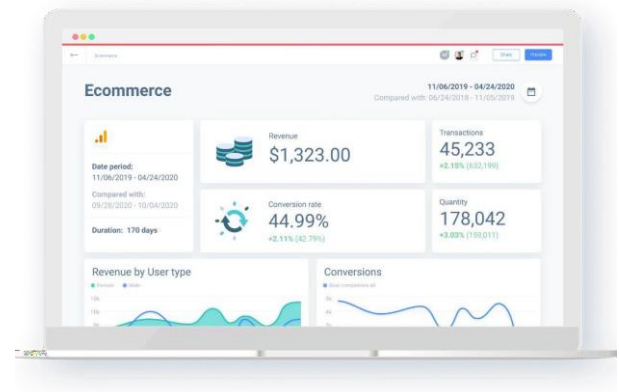

Figure 2. Whatagraph big data analytics (sumber: www.whatagraph.com)

3. CONCLUSIONS

Modern e-commerce still has several obstacles, which is user experience constraints, the low level of user experience will make the e-commerce business lose users. The right solution to this problem is to apply big data technology in all E-Commerce systems.

Processing of user-generated data can make consumer personalization more precise, increase security, and make customer service faster and more efficient so that the end result will encourage user satisfaction levels.

Important points:
1. The application of big data can produce to a new trend in the E-Commerce business.
2. The application of big data in E-Commerce increases user efficiency.
3. Big Data encourages user experience by implementing user personalization, recommendation systems, and improving customer service in E-Commerce.
4. E-Commerce business requires big data technology to operate its wide market segment.
5. User experience can increase the level of customer satisfaction which is one of the important factors in the E-Commerce business.
6. User experience is increasing rapidly with the existence of big data that will take advantage of the abundant data resources in the E-commerce environment.

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