



PROBLEMS OF THE IMPACT OF MODERNIZATION OF INDONESIA'S PUBLIC TRANSPORTATION EQUIPMENT SYSTEM

By
Tamrin Lanori¹, Bambang Heri Supriyanto²
^{1,2}Universitas Moestopo
Email: Heribambang54@gmail.com

Article Info

Article history:

Received Nov 06, 2022
Revised Dec 18, 2022
Accepted Jan 26, 2023

Keywords:

Problems,
Modernization, Means
Of Transportation

ABSTRACT

The problem with the modernization impact of Indonesia's public transportation system, the author chose this title because until now the modernization of the public transportation system in Indonesia, mainly with regard to the public transformation mode system, is still lacking due to several factors. The main problem in the article is to discuss how developments are, the factors that support the development of the modernization of the transportation system, efforts to overcome the adverse effects of modernization of the transportation system. The conclusion from the discussion is that the modernization of the transportation system makes a large contribution to the convenience of transportation, the factors that support the development of the modernization of the transportation system, namely the economy; geography, politics, defense and security, technology, competition and external (external) factors that affect the transportation mode system in Indonesia, including laws or government regulations, the influence of public service users, efforts to overcome the negative effects of modernizing the transportation system by implementing eco-principles - efficiency in meeting fuel needs, reducing motor vehicle exhaust fumes. The methodology used in this research is literature review research, which will use a descriptive research type with a literature approach, based on the existing reality.

This is an open access article under the [CC BY-SA](https://creativecommons.org/licenses/by-sa/4.0/) license.



Corresponding Author:

Bambang Heri Supriyanto
Universitas Moestopo
Email: Heribambang54@gmail.com

1. INTRODUCTION

For the state, the transportation system is one of the elements that plays an important role in the context of the welfare of its people. Transportation in general is the activity of transporting or moving something from one place to another. The transportation system, be it land, sea or air, which is the lifeblood of the development of a region, is always closely related to technological advances. Like most countries.

Indonesia as a country that has the Pancasila ideology philosophy as a country that has a demand for the advancement of technological development in all areas of life which is increasing rapidly which has a foundation for guiding people's behavior in all of life in order to achieve the goals aspired to together as a form of social integration. (Kaelan, 2002, 49)

Technological developments and innovations in the field of modern transportation modes because humans use their minds to find the problems they face to create comfort, the more needs for satisfying needs, both primary and secondary needs, more and more human thoughts will emerge to find new things that did not exist before. (Sadono Sukirno, 2002, 325).

The transportation system is a very important means of supporting the successful development of a country, especially in supporting community economic activities and regional development. Integrated transportation system paradigm. (M. Solly Lubis, 2009, 15). To improve population mobility services and other resources that can support economic growth in the region to reduce the concentration of workers who have expertise and skills in certain areas as

well as to open up opportunities for trade activities between regions and reduce differences between regions so as to encourage development between regions.

Modernization of the mode of transportation system can eliminate isolation and provide a stimulant towards development in all areas of life in society, both trade, industry and other sectors evenly in all regions. The mode of transportation system has a very important role for every region, be it rural or semi-urban or urban areas in developing countries, because it provides access for people to meet their daily needs for goods and services, and improves socio-economic life.

Access to information, markets, and community and location-specific services, as well as new opportunities are all important requirements in the development process. Modernization of transportation facilities, community economic activities, community empowerment, especially in development in areas that have high economic potential will be more easily developed. The community's economic activities will develop if they have good transportation infrastructure and facilities for accessibility. Stimulating the process of interaction between regions to the most remote areas so as to create equitable development, the study of transportation systems and regional development has a wide and complex dimension of problems. (Eddy Herjanto, 2019, 51)

In the era of globalization, the mode of transportation system is one of the technological advances that is very influential in the smooth running of human transportation, whether using private cars, taxis, buses, airplanes, ships and so on, which is the result of human reasoning to make it easier for someone. reach a remote destination. (Pure Hernawati Sitanggang, 2017, 17)

Globalization in the field of transportation mode systems including cars and electric motorbikes is a form of development from gasoline power. The development of rail public transportation, Mass Rapid Transit (MRT), Light Rail Transit (LRT), and Electric Rail Trains (KRL). The emergence of many variations of transportation whose prices are affordable, so many people choose public transportation. Ease of means of travel from one place to another due to the opening of new routes. The development of public transportation which is increasingly adequate, attractive, and inexpensive, has started to attract a lot of public interest. Ease of facilities and infrastructure that support booking travel tickets by public transportation. Payment for transportation services that can be made in a non-cash manner, speeds up the payment process.

Various types of transportation equipment with special technology and capabilities, so that they can reach areas with difficult terrain. So that people can feel the positive impact of globalization in the transportation sector, making population mobility easier to do. The availability of transportation in large quantities and various types with the advantages of technology that makes it easier for humans. The cheapness of public transportation costs makes everyone get the same opportunity to travel. The quality of public transportation is increasingly adequate, so many people choose not to use private vehicles. The opening of travel routes between regions that are increasingly diverse makes it easier for residents to interact. Open up many jobs in the field of public transportation. Export-import cooperation between countries is easy because it is assisted by the transportation system.

Understanding the management of the work pattern of the transportation system is very urgent and accessible, it is required to have a broad view and also see the negative side due to the modernization of the transportation system in human life so that they have an objective point of view, if transportation services are not managed with good transportation management or not used for good purposes. (Eddy Herjanto, 2019, 1)

The modernization of the transportation mode system is a business venture that aims to make a profit and on the other hand to serve the needs of the community seen in the reality of life in everyday life. (L.M. Samryn., 2012, 61) The negative impact of globalization in the field of transportation systems creates unfavorable conditions in society. The occurrence of traffic jams in cities with dense populations, causing air pollution and noise pollution which is unhealthy for living things as well as reduced rice fields or forestry, being converted into traffic lanes, threatening environmental sustainability due to traffic development without water catchment areas which can prevent flooding, the increasingly narrow land for residential areas, the increasing demand for fuel, but the supply is decreasing and has an impact on increasing the risk of global warming.

