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The Effect Of Big Data On Smart Mobility Application For Company Business In Integrating Community Habits

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Abstract: The role of data is very important especially entering the era of data explosion or "Big Data". Therefore, parties capable of processing and utilizing large, rapidly changing, varied, and complex data, can benefit greatly. Referring to the great benefits that Big Data technology can offer, it is interesting to see how far Big Data technology is being used in Indonesia, especially in the field of transportation that is so significantly transformed based on IOT, and what are the benefits to a company's business interests. It is expected that the results can provide information and inspiration so that the implementation of Big Data technology in Indonesia can be wider.

Keywords*: Big Data, Smart Mobility, Technology, Online Transportation*

Introduction

Over time, technology is growing and facilitating activities in various fields, especially in mobilizing communities from one place to another.

In the last few years, the world of transportation in Indonesia transformed into a digital base with the presence of an application-based online transportation model such as Gojek, Grab and Uber. Basically, the service is the same as a conventional motorcycle taxi, but the difference is, Gojek, Grab and Uber can be ordered anywhere and anytime through the application on the phone. Various convenience and convenience provided by this online motorcycle taxi makes people more enthusiastic about using his services.

As the community grows to online motorcycle taxis, the more data they get into the application. Where the first time to download this online motorcycle taxi application to the smartphone, the user must register the identity, phone number, email address, and so forth. This data is then the assets used by the company, which is then called Big Data. What is the purpose of this online motorcycle taxi company to store so much data and what are the benefits in the business?

Consumer data can be used by those who intend to conduct market research, promotions, and even political research. Of course, if you need such data, it is not easy. Compared to doing their own research, it would be more efficient to utilize data already owned by the data bank. And this Data Bank is Gojek, Grab and Uber.

Through Big Data that contains the data habits of application users, online Ojek companies, especially Gojek, which is now growing so rapidly in its line of business, viewing and utilizing data related to the behavior and interaction of their users. Where later the data is processed for information leading to better decision making and business strategies.

This study aims to determine the effect of Big Data on Online Motorcycle Application (smart transportation) in integrating public habits for corporate business purposes.

1. LITERATURE REVIEW

In this study, the author will focus on the use of Gojek applications only.

2.1 Data

According to R. Kelly Rainer and Casey G. Cegielski, data is an element that describes something or event or activity or transaction, which is stored but not meant to convey a special meaning. [1]

According to Thomas Connolly and Carolyn Begg, data is one of the most important components

in the DBMS that comes from the end-user's point of view. Data is useful as a bridge connecting the machine with the user. [2]

Based on the above understanding, the data is the most basic things required by the company that can be obtained from the day-to-day operational processes as well as external sources that will be processed according to the wishes of the company.

2.2 Big Data

According to Dumbill, Big Data is data that exceeds the capacity process of existing database system censorship. The data is too large and too fast or incompatible with the existing database architecture structure. To get the value from the data, it must choose an alternative path to process it. [3]

Based on the above understanding, it can be concluded that Big Data is data that has a large volume, so it cannot be processed using traditional tools and usually have to use new ways and tools to get value from this data.

2.3 Smart Mobility

According to Rudolf Giffinger, Christian Fertner, Hans Kramar, Robert Kalasek, Nataša Pichler-Milanovic, Evert Meijers. Smart Mobility drives people and deliveries while improving the economy, environment and human resources by emphasizing safe and secure accessible multi-modal travel and operating at an appropriate speed. [4]

In other words, Smart Mobility is a concept of technology utilization in the field of transportation in a sustainable manner by minimizing the social and economic impacts and potential driving accidents.

2.4 GOJEK

GOJEK is a social-tech enterprise that aims to improve the welfare of workers in various informal sectors in Indonesia. GOJEK activities are based on 3 basic values: speed, innovation, and social impact. [5]

Vision:

Helping to improve the transportation structure in Indonesia, providing convenience for the community in carrying out daily work such as document submission, daily shopping, using courier service facilities, and welfare the life of motorcycle taxi drivers in Jakarta and Indonesia in the future.

Mission:

1. Make PT Gojek Indonesia as the fastest transportation service in serving the needs of the people of Indonesia.
2. Make PT Gojek Indonesia as a reference for the implementation of compliance and good transportation structure governance by using technological progress.
3. Increase awareness and responsibility towards the environment and social.
4. Providing excellent service and value-added solutions to customers.

4. RESEARCH RESULT

4.1 Data Collection

This section explains how Gojek collects consumer data through consumer registration on the application and processes it through cloud computing.

Here is the process of inputting consumer data into the Gojek application: [6]

- Install the Gojek app on the Play Store Android device or App Store on your phone.

Figure 1. Download the app in the play store

- After that, register the data yourself in this application. This can be done by opening the Gojek app and then selecting the "Settings" logo on the top right of the screen.

Figure 2. Gojek app view

- Then chose *"SIGN UP"*.

