

# Artificial Intelligence Innovation in Capsule Bus in Jambi City

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## ABSTRACT

Artificial Intelligence (AI) has been used widely in people's lives, especially in transportation. One of the most often faced transportation problems in Indonesia is congestion, especially in big cities. People who do not have public transport find the service procedures to be complicated. Thus, innovation is required to provide solutions to community problems. The digital era changes everything; in this digital 4.0 era, people can quickly get anything with just the touch of a finger. The presence of affordable and digital-based public transportation called Capsule Bus Koja Trans is expected by the Jambi community to make it a transportation option. Jambi Mayor Dr. Syarif Fasha inaugurated the Capsule Bus Koja Trans, the first application-based bus in Indonesia on October 28, 2019. The presence of the Capsule Bus is an innovation for public transportation that is comfortable, contemporary, modern, high-tech, and also supports Jambi as one of the smart cities in Indonesia. "It is expected to" change the habits of the Jambi people in terms of utilizing public transportation and being a careful solution to overcome traffic congestion. Therefore, this study focused on community interest and effectiveness in using the Capsule Bus Koja Trans Jambi. This study employed a qualitative descriptive method, in which the data were obtained from applications and literature related to the research topic. Data were analyzed using the Nvivo 12 plus data processing application which is a qualitative document analysis tool with the help of computer equipment. Nvivo 12 plus was used for it is easy to use and can process words and explore word frequencies, attributes, cases from big data, generating categories of factors or sub-factors in research". The VOSviewer software was also utilized to see the overall theme of the discussion. The results showed that the Capsule Bus Koja Trans Jambi provided the community with a new and enjoyable experience using public transportation.

**Keywords:** Artificial Intelligence, Public Interest, Government Service.

## 1. INTRODUCTION

Artificial Intelligence (AI) is defined as the intelligence demonstrated by an artificial entity. Such systems are generally considered computers. Brilliance is created and put into a machine (computer) to do work as humans can. What is commonly called intelligent behavior, and with creating artifacts that exhibit behavior [1]? Aristotle

attempted to formalize 'true thinking' (logic) through syllogism (three parts of deductive reasoning). This inspired much work in the modern era, and early studies of the operation of the mind helped build contemporary logical thinking. Programs that allow computers to function in ways that make people appear intelligent are called artificial intelligence systems [2]. Based on the research of Eka NAM Sihombing, artificial intelligence or Artificial Intelligence is present as a branch of science from

Computer Science that promises many benefits in answering human needs in the future [3].

A previous study conducted by Eka NAM Sihombing defined artificial intelligence as a branch of science from Computer Science that promises many benefits in answering human needs in the future [4]. Widespread use of AI has offered prospects for increased productivity and innovation in various fields; even AI also allows society to answer the most formidable challenges [5]. "This 4.0 era certainly has a trend in supporting the improvement of technical quality, namely Artificial Intelligence (AI) which uses intelligent machines in public services, and this is closely related to the progress of transportation of complex service procedures that require innovation to provide solutions to the most common problems" faced by society. Indonesia has congestion issues, especially for big cities [6], experienced by people who do not have public transportation. Furthermore, research from the I Forum experts states that robots will replace current jobs in the next 30 years, a real challenge that will be faced in the future [7].

International Data Corporation (IDC) AsiaQuest Indonesia (AQI) Artificial Intelligence (AI) has succeeded in making the world of transportation enter an extremely sophisticated era. AI is one of the many options to answer various transportation problems [8]. AI can answer four problems, namely congestion problems, passenger safety, expenditure costs, and reducing gas emissions. AI is here to disturb the comfort of the traffic jams that have plagued Indonesia for years [9]. This AI technology is starting to target transportation systems that can still be developed. Later, AI can help the government in managing vehicle traffic. One method that can be used is Public Mobility Monitoring [10].