The increasingly depleted fuel from nature is of course very impactful on future generations who cannot taste this petroleum because fuel from petroleum is a natural product that cannot be renewed, then in this case an effort is needed to overcome the impacts caused by the modernization of the system. mode of transportation on the environment. so that the writer is interested in writing a scientific paper entitled Problems of the Impact of Modernization of the Indonesian Public Transportation Equipment System.

In this case, the author of the problem formulation discusses several problems in writing this scientific work, namely as follows:

- a. How is the development of the modernization of the transportation system?
- b. Factors that support the development of modernization of the transportation system?
- c. How to overcome the bad effects of modernization of the transportation system?



In accordance with the problems posed, the research objective to be achieved is to analyze the development of the modernization of the transportation system, the factors that support the modernization of the transportation system and efforts to overcome the impact of the modernization of the transportation system.

The benefits of writing scientific papers are as follows:

- a. In order to know the development of modernization and the factors supporting the development of the modernization of the transportation system and to know the efforts to overcome the impact of the modernization of the transportation system
- b. As one of the reference materials for agencies related to the transportation system.

According to research conducted by Lyod (2002), the classification of transportation is grouped into four sub-sectors, namely: land transportation, sea transportation, air transportation, and post and telecommunications. Land transportation consists of roads, rails, rivers, lakes and crossings. These four sub-sectors are very important but of the various transportation facilities, roads are a need that requires more attention because it is a basic need for the community and also absorbs the largest development budget, both for development and maintenance purposes.

According to research conducted by Shaw (2003), the field of transportation is part of the production process. The efficiency of transportation in the form of congestion, the length of travel time, and the decrease in the level of traffic safety causes an increase in operating costs that will be directly felt by the community. Inefficiencies due to low road services occur because road capacity is no longer sufficient. Road management, starting from the construction, improvement and maintenance of roads, must be carried out on an ongoing basis. However, the road capacity itself has limitations, where the growth rate of the number of vehicles (4-wheeled and 2-wheeled) and the carrying capacity of vehicles (especially trucks and the like) is increasing rapidly and is not proportional to the growth in road capacity and carrying capacity.

In order to overcome the limited capacity of the road is the development of a transportation network system, as well as the development of a freight and passenger transport system by optimizing the role of inter- and inter-modal transportation. According to research conducted by Sulisty (2008), transportation infrastructure is a prerequisite for economic growth and can also stimulate economic activity and will ultimately increase regional economic growth. The effect of transportation infrastructure has an impact on economic growth in the region itself, but also in its neighboring regions. Economic growth will be even better if it is supported by good transportation infrastructure. The types of transportation are divided into three namely,

- a. Land transportation is all forms of transportation using roads to transport passengers and goods. Ground transportation means are selected based on factors such as vehicle type and specifications, travel distance, travel purpose, availability of means of transportation, city size and settlement density, socio-economic factors.
- b. Water transportation is a means of transportation that uses river, lake and sea media as its operational basis. Ships, barges, boats and rafts.
- c. Air transportation is the latest and fastest means of transportation. Transportation uses aircraft as a means of transportation while air or space as a route or road. Air transportation can reach places that cannot be reached by land or sea transportation, besides being able to move faster and have a straight trajectory, practically free of obstacles. Such as airplanes, helicopters, hot air balloons, and others.

Transportation equipment system infrastructure is divided into 3 aspects, namely land, sea and air transportation:

- a. Land transportation infrastructure, land transportation infrastructure including roads, bridges including parts of equipment, namely bus stops. Special trains use special lines called Rails. The rails direct the train to the place or destination station.
- b. Sea transportation infrastructure. Infrastructure for sea transportation, namely ports. A port is a facility at the end of a river, lake or ocean that is useful for stopping ships, transporting goods, moving goods or transporting and dropping off passengers.
- c. Air transportation infrastructure. Infrastructure for air transportation, namely airports or often referred to as airports. Airport is a facility for airplanes to take off and land, equipped with flight service operators and others.

Another study shows: efforts to increase highway capital in a region have a positive association with the product (output) in the region itself (the area where the highway is built). However, it has a negative association with products (output) in neighboring areas. According to research conducted by Warpani (2008), the problem of congestion in big cities really needs problem solving. Road capacity is not able to accommodate private vehicles which are increasing day by day. The research was conducted in Greater Jakarta. The purpose of this study is to find out how to solve transportation problems in big cities. The results are:

- a. To solve transportation problems in big cities, a strong management commitment to the pattern of transportation equipment systems from the central and regional governments and supported by strong leadership is needed as the first requirement that must be met by the government.

- b. Good sustainable long-term planning is needed, supported by funding for the construction and operation of mass transportation systems, for example, it is also necessary to oversee and control the progress of the plan so that it can be completed according to the time and plans made.
- c. Optimizing existing infrastructure to the maximum extent that is important is how to make maximum use of the Jabotabek rail network by improving service quality including increasing service frequency, collaborating on land around commuter train stations with developers, modern and integrated ticketing with other modes including the busway and for It is necessary to construct flyovers or underpasses to overcome the long queues of vehicles at level crossings.

Transportation equipment system infrastructure is divided into 3 aspects, namely land, sea and air transportation:

- a. Land transportation infrastructure, land transportation infrastructure including roads, bridges including parts of equipment, namely bus stops. Special trains use special lines called Rails. The rails direct the train to the place or destination station.
- b. Sea transportation infrastructure. Infrastructure for sea transportation, namely ports. A port is a facility at the end of a river, lake or ocean that is useful for stopping ships, transporting goods, moving goods or transporting and dropping off passengers.
- c. Air transportation infrastructure. Infrastructure for air transportation, namely airports or often referred to as airports. Airport is a facility for airplanes to take off and land, equipped with flight service operators and others.