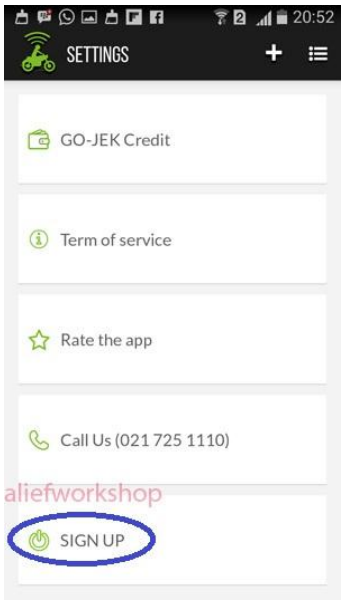

Figure 3. Gojek registration view

- Then fill in the necessary data. If so, select the logo "Submit" which is located above the words "SIGN UP".

Figure 4. Display data filling

- After that there will be a SMS containing verification code that is sent to the registered mobile phone number.

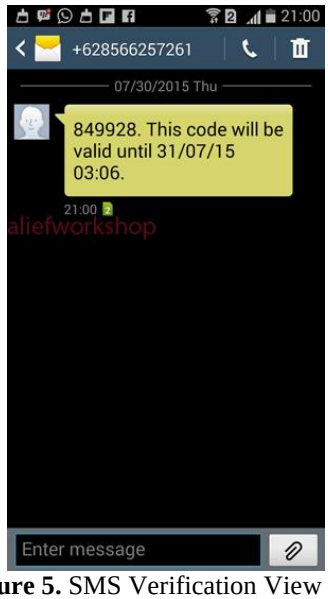

Figure 5. SMS Verification View

- Enter the verification code as shown below and select the "Submit" logo located above "SIGN UP". Registration complete.

4.2 Classification of Information Systems Used

Information Systems is a combination of information technology and the activities of people using the technology to support operations and management. In a very broad sense, the term often used information system refers to the interaction between people, algorithmic processes, data, and technology. [7]

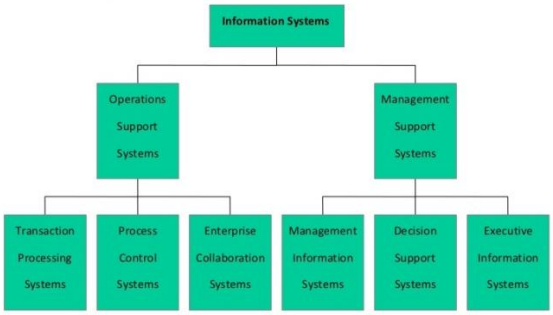

Figure 6. Classification of Management Information Systems

Figure 7. Information System Components

The classification of information systems consists of two types, namely the operating system and management system as shown in Figure above.

Here is the Figure diagram of the information system at Gojek : [8]

Figure 8. Gojek Information System

Information Systems for Business Operations

1. Transaction processing systems

Payment system Gojek entered into the Transaction Processing System, where the information system serves as a regulator of the flow of in and out of transactions that occur in the shop. Transactions here are included in the calculation of travel expenses, the addition of what credit credits when the customer increases the deposit amount and the reduction of the amount of credit because it is used to pay for the mock service. Book orders also include TPS, in which there is collection of information from users such as the determination of initial location and destination, and other forms.

2. Process Control Systems

All booking process / booking is part of information system where steps are done in stages in accordance with the SOP that has been determined. This is a function of the Process control system.

3. Enterprise Collaboration System

To facilitate coordination and exchange of information on the company's internal, Gojek connects all branches in different regions into a network. As for creating the convenience of its own customer, Gojek provides information about drivers or other service successors, both name, photo, and vice versa, the driver knows the name and no HP costumer, so that customer and driver can communicate directly.

Information Systems for Management Decision Making

1. Management Information Systems

Service monitoring and Customer relationship management is a form of information system on Gojek that allows the management to get special data, eg statistics and data orders and transactions from users, or the performance of drivers or other service successors.

2. Decision Support Systems

Specific data in the information system gained from previous data collection becomes the Gojek manager's reference as a decision material for centralizing or expanding the business, determining and recruiting drivers or new service successors, as well as developing services.

3. Executive Information Systems

In the EIS, Gojek executives use information systems to define policies for overall improvement of firms, such as IPO or IPO offerings for faster growth potential, cooperate with other companies, and analyze competitors and make policies to compete.

4.3 Technology Used

In providing services, Gojek utilizes information technology, among others : [7]

1. End User Technology
   - Android Smartphone App
   - iOS Smartphone App
2. Database Technology
   - Cloud Computing
   - Smartphone Storage
3. API (application programming interface)
   - Google Maps
   - Google Place
   - Transjakarta API
   - Apotikantar API

In this journal, the author will only discuss about cloud computing only.