The Mayor of Jambi, Syarif Fasha, believes (Bisnis.com) that the presence of Koja Trans is expected to change the habits of the Jambi people in terms of utilizing public transportation as a careful solution to overcome traffic congestion [11]. Since Jambi is the first city in Indonesia to operate this current transportation, Capsule Transport is expected to become the pride and new icon of the Jambi community. Quick Travel Transport (BRT), with a capacity of 14 seats, is public transportation equipped with various facilities including AC, CCTV, Complimentary wireless internet, USB charger, priority seats for passengers with special conditions, and sight and sound. The Koja Trans Case Transport presence is also expected to make it

easier for the community to carry out various activities and facilitate economic activities [12]. There has been no research that explicitly discusses the Innovation of Artificial Intelligence for capsule bus Transportation. Therefore, this study was conducted to analyze the Artificial Intelligence Innovation for Capsule Bus Transportation on Artificial Intelligence in Community Services as a local government innovation. This study aims to determine public interest and effectiveness using the Capsule Bus Koja Trans Jambi [13].

## 2. METHOD

This study employed a qualitative approach to explain the phenomena that occur and understand the meaning of the events. Qualitative research is a type of research that reveals contextual-holistic aspects by collecting genetic data and utilizing the researcher as an instrument to collect data [14]. Qualitative research describes the activities and impacts of research, and it represents the identification of the critical things with the correct meaning. The research was conducted in the city of Jambi, Sumatra, Indonesia. The capital city of Jambi Province is famous for ancient literature, with the motto Pesako Betuah Tanah Select [15]. Jambi City is the center of government and the center of social, economic, and cultural, with the spirit of community unity, both individuals, groups, and institutions that hold traditional values and legislation [16]. The area, which Dr. H. Syarif Fasha leads, has a breakthrough in the use of AI for government services that has led Jambi to become the advanced city it is nowadays. This region also has the highest population in Jambi Province, which is 17% of the total population of Jambi Province [17].

Furthermore, the data collection technique employed in this study was field data involving online application data and journalism, supported by a literature review of the Innovation Artificial Intelligence for Capsule Bus Transportation, the application of AI for public services, especially the people of Jambi City with the Capsule Bus Koja Trans as the object of research in this article [18]. Data were analyzed using the Nvivo 12 plus data processing application which is a qualitative document analysis tool with the help of computer equipment. It is easy to use and can process words and explore word frequency, attributes, cases from big data, and generate category factors or sub-factors in research. This study also utilized VOSviewer software to see the overall theme of the discussion. In this study, the unit of analysis was Artificial

Intelligence used in public services, which were then linked to public interest and effectiveness in using the Capsule Bus Koja Trans Jambi" [19].

### 3. BASIC THEORY

#### 3.1. Artificial Intelligence

The increase in population growth affects the level of urbanization. This also affects the service process in the government system. The population of the city is expected to reach 70% in the future. Therefore, the government needs innovation in Artificial Intelligence to make it easier for the government to get services; AI can overcome industry challenges by using automated quality control [20]. Furthermore, the existence of Artificial Intelligence helps facilitate the process of forecasting and ranking things that can happen in the future and is supported by legislation [21]. Artificial Intelligence will provide significant changes to the government or private sector by facilitating work in the face of industrial revolution 4.0. A scientific and correct understanding of the government towards AI is essential to develop regional potential. The results of the VOSviewer data show that research related to the Capsule bus is still minimal by researchers" [22].

#### 3.2. Effectiveness

According to Gibson, Donnelly, and Ivancevich, the concept of effectiveness consists of two "approaches, namely the objective approach and the framework approach." The two methods, among others, the objective approach to determine and evaluate effectiveness, are based on the idea that organizations are created as tools to achieve desires. Whereas in systems theory, the organization is seen as an element that is interconnected and interconnected with each other. The flow of input (input) and output (yield) is the starting point in the description of the organization. With other more straightforward customized organizations, organizations take resources (inputs) from an extensive system (environment), process these resources, and return them in a modified form (yield) [23].

