

## ANALYSIS OF THE DEVELOPMENT OF ONLINE TRANSPORTATION IN INDONESIA IN ERA 4.0 WITH DESCRIPTIVE RESEARCH METHODS

<sup>1)</sup> Fidya Nur Styaningsih <sup>2)</sup> Yardan Widyadhana Riyadi Putra <sup>3)</sup> Wiyan Herra Herviana  
<sup>1)</sup> Universitas Negeri Semarang <sup>2)</sup> Universitas Negeri Semarang <sup>3)</sup> Universitas Negeri Semarang  
<sup>1)</sup>[yardanwidyadhana@students.unnes.ac.id](mailto:yardanwidyadhana@students.unnes.ac.id), <sup>2)</sup>[fidyastya932@students.unnes.ac.id](mailto:fidyastya932@students.unnes.ac.id),  
<sup>3)</sup>[wiyanherra@students.unnes.ac.id](mailto:wiyanherra@students.unnes.ac.id)

### Abstract

*At the time of the 4.0 revolution, technology is developing rapidly, and the progress is significant. It can encourage replacing previous technology with the development of many innovations that have sprung up. The online transportation industry is growing at a breakneck pace. Current technological developments are the reason researchers analyze the development and progress of the online transportation industry in the current 4.0 revolution era because online transportation is the first company to progress very rapidly from time to time. This research uses a descriptive method. Revolution-era 4.0 innovation is now needed in all industries. Even disruptive Innovation plays an essential role in the online transportation industry. To continue to develop, compete, and survive in the industry. Everything is still possible in a creative industry like this.*

**Keywords:** 4.0 era, online transportation, technology

### INTRODUCTION

The transportation industry is currently experiencing reasonably rapid development. The number of cars, buses, trucks, and motorcycles increases every year. Motorcycles show the highest growth rate of the four modes of transportation annually. From 2015 to 2016, the number of motorcycles increased by 6,268,815, or 6.34 percent, according to the Central Statistics Agency (Badan Pusat Statistik, 2018).

The increase in congestion on roads, especially in urban areas, goes hand in hand with the rise in motorized vehicles. To maintain high population mobility, efficient vehicles are necessary to be a solution to prevent and reduce traffic jams. Traffic congestion, pollution, and traffic management problems are common

in urban areas.

According to (Munawar, 2007) Congestion often harms the driver himself, as well as the economy and the environment. Traffic jams cause stress (stress) for drivers. There are also negative economic consequences such as lost time due to extended driving periods and increased costs of transport work (petrol and engine maintenance) due to frequent stops. In addition, it also harms natural spaces, such as increasing air pollution with carbon monoxide and increasing noise (noise) from vehicles. The brake and gas pedals cause air pollution and additional noise from the roar of the car. Drivers are more likely to use the horn to relieve stress. This causes noise.

Parking problems are another traffic problem that often occurs in urban areas, not just metropolitan cities. There is no

parking space around the market, the shopping center parking lot is very small, and only a few four-wheeled vehicles can be parked. Even the parking space provided by the cinema does not allow four-wheeled vehicles to be parked.

Transportation is no less important. Buses and minibusses have become mainstream in local public transport and still feel uncomfortable, unsafe, and inefficient. High-speed local transport, such as trains, does not work well on local public transport. In big cities, public transport congestion often occurs. Public transportation users are still limited to the lower middle class. Most people still don't want to use public transportation because the tranquility of public transportation is still low compared to private transportation. At the same time, the Modern Public Transport System (SAUM), as an integral part of sustainable urban development, is in the design and design phase and is still the mainstream of government policies and urban development decisions.

System transportation is sustainable and balanced. The current lack of SAUM as an "urban" fixture, and thus the lack of a valuable alternative for travel makers, justifies the inefficient use of low-occupancy private cars. Over the last few decades, long queues and traffic jams in all corridors and city centers have wasted fuel energy and air pollution due to no meaningful "breakthrough" steps and urban travel makers.

Several companies have been established to provide online transportation applications to meet people's needs. According to (Setyawatiwahyu, 2017), transportation is widely used to transfer goods and people

from one location to another. Online transportation has been very well received since its inception because it is one of the discoveries in the development of software-based technology and is the best invention today.

With the poor order in Indonesia's transportation system, innovations in online transportation have emerged. Several large companies such as Gojek, Grab, and Uber compete to start an online application-based transportation companies. Online transportation is still a solution for a poor transportation system but a problem for those who rely on transportation services that don't use technology. There are several advantages of online transportation systems, so many choose to switch from traditional transportation habits to online transportation and security. But over time, the emergence of online transportation will change offline transportation methods, such as taxis, motorcycle taxis, and buses, which will cause social jealousy in the future.