Another study shows: efforts to increase highway capital in a region have a positive association with the product (output) in the region itself (the area where the highway is built). However, it has a negative association with products (output) in neighboring areas. According to research conducted by Warpani (2008), the problem of congestion in big cities really needs problem solving. Road capacity is not able to accommodate private vehicles which are increasing day by day. The research was conducted in Greater Jakarta. The purpose of this study is to find out how to solve transportation problems in big cities. The results are:

- a. To solve transportation problems in big cities, a strong management commitment to the pattern of transportation equipment systems from the central and regional governments and supported by strong leadership is required as the first requirement that must be fulfilled by the government.
- b. Good sustainable long-term planning is needed, supported by funding for the development and operation of mass transportation systems, for example, it is also necessary to oversee and control the progress of the plan so that it can be completed according to the time and plans made.
- c. Optimizing existing infrastructure to the maximum extent that is important is how to make maximum use of the Jabotabek rail network by improving service quality including increasing service frequency, collaborating on land around commuter train stations with developers, modern and integrated ticketing with other modes including the busway and for It is necessary to construct flyovers or underpasses to overcome the long queues of vehicles at level crossings.

According to research conducted by Wonni (2009), an integrated transportation system such as the Massive Rapid Transit (MRT) is a must in metropolitan cities. It is impossible for these cities to rely on private transport. One of the MRT in Jakarta is Trans Jakarta. This study discusses whether Trans Jakarta has been effective or not. The results of his research are that Trans Jakarta is not yet effective. Because there is no law enforcement support for special bus lanes and the transport capacity is still low, the human resources for officers are not evenly distributed.

2. DISCUSSION

2.1 The Development and Benefits of the Modernization of the Mode of Transportation Equipment

a. The Development of the Mode of Transportation Equipment System in Indonesia

The development of the mode of transportation system in Indonesia, including transportation routes, is also growing very rapidly. Several transportation systems developed in Indonesia, along with the distribution of national development results, include:

1. Air Mode
2. Ocean Mode
3. Land mode, consisting of:
4. Highway,
5. railway,
6. crossing transport,
7. other transportation.

According to Nasution (1996), the nature of services, operations and costs differentiate the means of transportation into five groups as follows:

1. Rail transport (rail road rail way)



2. Motorcycle and highway transportation (motorbike or road or highway transportation)
3. Sea transportation (water or sea transportation)
4. Air transportation

According to Tamin (2000), the need for transportation services is highly qualitative and has different characteristics as a function of time, purpose of travel, frequency, type of cargo transported, and so on. Transportation services that are not in accordance with the need for movement cause the transportation system to be useless. Economically, the inefficiency of the transportation system or transportation problems is a big waste.

The development of the transportation mode system in modern times is very fast, making people have to adapt to this situation. The function of transportation as a means of supporting efficient mobility also influences the level of a country's economy. The role of modern transportation in the economic field besides having a role for the effectiveness of the mobility of its users, transportation can be a vital aspect as a driving wheel for the country's economy. (Reza Pahlavi, 2022, 1)

This is because the country is so vast, a comprehensive system of transportation modes is needed to help process people's lives in any field, such as the economy, including:

1. As a means of mobility for Indonesian people; The basic role of transportation is as a means of mobility for its users, used for work, school, going to the market and others.
2. Help move goods to other areas; using modern transportation, is closely related to the overall distribution of resources throughout Indonesia.
3. Transportation as a means of price stability of goods; Modern transportation plays a role as an aspect that influences the price stability of goods. Access to transportation in a region is facilitated, so the price of goods in that region tends to be cheaper and more affordable and vice versa, because transportation has a vital role and function.
4. Improving the economy of various regions; Ease of access to transportation plays a role in increasing the economy in the region, the Indonesian government is now intensively building toll roads or highways, functioning so that access to transportation is more efficient and faster.
5. Transportation as a promotional accommodation for vacation spots; For people who like traveling, modern transportation is a vital object used. Ease of transportation to access tourist areas in Indonesia has boosted the region's economy. Such as the government facilitating access to transportation in order to develop Indonesia's economy in the tourism sector.
6. Encouraging the development of the education sector; Education is the most vital sector for a country, apart from the economic sector. Increasing the capacity of human resources (HR) is an important aspect of economic growth. Transportation that can help students to quickly graduate from school and become workers, ultimately boosting the country's economy.
7. Increasing the country's per capita income; increase in per capita income. The main reference for a country's economic growth is per capita income, there is the role of the community, import-export sales and of course access to transportation.
8. As a supporter of economic cooperation with other countries; Cooperation between countries in the economic field of the role of modern transportation so that countries work together to increase the economic welfare of their respective countries.
9. Improving the convenience of public transportation facilities; To be encouraged and required for all Indonesian people. Apart from being able to overcome traffic jams, people can also adopt a lifestyle that is disciplined and not dependent on having private transportation. If the country is free of traffic jams, the better quality of human resources will have an effect on improving the economic aspect, the government should make public transportation facilities more comfortable and safe.
10. Accelerating regional development; An example of the role of modern transportation in the economic field, regions in Indonesia are experiencing significant developments in the economic field, influencing economic development on a national scale. One of the supporting aspects is modern transportation. Economic development is of course based on relations between several fields, such as education and transportation, so economic development will be rapid.

b. The Benefits and Functions of the Modernization of the Transportation Mode System.

The purpose of organizing transportation is to provide a service that is needed by the community every day. So the mode system of modern transportation is a means that is needed by the community. Transportation economics is the science of the function of transportation in the structure and various activities of the economic system; the study of the role and function of transportation to support people's activities to meet the needs of life with the aim of realizing prosperity and prosperity.

Transportation has a very important role in supporting the economic growth of society and is the lifeblood of a country's economic development. The success of development in the economic sector must be supported by the development of a good mode of modern transportation system, in accordance with the needs and developments of the times.

The economic benefits of transportation include:

1. Movement of people; Transportation makes it easier and faster for people to move from one destination to another.
2. Transfer of goods; Transportation allows goods to be sent from production sites to other places that need these goods.
3. Maintain the price stability of goods; Transportation makes the supply of goods easier and more secure so that the price of goods will remain stable.
4. Increasing the economic value of the region or area; Transportation increases productivity and regional selling value including industrial products, agricultural products, land and so on.
5. Regional development; Transportation can accelerate the development of a region, limited transportation hinders regional development. (Sovy Fajrianti 2019, 1)

Transportation is the process of transporting goods by various types of vehicles according to technological advances. In general, transportation can be divided into three parts, namely: (Ani Rachman, 2022, 1)

1. Land transportation (for example cars and motorbikes),
2. Water transportation (eg ships), and
3. Air transportation (eg airplane).