#### 3.3. Operational

An operational definition is a definition made by a researcher. An operational definition is a definition given by a researcher and, at the same time, explains how to measure each variable in the

study [24]. For example, in the size of weight, a measure of time, calculation of speed, the unit benchmark, a measure of currency, an estimate of percentage, etc. Operational definitions show us what we must do, how to do it, what to measure, and how to measure it. We need this definition, especially by researching connections with things that cannot be observed or measured directly, such as learning outcomes, abilities, reasoning, and intelligence. For example, you want to know whether the quality of food affects the growth of fish. In this case, there are two things you need to explain, namely "food quality" and "fish growth" if "food quality" is described by "food quality" [25].

#### 3.4. Theoretical Framework

This study investigates the community's interest and the effectiveness of using the Koja Trans Jambi Capsule Bus to apply artificial intelligence in public services [26]. There are several assessment indicators. Governance quality is an aspect that is assessed based on community interest which continues to change along with improvements", initiatives, and innovations developed that always pay attention to the balance between business and the value of benefits that stakeholders must accept; the Koja Trans transport case will not only create order and improve time discipline in the Jambi City community, but more than that, community mobility will be realized which is supported by cheap, safe, and comfortable present-day transportation facilities [27].

### 4. FINDINGS AND DISCUSSION

#### 4. 1. Jambi Community Interest in the Presence of Capsule Bus

Jambi City became the first city in Indonesia to operate current transportation in line with the savvy city concept, following the Jambi mayor's thoughts who leads with a vision of technology going forward. The Jambi community welcomes implementing technology in public transportation facilities, considering the already good road infrastructure. The presence of capsule transport is a matter of pride for the people of Jambi, public transportation equipped with various facilities. These include AC, CCTV, Complimentary wireless internet, USB charger, priority seats for passengers with special conditions, and media. In addition, Container Transport is also equipped with maps that are adapted to the available transport corridors.

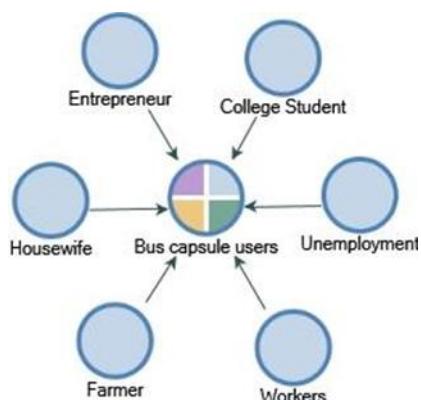
The presence of Koja Trans is expected to change the habits of the Jambi people in terms of using public transportation and be a careful solution to overcome traffic jams. Case Transport Koja Trans will create regularity and improve time discipline in the people of Jambi City. Still, more than that, community mobility will be realized supported by cheap, safe, and comfortable modern transportation facilities.

Variabel	Reason for Interest	Total
1: Amenities	50%	50%
2: convenience	30.56%	30.56
3: Security	19.44%	19.4%
4:Total	100%'	100%

**Figure 1. Query Rate Lintas – Rasio (%) Reason for Interest**

Source: Coding Analysis via NVivo 12 plus Software

Based on the Crosstab Query-Rate (%) of the Jambi community's interest in Capsule Bus, the respondents showed the most significant reason of interest as facilities with a score of 50% for the good of the Jambi community. In addition, comfort also affects a public interest in the capsule bus, which has a value of 30.56%. Security also affects the public interest in using capsule buses and has a value of 19.44%. This shows the significant influence of public interest in the use of capsule buses in terms of facilities, comfort, and security. Furthermore, this encourages the community to grow and learn about technology in order to bring significant changes to the residents of Jambi City's quality of life through the usage of transportation.



