

## Transportation Control Model Of Medan Center Market

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### KEYWORDS

Transportation control model;  
Medan city market center.

### ABSTRACT

Millions of Indonesians still supply their daily needs to a traditional market that is synonymous with the lower middle class. The study aimed at the problem of transportation at the center of the terrain city market and how to find solutions to the transport problem. The terrain city market center as a first-class market in the terrain city is one of the largest in the terrain city. One of the problems at the center of the terrain city market is that of transportation, which involves the daily congestion we encounter at a very critical stage. The central market for the city of Medan does seem to be physically, financially and under. In the study, problems are set in place (1) what is the current condition of the urban market and (2) what is the solution to the transportation problems that exist in the municipal market center? Using transportation control model approaches in the center of the city market that will be directly observed and analyzed using Vissim software. Researchers in this regard took a direct look at the problem at the city market center. Studies indicate that economic activity in the central urban market area has significant transportation problems, especially congestion. With the transport conditions and until the moment.

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## 1. Introduction

The presence of a market basically intends to offer types of assistance to the local area with the goal that they can satisfy the different cravings required for everyday endurance. However, in current developments, the market does not only function as a means of meeting the needs of daily life (the need for food and clothing) but also offers other goods besides these basic needs. Realizing the important role of the market, now almost every community group, even in remote villages, has a market. As a center (central), the market with all the equipment in it indirectly becomes a role model for the surrounding community. This shows that not only the role of the economy but also the role of culture in the surrounding community is quite large.

Medan City Market Center as a class 1 market in Medan City is one of the largest markets in Medan City. One of the problems found in the Medan City Market Center, namely transportation problems in the form of congestion, delays, as well as noise and air pollution that we often encounter every day, are already at a very critical stage. Before the best solution can be

determined, the first thing that needs to be done is to study and understand in detail the pattern of interrelationships between factors that cause these problems in qualitative and quantitative (measurable) forms at that location. Transportation planning and modeling is the most effective and efficient media that can combine all of these factors and the output can be used to solve transportation problems both now and in the future.

The Medan City Market Center is the largest market in the city of Medan and is one of the vital infrastructures in the City of Medan, the condition of the Medan City market center has experienced many declines both physically, functionally, image, legal (official), locational, financial, and economic.

The existence of a trading center is one of the most obvious indicators seen in the economic activities of the people in a region. According to the physical form, trade is divided into two, namely traditional markets and modern shopping centers. Activities that occur in a trading center such as a traditional market are one of the sub-trade center systems in a city which is one of the parameters that can be used to determine the economic growth and dynamics of a city.

Transportation and traffic jams are indeed a problem that always exists and is experienced by big cities, especially in markets in cities in Indonesia. It is due to the increasingly developed and modern life of a community in a city, so their needs become complex. Public transport is one solution to overcome this problem, however, ironically, traffic jams are also often caused by public transportation, for example, minibuses, or buses that stop at random places to drop off or look for passengers so that the person driving behind them must reduce speed or stop too. behind it which then creates a long queue of vehicles or other road users. Even so, it cannot be denied that people in big cities, including the city of Medan, really need this public transportation to expedite their daily routines so that they run smoothly as they should.

## **2. Materials and Methods**

To facilitate the study of the problems of this paper, the authors approach normative and empirical research methods. This approach at least makes it easier to solve problems and draw accurate conclusions regarding the problem.

The implementation approach used in this study is a positivistic approach that originates from empirical facts where knowledge is built based on the results of sensory observations supported by a theoretical basis. The position of theory only limits the scope and definition of a plan/program. This approach makes a comparison/comparison between the goals and objectives of a study. The research method used is dominated by quantitative research according to the aims and objectives of the research.

This study uses quantitative research which is used to achieve the research goals and objectives, namely to obtain solutions to transportation problems in a transportation control model at the Medan City Market Center.

The location determination method is done by observation method. The observation method is used to obtain data on the existing physical condition of transportation facilities and infrastructure in the Medan City market center to be analyzed in a transportation control model in the Medan City market center.