The role of transportation is very large, including facilitating the process of sending goods from producers to consumers. Production results can be expensive if the transportation costs are large. The development of numbers and technology in the transportation system is increasing rapidly. It is marked by the improvement in the facilities and infrastructure available in Indonesia, such as access to highways connecting between regions. Not only playing a role in distribution, transportation also plays an important role in supporting the economic growth of the community. Increasing transportation facilities and infrastructure will have great benefits in people's lives, especially the economy, among the benefits of transportation in the economic life of the Indonesian people, namely:

1. Ease of moving from one region to another.
2. Ease of moving goods from production sites to other places that need it.
3. The presence of means of transportation not only facilitates the distribution process, shortens the time required. Maintaining the stability of the price of goods facilitates the supply of goods or services.
4. Supply of goods and services is more stable and guaranteed.
5. Increasing the economic value of an area, being able to increase the productivity and selling value of an area, through the delivery and distribution of industrial, agricultural, land, or other products, accelerating the development of a region.

In terms of its use, transportation can create place advantage and time advantage, which moves goods and people to different places so that their use is greater, involving cargo in greater time, as well as benefits and benefits in the economic, social and political fields. The economic benefits of transportation are as follows:

1. Smooth transportation and supported by the availability of adequate infrastructure can expand the market. A broad goods sales market means that more goods are marketed, providing greater profits for producers.
2. Smooth transportation helps create stable market prices. The impact of declining prices in one area and increasing prices in other areas, the price level of goods in the two regions becomes relatively the same, the price level becomes stable.
3. Smooth transportation encourages regions with different potential economic resources to specialize in producing their superior goods or commodities. Able to obtain adequate market competitors to ensure the continuity of the production specialization carried out.
4. Smooth transportation increases connectivity and cooperation between regions or regions. If trade between regions/regions can be carried out effectively and efficiently, and is mutually beneficial, it is necessary to develop cooperation in the fields of trade, economy and inter-regional development.

Transportation equipment services provide social benefits, consisting of:

1. Smooth and wide transportation provides benefits in health services and education services more effectively and is able to reach service areas that are evenly distributed throughout the region, various parts of the region can enjoy health services and education services. In order to create a healthy society and educate the nation.
2. Smooth transportation will be able to expand the transfer of knowledge through sending textbooks and knowledge from developed countries to developing countries that really need it, so that developing countries can quickly and easily follow the developments and progress of developing countries. developed countries, absorb and apply



advances in science and high technology in developed countries, so that developing countries will develop and achieve progress in the field of science and technology (science and technology).

Transportation has a very important and strategic role in the success of development in various sectors and in various regions or regions, transportation plays a cross-sectoral and cross-regional role. Appropriate when assessing the system of modes of transportation with the success of development. Transportation sector support is very influential and determines the success of development, both directly and indirectly. (Adji Adisasmitha, 2016, 11-13)

The transportation function is as follows:

1. Transportation is a derived demand and creates a place and time function Transportation is a tertiary sector, namely a sector that provides services to other sectors (agriculture, industry, trade, mining, education, health, tourism and others) because these other sectors require transportation services to transport goods (raw materials and products) production) and humans (farmers, traders, employees, teachers, students, doctors, tourists and others) from the place of origin to the place of destination. Whereas the provision of transportation services comes from or is derived from demand from other sectors, which means it is derived from other sectors, then the demand for transportation services can be referred to as a derived demand.
2. The function of transportation is to move or transport cargo (goods and people) from one place to another, that is, from the place of origin to the place of destination. By moving goods and people from the place of origin to the destination, it generally provides greater benefits or uses. (Transportation Network Theory and Analysis, 2009, 9)
3. Transportation functions as a support and booster, transportation as a service sector, namely providing transportation services to the activities of these other sectors which are carried out effectively and efficiently. Effective and efficient services are expressed in various benefits or in the form of positive impacts felt by the areas served. Apart from being a service sector, transportation also functions as a driving sector which is intended to provide transportation facilities (infrastructure and facilities) to open isolated, remote, underdeveloped and border areas. The positive impact is increasing the production and productivity of its potential sectors, increasing employment and people's income, and it is hoped that it will reduce the level of disparity between developed regions and less developed regions.

Transportation has a very important and strategic function as a force that is able to shape the profile (face) of a region or region to be more homogeneous (homogeneous), to be more advanced, to be not unequal. Transportation emphasizes the consequences arising from the existence of transportation services, not on the causes, but transportation services are organized to achieve many goals.

2.2 Factors Influencing the Development of the Mode of Transportation System

a. Sources of Law of the Mode of Transportation System.

1. Laws that regulate transportation

Law No. 22 of 2009 concerning Road Traffic and Transportation (State Gazette of 2009 Number 96) which came into force since its promulgation on June 22, 2009. According to the provisions of the new law, a motorized vehicle is any vehicle driven by mechanical equipment in the form of a machine other than vehicles running on rails. public motor vehicle is any vehicle used for the transportation of goods and/or people with a fee (article 1 number 8 and 10 of Law No. 22 of 2009). (Abdul kadir Muhammad, 2013, 8)

In the world of transportation so that it can run well, a regulation that specifically discusses transportation is needed, therefore a transportation law or commonly known as a commercial transportation law is made. Transportation laws are regulated in book I Chapter V articles 90–98 of the Criminal Code, the legal basis is Law Number. 22 of 2009 concerning Road Traffic and Transportation. (Riki Septiawan, 2012, 1)

Public transportation companies are obliged to transport people and/or goods after a transportation agreement has been agreed and/or transportation costs are paid by people and/or goods senders (article 186). The main obligations of the carrier are to transport passengers or goods and issue transport documents and in return for their rights obtain transportation costs from the passenger or goods sender. The parties may also agree that in addition to the main obligations, the carrier has additional obligations, namely:

- a. Maintain and care for passengers and maintain the goods transported best.
- b. Releasing and dropping passengers at stops or at destinations safely and securely.
- c. Delivering the goods transported to the recipient intact, complete, undamaged, or not late. (Abdul kadir Muhammad, 2015, 152)

Public transportation companies are responsible for losses suffered by passengers, shippers or third parties due to their negligence in carrying out transportation services. During the implementation of transportation, the safety of passengers or goods being transported is basically the responsibility of the public transportation company. So, it is

appropriate if public transportation companies are responsible for any losses suffered by passengers or senders arising from the transportation carried out.