Online transportation is often cited as the cause of the decline in the income of traditional drivers. Drivers of conventional vehicles held large demonstrations to protest the existence of online vehicles such as Gojek, Uber, and Grab. So what's wrong with online transportation applications? Certainly not, because technological developments are inevitable for us in today's life.

Previously, if you wanted to use your preferred mode of transportation, you had to make a manual request or contact a call center. But now, only with the help of Android-based mobile phones can people choose from various transportation options. Using this application, the general public can estimate travel costs and driver and vehicle details listed in the application they use to be confident in the application you can use. I'm waiting.

He has currently pioneered the transportation method from offline to a more modern means of transportation via the internet. According to (Khasanah et al., 2016), Innovation is an organized activity to change something (product, idea, information, technology, etc.), a valuable resource for the target market. These properties consist of replacement, rotation, development, transition, deletion, and repair.

This is also supported by the fact that the world is entering the Industrial Revolution era, demanding greater production flexibility and better service to consumers (Prasetyo and Sutopo: 2018). The Industrial Revolution 4.0 era changed various sectors into simpler and more complex sectors using automated and digital technology (Meranti and Irwansyah: 2018). This creates confusion in various human activities, not only in the realm of technology but also in economic, social, and political terms (Prasetyo and Trisyanti: 2018). The birth of online transportation services is the impact of economic turmoil.

*Disruptive Innovation* is defined as disruptive innovations or disruptive innovations. Along with technological advances, it hinders the sense that the emergence of new technological updates will interfere with existing technologies (Hamid, 2017).

In the 21st century situation (Amajida, 2016), technology has successfully spurred the development of a digital society. People can carry smartphones and tablets anytime because of their convenience. Today's society is also connected to the Internet, and digital devices are almost everywhere connected to the Internet.

The high number of internet users in Indonesia benefits the advancement of

the digital business world, one of which is online transportation. The existence of online transportation has affected social transition. These changes can be seen at three levels: the individual, inter-individual, and community levels (Widiyatmoko, 2018).

Online transportation, of course, uses internet access as the primary condition for its use. But apart from that, this Android-based online motorcycle taxi transportation certainly utilizes the GPS function as a support service that has advantages in navigation accuracy and location identification (Amajida, 2016). The GPS feature allows the general public to know the direction, time, and distance that GPS can use to track the ordered online motorcycle taxi fleet and drivers.

Nadiem founded Gojek Indonesia in 2011. Nadiem developed Gojek, a modern form of online motorcycle taxi pickup service. At first, Ojek, which was initially only a motorized vehicle, became an efficient means of transportation. This software allows users to order motorcycle taxis online via their smartphones. Gojek is known as a professional motorcycle taxi. Every Gojek driver is equipped with an Android-based cellphone that allows the driver to communicate with users and find the best pillion transportation route.

Online transportation in Indonesia is growing rapidly from time to time, so researchers are interested in analyzing the development of the online transportation industry in the disruptive era (Aziah, A., & Rabia, P., 2018). Many data analysis techniques can be implemented with several methods, one of which is forecasting (Budiman & Ifriza, 2021).

According to the statement above, the formulation of the research questions is:

1. How is the progress of the online

transportation industry in Indonesia?

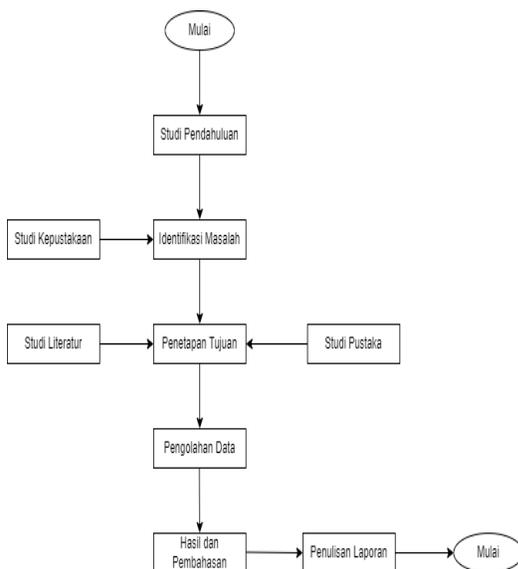
2. What is the impact of Innovation 4.0 on the progress of the online transportation industry in Indonesia?