This research area is located in the central market area of Medan City, which is located in the Central Market Village, Medan City District, Medan City.

The selection of the Central Market area as a research object is considered to represent general problems regarding the control of transportation-based historical areas in the Medan City Market Center in North Sumatra Province in the national context and Medan City in the local context.

This quantitative research is used to formulate actions to solve problems. In this study, an

action formulation was carried out to be able to provide recommendations that are by the results of the research achieved related to the transportation control model in the central market of Medan City which is the focus of research in this study.

### **3. Results and Discussions**

#### **A. Theoretical Framework.**

According to Ofyar Z. Tamin, 1997, in the Book of Transportation Planning and Modeling, he wrote that the increasingly rapid pace of urbanization is causing several problems, one of which is the problem of transportation.[1] The factors that influence urban transportation are as follows:

- a. The farther the average daily movement of people is, the more expensive the price of land in urban centers causing residential land to increasingly shift to the outskirts of cities, while places of work tend to be increasingly concentrated in urban centers. This causes a person to move farther and longer to reach the workplace. The farther and longer a person burdens the road network, the higher their contribution to congestion.
- b. More and more women are working, it is undeniable that the current needs of the family cannot only be supported by the husband's income. There needs to be another addition, and this causes the wife to also work, which results in causing more and more movements to be made by the family
- c. The more students and students, the tendency of increasingly fierce competition in the future causes continuing education such as courses, training, and part-time degree education to be a must for someone who is already working. This trend is causing additional movement to the city center, where these education centers are usually located
- d. The more tourists, the high pressure felt by everyone who lives in urban areas causing recreation to become a major need. It also causes more movement.

#### **B. Discussion and Study**

According to Homer Hoyt, new developments that occur in a city gradually regenerate the character possessed by the same sectors beforehand. This reason is mainly based on that in large cities there are large variations in land rent or house rent. The market is the center of buying and selling activities, it is usually located in a place that is easily accessible from various directions, takes place at certain times, and prioritizes objects of daily life needs for the family.

According to Weber, the market itself, seen from an economic perspective, is a settled place whose inhabitants mainly live from trade rather than live from agriculture. In view of the Guideline of the Clergyman of Home Undertakings of the Republic of Indonesia No. 20 of 2012, market-supporting facilities include management offices, parking areas, public toilets, landfills, drainage, hydrants, security posts, places of worship, kiosks, booths, loading and unloading areas and transportation. Meanwhile, traditional market infrastructure includes; access roads, electrical installations, communications, health services, and clean water.

Transportation is a crucial part of the context of sustainable urban development. It makes every urban planning inseparable from planning or controlling transportation which is an important element in a city. In transportation control there are five main elements, namely:

- a. Humans, out of luck
- b. Items required
- c. Vehicles, for the purpose of transportation
- d. Roads, as transportation framework, and
- e. Organization, to be specific vehicle administrator

As per Botero in *The City Collected*, of the Components of Metropolitan Structure Through History:

"A city is supposed to be a gathering of individuals, an assemblage attracted together to the furthest limit of the may in this way the better life at their straightforwardness in riches and bounty. Also, the significance of the city is supposed to be, not the significance of the site or the circuit of the walls, yet the large increasingly numb of the occupants and their power. Presently men are suffocating together upon various causes and events there unto them moving; some by power; some forcibly, some by delight, and some by the benefit that continued from it."

Blockage is what is happening or condition where traffic is stale or even halted because of the enormous number of vehicles surpassing the limit of the street. Clog happens a ton in huge urban communities, particularly urban areas that don't have great or sufficient public transportation or where the requirement for streets isn't offset with populace thickness, for instance, gridlocks are an everyday issue in Jakarta, Balikpapan, Surabaya, Bandung, Medan, and other large urban areas in Indonesia.