The responsibility of the public transport company to passengers starts from the time the passenger is transported to the agreed destination. Likewise, the responsibility for the owner of the goods (sender) starts from the time the goods are received for transportation until the goods are handed over to the sender or recipient. The amount of compensation is equal to the actual loss suffered by the passenger, the goods sender, or a third party. This real loss is a contractual provision that may not be violated by the carrier who is in his favor because this provision is coercive (dwingend recht) is not included in the meaning of a real loss, among others:

- a. The expected profit will be obtained
- b. Discomfort due to the condition of the road or bridge being traversed during the trip; and
- c. Fees for services already enjoyed.

Drivers and vehicle owners are responsible for the vehicle and its cargo left on the road, this means that the cargo (passengers and goods) left on the road suffers losses, the driver and vehicle owner are required to pay compensation jointly and jointly. Drivers are responsible for losses suffered by passengers or owners of goods or third parties arising from the negligence or error of the driver in driving a motorized vehicle. In the event of an accident involving more than one driver, the responsibility for the resulting material losses is borne jointly (joint responsibility).

The driver can pay compensation directly to the passenger or owner of the goods or pay to the public transportation company to be paid to the injured passenger and/or owner of the goods. the goods being transported can endanger the security and safety of transportation. The considerations used to be able to lower passengers or goods being transported really must be legally justifiable and the norms of decency.

b. Factors that support the development of the Mode of Transportation System.

Factors that support the development of the modal system of transportation in the future are as follows:

1. Economy; in a country the economy is the main foundation in order to improve the quality of public services and the role of the state for the public. Because the independence and stability of the economy is very decisive to continue to increase the modernization of the transportation system in the future.
2. Geography; Topography and geography within a country also play a role in further improving the system of transportation modes so as to create public transportation that is effective, efficient and affordable for all groups of people as citizens. Not only concentrated in certain areas but become a continuous unit in all regions of the country.
3. Politics; developing a system. transportation politically in the hope of being able to support the fulfillment of public rights carried out by the state as an institution that has received a legitimacy mandate from the community in order to manage life activities within the nation and state in a fair and equitable manner so that national stability is always maintained.
4. Defense and Security; the development of a modern mode of transportation system for the community so that on the defense and security side it increases and the feeling of security, comfort, calm is increasingly guaranteed, in following government policies primarily regarding the system of modes of transportation which can increasingly guarantee a sense of security for every user of the modes of transportation that have been provided by the state to be used as much as possible for the benefit of society.
5. Technology; with the existence of globalization which has an impact on countries to always innovate both in deregulating public policies that must increasingly prioritize the interests of the community as well as to create inventive modes of transportation that are always creative and motivated so that people prefer to use increasingly sophisticated public transportation and increasingly modern to make comfortable and "fashion life trend" in all activities in society which of course must always pay attention to timeliness, convenience of facilities and affordable economic value for the community and can bring more and more users of public transportation system services.
6. Competition; With the existence of a competitive value, it is hoped that in the future the transportation mode system will increasingly have high competitiveness and be able to compete in a competitive world and always present creativity, innovation and a spirit of motivation for mobility that is increasingly quality so that it can become a source of pride for the public.

External factors (outside) that affect the mode of transportation system in Indonesia, among others, include:

1. Laws or Government Regulations, regarding products of political will policy deregulation of holders of government administration in a country that are able to accommodate the needs of the people in it which in turn provide more space to be able to provide governance of the transportation mode system with integrity to support the mobility of community activities with various patterns and activities in the realm of public interactions such as work, school or economic trading activities in their daily life



2. The policies or arrangements of the central and regional governments, the active participation of the central and regional governments so as to create a system of public transportation modes that are increasingly broad in scope so that more and more people experience the services of a convenient, precise, effective transportation mode system and efficient and integrated as well as economical.
3. The influence of community service users (demand), and the success of the modernization of the transportation mode system cannot be separated from the influence of service use, namely the community, which is the community which ultimately uses and evaluates the public transportation system that has been provided or will be made so that it can become increasingly a brand brand for every public using transportation services in Indonesia.

Today's transportation has shown rapid progress in land, water and air transportation. Transportation facilities and infrastructure are getting more complete and better. Modernization can be interpreted as a process of changing the system of people's lives from traditional life towards modern life. Modernization occurs in all fields aimed at facilitating human work. One of them is modernization in the field of land transportation.

Along with the progress of the land transportation era is also progressing. Traditional vehicles are being replaced as a result of developments in transportation technology. Transportation, which used to use animal power, is now being replaced by various sophisticated machines, ranging from bicycles, motorcycles, cars to trains. make it easier for people to travel in a short time.

The influence of globalization, the modernization of the mode system of Indonesian transportation equipment, includes the following:

1. The existence of electric cars and motorcycles as a form of development of gasoline power.
2. The development of rail public transportation, for example Mass Rapid Transit (MRT), Light Rail Transit (LRT), and Electric Rail Trains (KRL).
3. The emergence of many variations of transportation whose prices are affordable, so that many people have private transportation.
4. Ease of travel from one place to another due to the opening of new routes.
5. The development of public transportation that is increasingly adequate, attractive, and inexpensive, so that it is starting to be in great demand by the public.
6. Ease of facilities and infrastructure that support booking travel tickets by public transportation.
7. Payment for transportation services that can be made in a non-cash manner can speed up the payment process.
8. Various types of transportation with special technology and capabilities, so that they can reach areas with difficult terrain.

Transport modernization has also increased the interaction of the natural and social environment. Despite experiencing rapid development, modernization in the field of land transportation continues to have both positive and negative impacts on humans and the surrounding environment. The following is the explanation: The impact of transportation modernization on humans There are positive and negative impacts of transportation modernization on humans. Some of the positive impacts of land transportation modernization for humans are:

1. Facilitate community work
2. Helping people transport a lot of goods
3. Make it easier for people to travel long distances
4. Shorten the time of visiting to remote areas
5. Creating new jobs.