The aims of this study are to:

1. Study the progress of the online transportation industry in Indonesia.
2. Studying the role of Innovation 4.0 in advancing the online transportation industry in Indonesia.

Existing business processes can be changed and improved (Budiman, Subhan, Efrilianda, 2021). Business changes for the better will result in more added value (Khoirunnisa et al, 2021). Better changes can be made, one of which is to motivate users and implementers to jointly improve the existing business (Budiman, Akhlis, 2021)

## RESEARCH METHODOLOGY



This study applied descriptive research methods. This study aims to describe how the development of the

Indonesian online transportation industry, especially Gojek, clarifies the role of Innovation 4.0 in the industry's progress.

While the data collection method used by researchers in this study is the method of library research using data collection or literature research to obtain a basis related to the problems studied in this study.

The type of data obtained from this research is secondary data, namely data from various references and internet sites to support other data.

## RESULTS AND DISCUSSION

### The Development of the Online Transportation Industry in Indonesia

The era of internet progress when population growth is very fast is very necessary to answer the community's needs. The presence of online transportation services that utilize the internet has impacted the community in all activities quickly and efficiently. An example of a business that is currently progressing is the transportation service business with two-wheeled vehicles, also known as motorcycle taxis. Previously, sole ownership managed motorcycle taxis conventionally. There is a business field that provides public transportation services and is managed competently. (Rifaldi, 2019).

The incident of technological progress that is most often discussed and discussed is developing technology towards a modern transportation business by involving sophisticated applications in cyberspace. Today's society is very easy with this means of transportation, especially for ordering (Anindhita, 2016)

Today the development of technology is increasingly rapid, and this technological development has provided

many revolutions in various fields in Indonesia. One of them is the transportation industry. There are many companies, innovations, and even new technology-based business models. The business competition, a challenge for today's business, is not only domestic but also competing with foreign competitors from abroad, especially from the ASEAN Economic Community (AEC).

Companies are constantly innovating to create attractive business models through simple and impressive services with new technologies—an example of today's technological advances in the online motorcycle taxi facility. Although transportation has been around for a long time, transportation has become a phenomenon when transportation and existing technical capabilities are contrasted. Thus online transportation is born.

#### **At a Glance About the Development of the Online-Based Transportation Industry in Indonesia**

At the end of 2014, even though Uber and Grab Taxi entered the Indonesian market, there was no sign that online motorcycle taxi services might be a significant innovation developing at that time. Due to the controversy over Uber's presence in Indonesia, the transportation business has become very popular. However, the Indonesian people did not know the term online motorcycle taxi.

A year later, with the release of the Gojek application in January 2015, online motorcycle taxis quickly became the most popular Innovation in Indonesia. In 12 months, Gojek has evolved from a mobile application to a large-scale service, followed by Grab Taxi, which provides Get Bike services.

Online transportation services

prominent and widely used today are online transportation services from the Go-Jek and Grab companies. The services often used are Go-ride and Go-car for the Go-Jek company and Grab-bike and Grab-car for the Grab company (Rachmatunnisa, 2016).

In early 2016, the competition was getting more challenging. At that time, Gojek developed its business by creating Go Food services and creating takeaway service functions. Not only that, but Gojek also has a Go Vehicle service, and in 2016 it innovatively launched an online payment function called Gopay. Go-Pay is a digital wallet feature that can be used for payment transactions for various types of features or services provided by the Go-Jek application on a non-cash or cashless bases, such as Go-Ride, Go-Food, Go-Mart services, and other features (Rahayu, 2018). Currently, Gopay balances can be top-up in various ways, from bank transfers to direct donations to drivers. In 2016, Gojek also acquired a payment service called PonselPay to strengthen its position as a payment method for Gopay.

On the other hand, Gojek continues to improve its old services, including the Go-Send service. Gojek collaborates with other Indonesian fire-ups, such as Tokopedia and Bukalapak, to deliver ordered goods from merchants to consumers. Not only that, but Gojek also works with the LINE Talk application, allowing LINE users to order Gojek directly from the application.

One form of progress in the Industry 4.0 era is the growing development of online-based transportation (TBO). This increase in TBO can lead to a debate between many parties (Astuti, Kumayah, and Agustina 2020). Thousands of public transport drivers who believe online transportation services reduce their income

finally staged a demonstration in early 2016. Protests occurred not just once but even a week later. As a result, the government was forced to take immediate action. One of them, the government asks drivers of online vehicles to change the name on the STNK to the name of a company or cooperative. But in the end, the government then revoked the regulation.