As indicated by Regulation No. 14 of 1992 concerning Traffic and Expressways, the idea of traffic is the development of vehicles, individuals, and creatures in the street traffic space which has the importance of foundation expected for the development of vehicles, individuals, or potentially products as streets and supporting offices. Gridlock will continuously have an adverse consequence, both on the actual drivers and from a monetary and natural viewpoint. For vehicle drivers, congestion will cause tension (stress).

The public authority has the objective of acknowledging protected, secure, quick, smooth, methodical and precise, agreeable, and effective street traffic and transportation through traffic the board and traffic designing. The traffic parts themselves comprise of people, vehicles, and streets that cooperate with one another in the development of vehicles that meet the qualification prerequisites to be driven by drivers who keep traffic guidelines specified in light of regulations and guidelines concerning street traffic and transportation through streets that meet circumstances. Transportation is a method for moving individuals and merchandise starting with one spot then onto the next to arrive at the ideal places or send products from one spot to the objective.

Regulation No. 22 of 2009 concerning Street Traffic and Transportation characterizes transportation as the development of individuals as well as products starting with one spot then onto the next involving vehicles in rush hour gridlock spaces.

According to Ahmad Munawar [2], a framework is a type of connection and linkage between one variable and one more in an organized plan, while transportation is the movement of moving travelers and merchandise starting with one spot then onto the next. The essential strategies for the improvement of the metropolitan transportation framework are as per the following:

- a. The improvement of metropolitan transportation should be coordinated towards the acknowledgment of a public transportation framework that is incorporated, methodical, smooth, protected and agreeable, and proficient in supporting the portability of individuals, merchandise, and administrations, as well as supporting provincial turn of events.
- b. The urban transportation system must be organized and continuously refined, supported by an increase in the quality of human resources
- c. The urban transportation system must be managed and continuously adapted to economic development, the level of technological progress, spatial policies, preservation of environmental functions, and national energy policies so that it can always meet the needs for development and the demands of society.
- d. Transportation in urban areas will develop a mass transit system that is orderly, smooth, safe, comfortable, and efficient to be attractive to users of transportation services so that traffic jams and disturbances can be avoided and quality of life can be maintained
- e. Passenger and freight transportation in urban areas must be fostered and developed so

that it can play a role in increasing the smooth flow of passengers and goods, in harmony with the dynamics of development.

The challenges and problems of urban passenger public transport in Indonesia include:

- a. The driver's desire to get a large income to meet sufficient deposits and wages.
- b. Driver indiscipline in driving the vehicle and obeying existing traffic signs.
- c. Transport owners want maximum profit by boarding as many passengers as possible, even if they put aside the interests of passengers from feeling safe, fast, and comfortable.
- d. Discrepancy between the number of operating fleets and movement needs.
- e. Passengers need the availability of public transportation for urban passengers in large numbers and at low fares, as well as fast, safe, and comfortable.
- f. Inequality of access to passenger public transport in all urban areas.

Public transport uses infrastructure more efficiently than private vehicles, especially during peak hours. There are two types of measurements of better public transport services, namely:

- a. Improvement of waiter operations, frequency, speed, and passenger comfort
- b. Repair of passenger facilities

Experts agree that the terms "transportation" include:

- a. Steenbrink (1974)  
Transportation is the development of individuals or merchandise utilizing instruments or vehicles from and to places that are geologically isolated
- b. Morlock (1978)  
Transportation is the action of redirecting or carrying something starting with one spot then onto the next
- c. Bowersox (1981)  
Transportation is the development of merchandise or travelers starting with one spot then onto the next, where the item is moved to the objective area.

According to Lovelock, consumers have criteria that are identical to several types of services that provide satisfaction to consumers. These criteria include:

- a. Reliability is the capacity to offer types of assistance precisely as guaranteed.
- b. Responsiveness is the capacity of workers to assist purchasers with offering types of assistance rapidly as indicated by what shoppers need.
- c. Assurance is the information and capacity of workers to present with certainty.
- d. Empathy (compassion) is that representatives should focus completely on customers and comprehend buyer needs.
- e. Tangible (noticeable) is the presence of actual offices, hardware, faculty, and method for correspondence.