The positive impact of the influence of globalization on the modernization of the mode of transportation in Indonesia, the public can feel as follows. (Grace Eirin, 2022, 1)

1. Population mobility is easier to do.
2. Availability of transportation in large quantities and various types with technological advantages that make it easier for humans.
3. The cheap cost of public transportation allows everyone to get the same opportunity to travel.
4. The quality of public transportation is getting better, so many people choose not to use private vehicles.
5. The opening of travel routes between regions that are increasingly diverse, facilitating the interaction of residents.
6. Open up many jobs in the field of public transportation.
7. Export-import cooperation between countries is easy because it is assisted by means of transportation.

The technology of modes of transportation facilitates human mobility in carrying out various activities, nowadays it continues to experience developments in terms of effectiveness and efficiency in accordance with human needs. The development of transportation technology in Indonesia is strongly influenced by Indonesia's geographical conditions and the influence of external cultures such as Indo-chinese, Indian and European cultures.

Indonesia's geographical condition, which is an archipelago with many mountains, presents its own challenges for the development of transportation technology. Indonesian people must adapt transportation technology to geographical conditions so that the technology becomes effective. The invention of the steam engine in Europe during the industrial revolution was able to replace the function of animals as the main means of transportation in Indonesia. Since the invention of the steam engine, the Dutch colonial government introduced mass transportation technologies such as trains and steamships in Indonesia. (Gama Prabowo, 2020, 1)

Transportation services have become a basic need for society, therefore the continuity of the availability of transportation services in meeting the needs of production, consumption and distribution activities must receive ongoing attention according to the Minister of Transportation Budi Karya Sumadi. The continuity of the availability of transportation services throughout the region is absolutely essential because the strategic function of transportation contributes to the stability and continuity of community activities and the wheels of government.

The Ministry of Transportation in its role as a connector is developing the sea highway and air highway. Through this, the role of transportation as a link has a big impact and can be directly felt by the community. Data from the Coordinating Ministry for Maritime Affairs shows that the existence of the sea highway has resulted in a decline in commodity prices. The biggest decrease was in the eastern part of Indonesia, namely in Namlea by 49 percent.

Indonesia has a large maritime industry potential in terms of Indonesia's sea area of approximately 5.8 million km² with a total of 17,508 islands, as a maritime country. The potential for the maritime industry in Indonesia has shown an increase over the last 3 years, there has been an increase in the fisheries, agriculture and tourism sectors. With the potential that Indonesia has, it must be supported by a reliable transportation system such as the procurement of sea transportation, the construction and maintenance of cargo port ships, the construction of maritime highways to equalize commodity prices, eliminate extortion at ports, and the connectivity of the transportation system.

The development of integrated modes of transportation, for example BRT in Jogja, Jakarta, then the existence of roro ships for easy access and a shift in the paradigm of distribution from land to sea. In the framework of Indonesia's re-industrialization, there are four selected industries by the National Economic and Industrial Committee (KEIN), including:

1. Maritime industry,
2. Agricultural industry (agro-industry),
3. Creative and digital economy industries as well
4. The tourism industry.

These four industries are an integral part of all national development programs and all of them have mutually supportive relationships. The National Economic and Industry Committee (KEIN) itself is a special institution formed under the legal umbrella of Presidential Regulation No. 8 of 2016 to support the success of the Working Cabinet in determining national economic and industrial policies. The formation of the National Economic and Industrial Committee (KEIN) is within the framework of an assignment from the president for the re-industrialization of Indonesia until 2045 which coincides with 100 years of Indonesia's independence. Negative impacts on humans Some of the negative impacts of land transportation modernization on humans are as follows:

1. People become dependent on transportation and lose their independent attitude. Causing traffic jams
2. Increasing noise pollution which can disrupt community activities
3. Increase the risk of traffic accidents
4. Improving consumptive lifestyle

The negative impacts of globalization modernizing the mode of transportation systems include the following.

1. The occurrence of traffic jams in cities with dense populations.
2. Generates unhealthy air pollution and noise pollution for living things.
3. Reduction of paddy fields or forestry, due to being converted into traffic lanes.
4. Threatening environmental sustainability due to traffic development without water catchment areas that can prevent flooding.
5. The narrowness of residential land for residents.
6. The increasing need for vehicle fuel which has an impact on increasing the risk of global warming.

Positive impact on the environment There are several positive impacts of modernization of transportation on the environment, namely:

1. The environment is more organized because it is managed properly
2. The emergence of environmentally friendly transportation technology
3. Increasing the interaction between the natural and social environment Reforestation in the area of development of transportation facilities and infrastructure
4. New buildings appear that beautify the environment



2.3 Efforts to Overcome the Impact of Modernization of Transportation Modes on the Environment

a. The Impact of Modernization of the Mode of Transportation System

Transportation is the transfer of people or goods from one place to another using a vehicle driven by humans or machines. Basically this transportation technology is used to make it easier for humans to carry out their daily activities. Facilitate community work. Helping people transport a lot of goods. Make it easier for people to travel long distances. Shorten visiting time to distant areas.

The function of transportation is to move or transport cargo (goods and people) from one place to another, namely from the place of origin to the place of destination. By moving goods and people from the place of origin to the destination, it generally provides greater benefits or uses. Commodities are useful according to time and place. In transportation there are two categories, namely:

1. Transfer of materials and production results by means of transportation;
2. Transporting passengers from one place to another. (M.N Nasution, 2013, 6)

Transportation has a very important role, which determines the success of development. The economy is defined as a condition that includes various activities grouped into production, transaction, distribution and consumption activities. The economic condition consists of several stages, namely the traditional economy, the transitional economy. (Sakti Adji Adismita, 2015, 8)

The development of the economy according to its stages reflects the condition of its transportation. In the modern economic stage, the condition of transportation is very advanced. The conditions of transportation development and development show the same direction or a very positive relationship.