Gojek has changed the minds of frustrated drivers and admitted that their transportation services are low-income. Finally, they saw this online transportation service as an opportunity and then worked with them. The emergence of collaboration between Blue Bird and Gojek shows this. The partnership gave birth to smart innovations that allow users to order Blue Bird taxis through the Gojek application.

As a growing startup company in Indonesia, Gojek continues to impact. Emerging services such as BluJek, TopJek, and LadyJek tried to catch up to the triple success and are now not even visible on the streets of the capital. Seen from the virtual world, this service is now changing its focus to the logistics sector. Gojek continues to work and become the best domestic service.

Unlike its competitors, Gojek is a startup that provides most services. Gojek is the most agile service in many cities in Indonesia. It should be noted that although this online-based transportation business has attracted a lot of controversies, it is a breakthrough in the transportation sector. However,

fast technological developments cannot be stopped and in the future new technologies can be reliably applied to various aspects of life. Therefore, this online transportation business has received a good response and needs

further development as part of innovation 4.0.

### **The Role of Innovation 4.0 on the Development of the Online Transportation Industry in Indonesia**

Judging from recent developments, the trend of applied online companies is fascinating. In addition, this development is related to the existence of Innovation 4.0 in the online transportation industry and its development role in Indonesia.

Gojek, Grab, and Uber are currently part of the three most influential startups in the online transportation sector in Indonesia. They must turn their business into a startup by leveraging Innovation and solving social problems. As a result, these companies disrupt existing markets or industries, even creating new industries. Currently, the competition between the three companies is quite tight. From the user data of online traffic applications, the results of the analysis are presented in graphical form, as shown below,



Image: App Usage Data  
Online-Based Transportation

Apart from the three startups mentioned above, local startups are similar to those mentioned above, such as BlueJek, LadyJek, TopJek, and OjekSyaRI. However, many of these startups are dormant due to competition and capital issues.

Various factors prevent them from

competing, for example, a less user-friendly user interface, more competitive drivers, more bug-causing applications, and corporate subsidies to drivers and users that will have a lower value than the competition. Of these various factors, the most important is the company's provision of driver and user subsidies. Providing this subsidy is a boon for both drivers and users to increase their loyalty to the company. The provision of subsidies to users will be reflected in the user fee annex.

In terms of profitability, there is a difference between the profitability of startups and traditional industries. Unlike traditional business models, startup business models cannot be achieved overnight. The conventional business model is still a turnover minus the HPP, resulting in a net profit. Compared to the startup business model that targets the number of market or application users to sell the company value and stock valuation, this will be a higher value in the future.

By looking at the evolution of online transportation outside of it and the fantastic old local brands, new local brands are constantly trying to research and innovate to compete, grow and survive with big companies. One way is to control specific markets that large companies have not had time to think about or focus on. Currently, the big players are busy becoming local champions in their respective regions. As market players in the capital are currently more concerned with competition and subsidies than in other regions, many users and drivers in other regions no longer receive massive subsidies.

In addition, Gojek's competitors are targeting Uber and Grab through specific markets or niche markets.

Innovate various service functions from. SEND, and others are innovations in the 4.0 era that Gojek has implemented to develop its business. Gojek is a solution to people's problems in providing safe, comfortable, profitable, and value-added services. Therefore, it is appropriate that the number of Gojek application users increases every year.

Innovation 4.0 is an essential innovation for all industries, both developing and developing, including the online transportation industry participating in this 4.0 innovation. Industry 4.0 plays a significant role in the growth, competition, and survival of the industry.

Anything can happen in today's creative industry. Major players, who have become market leaders with large capitals, can compete with other players who are very disruptive and provide the value users need.

## CONCLUSION

To reduce the high number of traffic jams, an efficient means of transportation is needed to avoid or minimize traffic jams.

To meet the community's needs, several companies have been established that provide online freight transportation applications to meet the community's needs. Online transportation emerges in the context of Indonesia's disorganized transportation system. The preferred mode of transportation for people who have never been online before, is now online and more modern. This is closely related to the impact of the current 4.0 innovation.

Innovation 4.0 is very important for all industries, including the online transportation industry, with innovation 4.0 playing a significant role. To continue to develop, compete and survive in the industry.