4.4 How Cloud Computing Works

Cloud Computing uses the Internet as the center of the data server and for data processing. This allows the user to not install in the login process to the internet, connect in some programs and run the application. Here are the steps of Cloud Computing System at Gojek ; [9]

1. Instructions or instructions from users and data storage media will be stored virtually using the internet connected network.
2. The command continues to the application server and new data is processed. As a result, in the last process there will be a different page and updated according to the command. This is what will be seen by users where then consumers will also feel the benefits. A simple example is like using email on Gmail or Yahoo apps. Users do not have to download special software to be able to use the service because all data located on several different servers has been integrated in general or global.
3. All user and software memory are not located on the computer but is integrated directly by using a cloud system with a computer intermediary and with a connection or internet connection.
4. In the distribution of related data and the main line, the internet is a factor that is most important and must exist.

4.5 Big Data Benefits in Integrating Consumer Habits for Business Gojek

Gojek has a special team to manage their Big Data. Where this task is submitted to the division Business Intelligence in which contains people with good data analysis capabilities. [10][11]

Business Intelligence at Gojek Indonesia oversees building the foundation of the data. That data is everything that comes from Goat's back-end system like location, user profile, partner profile, transactions, and everything can be data from Go-Ride to Go-Tix.

The task can create a tool (tools) so that certain data can be accessed and used by other divisions. Business Intelligence provides tools for Go-Food teams to find out what types of food or merchants are more crowded in the user's order. Details of the merchant can be randomized as to how many orders and transactions. All can be sought self-service by Go-Food team.

This also applies to the driver partners who often pick-choose orders. For example, there are drivers who always cancel the order that will be delivered to the road A. Then most likely future drivers will not get orders again into the street.

All user-initiated interactions are raw data they can find in Big Data. Gojek is a company that has many users, which must have raw data in large quantities. The data is then processed and analyzed to be useful information for divisions and companies.

4.6 Business Development Project with Big Data

Information and insights gained from Big Data's processing are not only used for optimizing existing Gojek business, but also opening up opportunities to create new businesses. Duck also collects data from their app users. Gojek knows what his user profile is and where they are traveling. [12]

Such data could encourage new business models, such as food messaging services or Go-Food. Gojek who initially only provides transportation services (Go-Ride and Go-Car) see the trend of destination destinations related to culinary users. From the data they get information and insight (insight) to create an inter-food messaging service such as Go-Food.

From here Gojek sees user profiles with frequently consumed food types or destination locations frequented by users. The later data that contains this behavior and user activity opens the possibility of a new business model.

4.7 Challenges in Big Data Utilization

The challenges that may occur in the utilization of Big Data, among others : [13]

1. Quality of data related to integrity and data irregularity. Data can be sourced from both internal and external organizations, so its integrity is not always guaranteed, in terms of truth and accuracy can be accounted for. Similarly, not all data is structured and, therefore, it becomes not easy to understand. Worldwide, unstructured data volumes are estimated at 80% of total volume. Cuitan via Twitter is an example of unstructured data.
2. Data fragmentation. In most organizations, data is fragmented. Each department or section and business unit stores its own data. No department specifically handles overall data management and ensures its truth, consistency, and novelty. This fragmented data has the potential to deter the user from understanding the complexity of the problem. The results of research conducted by Economist Intelligence Unit in 2012 show that data fragmentation is the biggest challenge (57%) facing the organization: too many silos so that data is not accommodated centrally.
3. Infrastructure. Big data is too complex to collect, store, and understand. Big data management requires infrastructure, storage, wide bandwidth, computer devices, and so on with varying workloads. The amount of infrastructure you need also varies, sometimes a lot, at other times slightly, depending on need. Meanwhile, building its own infrastructure requires a high cost.
4. Platform and application challenges. Because big data analytics is becoming a trend, it is not surprising that many information technology companies are involved in developing the necessary tools, both in the form of platforms and applications for analysis. Some experts warn that some of the available devices have not

been very mature, even relatively new. Therefore, carefulness in choosing the platform and application most appropriate to the needs of users, including considering the large budget allocated for big data analytics.

5. Brainware. Users need people who are skilled in analyzing big data. Users need not only business analysts and people who are able to operate the infrastructure and applications, but users also need scientist data to understand the results of big data analytics. Users need people who master statistical algorithms and visualization tools. They exist, but the numbers are still small. Lack of skilled people in data analysis can be a serious challenge.
6. Organizational culture. Is your organization relatively adaptive to change and innovative to try new things? The challenge faced, in this context, is that senior management often does not consider big data as a valuable strategic asset to the organization.

5. CONCLUSION

With Big Data that contains the behavior of app users, Gojek sees and utilizes data related to their users' behavior and interactions. Where later the data is processed for information leading to better decision making and business strategies. With Big Data, the insights and information gained are not only used for the optimization of existing businesses, but also the opportunity to create new business.

Gojek itself has grown very rapidly to date since it was founded in 2010. Proven with this growth makes Gojek now worth more than $ 3 billion and into the list of 50 companies that changed the world of Fortune magazine.

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