What is the impact of the development of land transportation facilities for the lives of Indonesian people. Now there are many means of transportation that can be used as an alternative to private vehicles. In fact, there are many things that make people confused about using a vehicle that can take them to their destination quickly and at a low cost. Choosing the right and economical public transportation will be able to make people calm without having to think about the applicable travel rates. There are several public vehicles that can be used while in Jakarta which are cheap and usable. Among them:

1. Transjakarta is a public transportation option when traveling in Jakarta. Apart from being cheap, Transjakarta is also a convenient means of transportation. To make passengers comfortable, Transjakarta provides air conditioning facilities and comfortable seats. To be able to use Transjakarta, passengers are required to come to the bus stop and tap at the bus stop or when boarding the bus by paying IDR 3,500 passengers can travel to various points that are passed, as long as they don't leave the bus stop. The weakness in reality often occurs when users of Transjakarta services include:
 - a) Waiting for the Transjakarta fleet at bus stops in the corridors of users of the Transjakarta transportation mode for a long time, some even for hours, thereby hindering the mobility of the users of the Transjakarta transportation mode of service;
 - b) Automated pavilions for buying Transjakarta bus ticket credits are only available at several corridor points and there are some that still use the old 20,000, 50,000, 100,000 denominations which are adjusted to the latest issued denominations of 20,000, 50,000, 100,000;
 - c) With regard to Human Resources, especially picket service officers in the corridors of transit places, Transjakarta service users sometimes still don't provide friendly service servers and seem indifferent to passengers using Transjakarta bus transportation services when needed, thus creating a feeling of discomfort for users transjakarta transportation mode services;
 - d) Transjakarta buses stop for a moment when picking up passengers using Transjakarta bus transportation services who are not yet on time in uniform and sometimes seem rushed and some go through transit corridor stops or stops for users of Transjakarta bus transportation services;
 - e) Rarely or even absent at transit corridor stops or passenger stops using Transjakarta bus transportation services, public facilities such as wi-fi are available, even if there is access, their use is still limited and sometimes kept secret by the officers waiting at the stops at transit corridors or stops for users Transjakarta bus transportation services.
2. Electric Rail Train (KRL), is a means of transportation that can be chosen after Transjakarta. Apart from the low fares, KRL can also reach distant points that cannot be passed by Transjakarta. For the problem of time, the KRL can save more time, because people don't need to feel Jakarta's traffic jams. Rates also vary, starting from IDR 5,000-9,000.
3. The Integrated Raya Mode (MRT) can save travel time. However, currently there are not as many MRT stations as KRL, there are only a few points. The elegant design of the train makes it a magnet for people to use this means

of transportation. In contrast to KRL, MRT stations are also not only near the main road, but several stations are underground. The rates charged range from IDR 3,000-14,000.

4. City Transportation (Angkot) KWK Another public vehicle that can be used as an alternative is city transportation or commonly called angkot. Angkots are smaller in size than Transjakarta and also KRL, so they can only accommodate 8-10 passengers. There are many types of angkot in Jakarta based on their origin and destination, one of which is the KWK angkot (Kalpika Wahana Cooperative). Unlike other angkots, KWK angkots are already integrated with Transjakarta, this can be seen from the payment system that can use the same card used to use Transjakarta. In KWK public transportation, there is a tap device near the driver's seat to serve payments using a card. Rates are charged from IDR 4,000-8,000.
5. Bajaj This vehicle is an old vehicle that is still widely used for traveling in Jakarta. This vehicle has a tiny shape so it can only accommodate 2-3 passengers. With a tiny physique, this vehicle is still a mainstay for breaking through traffic jams in Jakarta. The rates charged range from IDR 7,000-20,000. The public vehicles above can be used as the people's choice for traveling while in Jakarta. In addition to cheap rates, people can also experience an exciting sensation when using public transportation. (Saddam, 2019, 1)

Negative impact on the environment There are several negative impacts of the modernization of the mode of transportation system on the environment, including:

- 1 Land conversion to become the location of transportation facilities and infrastructure Reduced productive agricultural land because it is used to accommodate the need for transportation services such as terminals, airstrips or vehicle parking. all of this, if a problematic solution is not found, it will certainly lead to problems in the future which mostly only have an impact on the present but can also affect the next generation, who experience less and less green and natural land spaces to filter weather and extreme climates that can interfere with the survival of humans in this world which must be wisely because this earth is the property of future generations and becomes a legacy that must always deserve to be maintained and preserved its existence on an ongoing basis.
- 2 Scarcity of natural resources used as transportation fuel. Until now, most modes of modern transportation still use fuels derived from biological materials from petroleum, natural gas, coal and others, and all of which are fossil materials which will surely run out one day due to continuous use. non-renewable if it is used up it will not be produced again. Because now the pattern of a modern, renewable transportation mode system is becoming a trend in the world, all as a win-win solution pattern in order to anticipate if, in a condition, fuel originating from rare fossilized mineral materials is even extinct, and what is now being felt where it is always an increase in the price of petroleum and others is an early indication that the existence of fuel derived from fossil minerals will one day run out.
- 3 Increasing the risk of air pollution so that brown clouds will form, this is very disturbing when enjoying the beauty of nature. Dirty air can cause air pollution. Air pollution is a phenomenon that often occurs now because commercial and non-commercial flight traffic is increasingly congested due to the demands for the high mobility of one human interaction with another human which is not just one country but has crossed regions, countries, continents whose coverage has been cannot use land vehicles because the distance is long and takes a long time so that the impact is air pollution which is increasing from time to time from the beginning of the industrial revolution in Europe to the current era of globalization.
- 4 Noise pollution that can interfere with human psychology. Loud noise from transportation can damage hearing and can lead to deafness. The emergence of sound pollution (noise) and air pollution. This can be caused by the construction of the tool or the actions of people who are less responsible. Like the magnificent and fast Concorde 002 aircraft, it causes a very disturbing noise to the environment. This aircraft also emits NO₂ gas which is very disturbing to the ozone layer, the stratosphere, (NO₂, is a catalytic effect of nitrogen oxides). High levels of Pulotan due to emission (release) of motor vehicle exhaust. This is a serious threat if left unchecked, not only for the environment we live in, furthermore this can lead to a decline in public health status by contracting respiratory tract diseases due to air pollution.
- 5 Increasing waste that pollutes the environment. The existence of a leaking or exploding oil transport ship in the sea can disrupt the beauty of marine parks. 3.
- 6 Damaging the ecosystem balance due to land conversion which in the end will reduce green space as a public relaxation space in city centers, especially in the state capital DKI Jakarta. to find spaces or places to breathe fresh air that are environmentally friendly is increasingly difficult because it has become a reality in urban centers where the level of mobility and activity is very dense which is oriented towards economic values prioritizing material values rather than maintaining the value of the balance of natural ecosystems which in the end presents frequent natural disasters. (Serafica gischa, 2022, 1)



b. Efforts to Overcome the Impact of the Modernization of the Mode of Transportation Equipment System on the Environment.