## REFERENCES

- Khoirunnisa, O., Pertiwi, D. A. A., Dianti, E. N., Fattah, A. M. M., & Budiman, K. (2021). Improvement business process model and notation on the drink distribution industries using six core element. *Journal of Soft Computing Exploration*, 2(2), 99-106.
- Budiman, K., & Akhlis, I. (2021, June). Changing user needs and motivation to visit a website through ad experience: a case study of a university website. In *Journal of Physics: Conference Series* (Vol. 1918, No. 4, p. 042008). IOP Publishing.
- Budiman, K., & Ifriza, Y. N. (2021). Analysis of earthquake forecasting using random forest. *Journal of Soft Computing Exploration*, 2(2), 153-162.
- Budiman, K., Subhan, S., & Efrilianda, D. A. (2021). Business Process re-engineering to support the sustainability of the construction industry and sales commodities in large scale transaction during Covid 19 with integrating ERP and Quotation System. *Scientific Journal of Informatics*, 8(1), 84-91.
- (Amajida 2016) Amajida, Fania Darma. 2016. "Digital Creativity In Urban Risk Societies: The Study of 'Go-Jek' Online Ojek in Jakarta." *Information* 46(1): 115.
- Munawar, A. (2007). Sustainable transportation development. Inaugural Speech of Professor of Faculty of Engineering UGM.
- Khasanah, N. A., & Sugiati, M. A. (2016). Strategi Desain Call Jack dan Implementasinya Pada Media Visual. *E-Proceeding of Art and Design*, 3(3).
- Meranti, & Irwansyah. (2018). Digital Public Relations Study: Transformation and Contribution of Industry 4.0 to The Public Relations Strategik. *Journal of Information and Communication Technology*, 7(1), 27-36.
- H. Prasetyo, and W. Sutopo, "INDUSTRY 4.0: STUDY OF THE CLASSIFICATION OF ASPECTS AND DIRECTION OF RESEARCH DEVELOPMENT," *J@ti Undip: Journal of Industrial Engineering*, vol. 13, no. 1, pp. 17-26, Mar. 2018. <https://doi.org/10.14710/jati.13.1.17-26>
- Prasetyo, B., & Trisyanti, U. (2018). Industrial Revolution 4.0 and the challenges of social change. *Science and Technology Journal of Proceedings Series*, (5), 22-27.
- Aziah, A., & Rabia, P. (2018). Analysis of the Development of the Online Transportation Industry in the Era of Disruptive Innovation (Case Study of PT Gojek Indonesia). *Horizons*, 18 (2), 149-156.
- (Rifaldi, 2019) Rifaldi, Kadunci, and Sulistyowati. 2019. "The Impact of Gojek's Online Transportation Service On Customer Satisfaction in Students /I of Jakarta State Polytechnic Commercial Administration." *JIM UPB (Scientific Journal of Management of Putera Batam University)* 7(1): 1.
- (Hamid, 2017) Hamid, Edi Suandi. 2017. "Disruptive Innovation: Benefits And Shortcomings in Context."

- National Seminar on Disruptive Innovation: Economic Studies:* 1–20.
- (Setyawatiwahyu, 2017) Wahyusetyawati, Enda, and Ng. 2017. "The Dilemma of Online Transportation Arrangements." *Journal of RechtsVinding* (April): 1–4.
- (Rahayu, 2018) Rahayu, Rurie Wiedya. 2018. "Effect of Benefit Perception, Ease Perception, Risk Perception, and Technoloi Innovation On GO PAY Application from PT. GOJEK Indonesia (Study on the community in Sleman Regency da n Yogyakarta City)." Islamic University of Indonesia: 101.
- (Widiyatmoko, 2018) Widiyatmoko, Faris. 2018. "Dynamics of Online Transportation Policy." *Journal of Urban Sociology* 1(2): 55.
- (Anindhita, 2016) Anindhita, Wiratri, Melisa Arisanty, and Devie Rahmawati. 2016. "PROCEEDINGS OF INDOCOMPAC National Seminar ANALYSIS OF THE APPLICATION OF APPROPRIATE COMMUNICATION TECHNOLOGY IN THE OJEK TRANSPORTATION BUSINESS ONLINE (Study on Gojek Business and Grab Bike In The Use of Appropriate Communication Technology To Develop Transportation Business)." 2: 712–29.
- (Astuti, Kumayah, and Agustina, 2020) Astuti, Ramlah Puji, Siti Kumayah, and Agustina Agustina. 2020. "Dynamics of Online-Based Transportation In the Era of the Industrial Revolution 4.0." *Science: Journal of Management and Business* 12(2): 216.
- (Rachmatunnisa, 2016) Rachmatunnisa. 2016, December 5. Choose Ojek Online Mana, Go-Jek or Grab? Detikinet.
- Central Bureau of Statistics. Development of The Number of Motor Vehicles By Type (2018).