Transportation systems can be classified into four broad categories, namely:

- a. Land transportation
- b. Air transport
- c. Water transportation
- d. Transportation in land and sea pipelines

A model is a portrayal of an item, item, or thought in a worked on type of normal circumstances or peculiarities. The model contains data about a peculiarity that is made to concentrate on the genuine framework peculiarity.

Meanwhile, according to Firdaus Ahmad Dunia Wasilah, Control states that:[3] "Control is an administration work to accomplish the objectives that have been carried out by making persistent examinations among execution and plans. By contrasting genuine outcomes and projects or spending plans ready, the executives can assess business effectiveness and the capacity to procure benefits from different items. Likewise, supervisors can make a remedial move on the off chance that there are deviations emerging from the consequences of these

correlations.

The use of traffic simulation is one of the most widely used approaches to measure the accuracy of the simulation with real traffic conditions. VISSIM is a recreation programming utilized by experts to make reproductions of dynamic traffic situations prior to making arrangements in a genuine structure by changing in accordance with existing transit regulations or guidelines.

Vissim is a visual programming language for dynamic system simulation. Vissim is a traffic simulation tool or software for traffic engineering, transportation planning, signal timing, public transportation, and microscopic urban planning in multi-modal traffic flow which is visually translated and developed in 1992 by one of the IT companies in Indonesia and German.

### **C. Concept Model of Existing Conditions (with side friction)**

From the aftereffects of the traffic study information directed, a model of the existing condition of the Medan City Market Center was obtained through visual programming for dynamic system simulation (VisSim) with existing parking conditions and vehicle stops.

The existing condition model of the Medan City Market Center, the model if all side barriers are removed (including through parking arrangements and vehicle stops) based on the simulation results of the existing condition model with side barriers and the model without side barriers, the comparison is obtained as follows:

- a. Comparison of conditions with side barriers and without side barriers based on the results of the traffic survey data conducted, the existing condition model of Medan City Market Center is obtained through visual programming for dynamic system simulation (VisSim) with existing condition parking barriers and vehicle stops.
- b. Based on the simulation results of the existing condition model with side barriers and the model without side barriers, a comparison is obtained that: Comparison of conditions with side barriers and without side barriers based on the results of the Vissim simulation carried out shows that by reducing the existing barriers in the Medan City Market Center, the speed vehicle speed can increase from 17.61 km/hour to 46.99 km/hour and for vehicles that stop other than because of a red light it is only 0.01 seconds with the understanding that there is no congestion referring to the definition of congestion according to the Indonesian Road Capacity Manual; that congestion is a condition in which the flow of traffic passing on the road under review exceeds the planned capacity of the road resulting in a speed approaching 0 km/hour causing a queue.
- c. Congestion increments when the current is enormous to the point that vehicles are extremely near one another. Traffic congestion occurs when road capacity remains constant while the number of road users continues to increase, which causes travel time to become longer transport is the capacity of the road.
- d. The result of this research is that the level of service for these roads cannot accommodate the number of vehicles passing on these roads, it can be seen from the average degree of stopped delay on these roads reaching 0.65 seconds and resulting in queues. The method used to improve road services in the area is traffic management. The best alternative solution from this research is widening roads and parking arrangements by statutory regulations.

## **4. Conclusion**

In essence, the Medan city market center transportation control model is intended to produce a way out of the land transportation system related to public transportation that is stuck in traffic jams, causing inconvenience to users of public transportation in empowering land transportation. Thus the best alternative can be implemented through visual programming for

dynamic system simulation (VisSim) with existing parking conditions and vehicle stops, which are supported by corrections for road widening and parking arrangements in accordance with statutory regulations.

With the widening of the road facilities, it is certain that the transportation control model for the central market in the city of Medan can produce a way out of the land transportation system related to public transportation that is free from congestion so as to create convenience for public transportation users.

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