The modernization of the transportation mode system has become a primary need for modern society, especially when it comes to public transportation, the availability of comprehensive public transportation will greatly affect the mobility of a city. Moreover, its effect on the surrounding environment, in most big cities around the world this is a serious problem and therefore an effort is needed to overcome the environment caused by means of transportation.

Various human activities require energy, such as coal, petroleum, water, sunlight, wind and others. The current global problem is the decreasing world oil reserves while fuel needs must be available. The application of eco-efficiency principles in meeting fuel needs includes:

1. Use of renewable alternative energy sources, such as wind power, water, biomass, and organic fuels.
2. By using human reason can create cars that are environmentally friendly. Such as an electric car called ELITS which is the result of an experiment conducted by the ITS Electron Engineering Energy Conversion Laboratory team, whose goal is to anticipate dwindling petroleum reserves. Applying the use of environmentally friendly technology in the management of both renewable and non-renewable natural resources by taking into account their carrying capacity and capacity.
3. One of the easiest ways to reduce motor vehicle fumes is the "bike to work" program, as well as the "one man tree" as a way to reduce motor vehicle fumes.

3. CONCLUSION

The author concludes several things regarding the results of this study that have been discussed, namely:

- 1 The development of the modernization of the transportation system has contributed greatly to the convenience of transportation such as the availability of cars, motorcycles, airplanes, trains, ships, which used to take a long time to travel abroad but now it only takes a few hours to arrive destination.
- 2 The factors that support the development of the modernization of the transportation system, namely the economy; geography, politics, defense and security, technology, competition and external (external) factors that affect the transportation mode system in Indonesia, including laws or government regulations that provide space to be able to provide integrated management of the transportation mode system to support public mobility , policies or arrangements of the central and regional governments, active participation of the central and regional governments so as to create a system of public transportation modes so that more and more people experience the services of a transportation mode system that is comfortable, precise, effective and efficient and integrated and economical , the influence of community service users (demand). and the success of the modernization of the transportation mode system cannot be separated from the influence of community service users so that they become a brand brand for every community.
- 3 Efforts to overcome the adverse effects of modernization of the transportation system by implementing the principles of eco-efficiency in meeting fuel needs, including the use of renewable alternative energy sources, including wind power, water, biomass, and organic fuels. Creating innovative new inventions especially creating an environmentally friendly mode of public vehicle transportation system. Applying the use of environmentally friendly technology in the management of both renewable and non-renewable natural resources by taking into account their carrying capacity and capacity. Reducing motor vehicle fumes includes the "bike to work" program, as well as the "one man tree" as a way to reduce motor vehicle fumes

4. SUGGESTION

The specialty of human beings is their unlimited resourcefulness in creating creative and innovative inventions that did not exist before, such as the current diverse modes of transportation, but that must also think about the impact that will occur on the tools created, so that the benefits are useful. both for humans and nature.

REFERENCES

- [1] Abdul kadir Muhammad, Commercial Transport Law., (Bumi Aksara: Jakarta 2015)
- [2] Adisasmita, Adji, 2016
- [3] Herjanto, Eddy, Production and Operations Management., (Grasindo: Jakarta, 2019)
- [4] Lubis, M. Solly ., Law Science., (Mandar Maju: Bandung, 2009)
- [5] Kaelan., Pancasila Philosophy View of Life of the Indonesian Nation., (Paradigm; Yogyakarta, 2002).
- [6] Nasution, M.N 2013
- [7] Mohammed. Abdul kadir, Commercial Transport Law, (Jakarta: PT. Citra Aditya Bakti, 2013)
- [8] Sitanggang, Murni Hernawati., Pancasila in the Graves of Globalization., (LKIS: Yogyakarta, 2017)..

-
- [9] Sukirno, Sadono., Introduction to Microeconomic Theory., (Raja Grafindo Persada, 2002).
- [10] Samryn.L.M., Introduction to Accounting makes journaling easy with the Transaction Cycle approach., (Raja GrafindoPersada: 2012)
- [11] Gischa Serafica., <https://www.kompas.com/skola/read/2022/08/16/180000469/dampak-modernisasi-transportasi-darat-bagi-human-dan-environment-?page=all>.<http://dishub.jabarprov.go.id/artikel/view/221.html>.
- [12] https://www.academia.edu/8669794/MAKALAH_DAMPAK_PERKEMBANGAN_ALAT_TRANSPORTASI
- [13] <http://rikiseptiawan180991.blogspot.com/2012/12/Hukum-pengangkutan-niaga>
- [14] The positive and negative impacts of transportation modernization KOMPAS.com -
- [15] <https://dephub.go.id/post/read/menhub-transportasi- already-Jadi- Perlu-dasar- Masyarakat Eirin Grace., 13> Positive and Negative Impacts of Globalization in the Transportation Sector Sunday, 11 December 2022 | 08:15 WIB
- [16] <https://www.idntimes.com/travel/tips/amiruddin-saddam/kendaraan-umum-yang-murah-di-jakarta-c1c2?page=all>
- [17] Rachman, Ani., Kompas.com .
- [18] Pahlevi, Reza., The Role of Modern Transportation Mode Systems in the Economic Sector. June 2, 2022<https://nibiobank.org/peran-transportation-modern-dalam-field-economy/>
- [19] Prabowo, Gama., <https://www.kompas.com/skola/read/2020/12/21/152002869-development-transportation-technology-di-indonesia?page=all>.