**Figure 2. Capsule Bus Users**

Source: Project Map via NVivo 12 plus Software

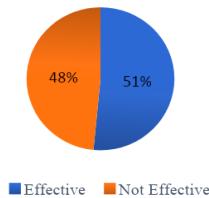
The Jambi Capsule Bus User Map Coding Project findings show that almost all professions use Capsule Bus for different purposes. This indicates that the capsule bus Koja Trans Jambi is in great demand by the public, starting from complete facilities, comfortable and guaranteed security, and affordable prices for the Jambi community. The digital-based Capsule Bus makes it easy for the public to use the service simply by ordering through the Capsule Bus application itself. 80% of Capsule Bus users are used by ordinary people, workers, students, and homemakers, with the most significant respondents being students and workers. The students use the Capsule Bus to go to campus and the workers to go to work.

#### 4.2. The Effectiveness of Using Capsule Bus

In terms of its effectiveness, the management of Capsule Buses in Jambi province, which is a mass public transportation and shows that as long as Capsule Buses operate, proves that it becomes a way that makes it easier for users to get to their destination. Capsule Bus which is equipped with modern facilities and pays with electronic money by filling in a balance of 25-50 thousand.

**Figure 3. Query Rate Lintas – Rasio (%)**

Effectiveness Assessment



Source: Coding Analysis via NVivo 12 plus Software

Crosstab Query-Rate (%) illustrates that applying artificial intelligence significantly affects using Capsule Bus, making it easier for people to use it. This shows that the effectiveness of using a capsule bus has a substantial value of 51% and has a higher value than ineffective which has a discount of 48%. The indicator of the effectiveness of capsule buses is seen from the strategy of functions and objectives carried out to the maximum. Communication to all parties involved in managing the capsule bus must know their respective roles to determine the capsule bus's internal and external constraints and threats.

Capsule Bus Koja Trans is digital-based public transportation. Application-based public vehicle in

Indonesia, with 13 to 15 passengers, Capsule Bus, is also equipped with various facilities such as AC, CCTV, Free WiFi, USB charger, priority seats for passengers with special conditions, and multimedia. The Koja Trans Capsule Bus is also equipped with GPS, making passengers not worried if the driver takes the bus out of town. Everything is monitored by the Koja Trans operator to guarantee passenger safety.

<b>Variable</b>	<b>Year of Knowing Capsule Bus</b>	<b>Total</b>
<b>1: 2019</b>	<b>47.06%</b>	<b>47.0%</b>
<b>2: 2021</b>	<b>29.41%</b>	<b>29.41</b>
<b>3: 2020</b>	<b>23.53%</b>	<b>23.53%</b>
<b>4: Total</b>	<b>100%</b>	<b>100%</b>

**Figure 4. Kueri Tab Lintas – Rasio (%)**

Source: Coding Analysis via NVivo 12 plus Software

Crosstab Query-Rate (%) shows public data in recognizing capsule buses; since it was officially launched on October 28, 2019, Capsule Bus has become one of the most popular public transports. This proves that the first year it was formally launched had the most significant value compared to the two years after that, which was 47.06% and made people interested in the facilities. Capsule Bus is also adequate public transportation used by the community because it is very safe to use and is different from other public transportation because it is technology-based.

## 5. CONCLUSION

Capsule Bus, which is very influential in making public interest in the use of public transportation, the city of Jambi is one of the cities in Indonesia with a very high number of vehicle growth and the arrangement of public transportation services is needed. Therefore, it is necessary to rearrange public transportation with more integrity, by prioritizing comfort, safety, and time. The mayor of Jambi, Dr. H. Syarif Fasha showcased efforts to adopt artificial intelligence in digital-based public transportation services for the people of Jambi City. Thus, people, especially those in Jambi City, are no longer reluctant to use public transportation that the city government has provided. In addition, the Koja Trans Capsule Bus

is also equipped with GPS, which makes passengers not worried if the driver takes the bus out of town. Everything is monitored by the Koja Trans operator to guarantee the security of passengers. Capsule Bus has a significant impact on the people of Jambi City in the future in using public transportation. The presence of Koja Trans is expected to be able to overcome transportation problems in urban areas, especially Jambi City.

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