Jurnal Indonesia Sosial Sains Vol. 2, No. 11, November 2021
E-ISSN:2723 – 6595
http://jiss.publikasiindonesia.id/ P-ISSN:2723 – 6692

Government Strategies In Planning Mass Transportation Medan City

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Artikel info

Artikel history:
Received : 10-12-2021
Revised : 11-11-2021
Approved : 11-11-2021

Keyword: *mass transportation; public policy; action plann*

Abstract
Mass Transportation is the most important. The city of Medan is one of the cities that is quite a lot inhabited by people who in their daily activities use mass transportation. Therefore, to be a commitment and consistency of good spatial planning as well as the meaning of transportation regulations, the Medan city government needs to develop a strategy so that mass transportation becomes a solution and alternative for the community in reducing congestion in the city of Medan. The purpose of this study is to find out how strategic the Medan City Government is in planning mass transportation in Medan City. The method used in this study is a mix Methode approach with SWOT data analysis techniques and Analytical Hierarchy Processs (AHP). The results with the SWOT Quadrant I scoring 3.01, the main strategies that are carried out are: Strengthening environmental-based Transportation. Weighting with AHP, the online-based taxi mass transportation mode with 0.6898 or 68%, for example taxis, namely the Deli Trans Bus which is environmentally friendly, payment using SMART CARD.

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Introduction

Mass transportation is one of the most important parts of urban planning. Moreover, urban conditions are starting to move towards metropolitan urban planning. Transportation is a basic alternative in people's daily activities. Moreover, the transportation has high participatory-based operational standards. The variety of policy alternatives was born not only due to collaborative dialogue between policy actors, but the dialogue cannot be held without the commitment of the government elite to facilitate (facilitative leadership) and awareness and a vehicle for the community to voice their interests (civil society) (Shadu Satwika Wijaya, Paulus Israwan Setyoko 2018).

The influence of spatial planning is also one of the causes of transportation problems. The spatial use conflict that occurs at the research location is essentially influenced by the main factor, namely transportation. The condition of the transportation route at the research location is getting uncontrollable day by day which causes a struggle over the use of space, causing conflicts for road users, among others, pedestrians, vehicle drivers, street vendors and other people who are active every day (Katiandagho, Ngangi, and Kaunang 2017). Factors that play a role in evaluating this level of acceptance can be directed properly, then the level of public acceptance, especially private vehicle users can get more expected. It is not easy to bring these factors to the desired direction. Therefore, effective communication, social modeling, and educational programs are needed to change the current norms and attitudes (Kusairi 2005).

Doi: 10.36418/jiss.v2i11.461

Based on data from the Central Statistics Agency (BPS) stated that the data collected in 2015 on traffic accidents in Indonesia were 98.9 thousand cases. This condition can be seen from the increasing fluctuation in the number of accidents over the last 10 years. Based on a statement from the Ministry of Transportation (Kemenhub), the basic thing that causes this accident rate is the KIR Test (Keur/KIR) on test vehicles, such as public transportation, freight transport, and types of buses that are still less effective. So it is necessary to strengthen the Law No. 22 of 2009 concerning Road Traffic and Transportation (LLAJ). That cost increases and time reductions are more sensitive than time increases and cost reductions are made for travel mode users (Akmaliyah 2013). Urban planning has a positive and significant effect on regional development. It means that hypothesis 3 in this study can be accepted. This means that if urban planning is carried out by paying attention to aspects of spatial planning and land use, it will be able to increase regional development in Medan City(Alfonsius 2017). In addition to spatial planning in Medan City, it also seems that there is no synchronization between policy makers to sit with talk about various problems related to traffic jams which impact on economic bottlenecks (Sukarmi and Suwondo 2019).

Convenience is also very much needed in the arrangement of transportation. People want transportation that refers to comfort, safety and punctuality. Not a few of them want innovation in the services provided, such as special chairs for women, the elderly and pregnant women, as well as facilities for people with disabilities (Oktavianti and Lituhayu 2017). This is in line with transportation services that have been operating for a long time, now the way consumption of transportation services has changed online even though service providers and consumers do not know each other. This consumer behavior has changed since the entire system has made this efficiency work, as well as the decision to purchase transportation services is currently undergoing a fairly rapid change(Haris et al. 2020). Therefore, the Medan City Government has not been seen preparing a series of Mass Transportation Policies. The government decided to invite the public to mobilize by public transportation, so the government must seek the effectiveness of other related policies, such as providing comfortable space for non-motorized vehicle lanes, including sidewalks for pedestrians (Satiti 2014).

With the existence of several problem indicators as the background above, the title of this research is the Medan City Government Strategy in Planning Mass Transportation in Medan City.

Research Method

This research is a mix method research using qualitative and quantitative approaches. mix methods is a research method by combining two research methods at once, qualitative and quantitative in a research activity, so that more comprehensive, valid, reliable, and objective data will be obtained (Sugiyono 2017). data analysis techniques used with SWOT and Process Hierarchy Analysis (AHP).

Results And Discussion

The strategy built by developing 5 strategies that strengthen public services is based on David Osborne in Sedarmayanti (2009) dalam (Yanuaria 2012). The concept built in this strategy analyzes the planning carried out with scientific studies as follows:

A. Core Strategy (Core Strategy)

The vision of the Department of Transportation itself is the creation of reliable, comfortable and humane transportation for the city of Medan. Then the mission of the Department of Transportation is to increase human resources, realize an integrated mass transportation system, provide transportation accessibility for all groups, improve the efficiency and effectiveness of transportation service performance, and promote orderly, safe and friendly transportation. To achieve the vision and mission, the Department of

Transportation adheres to the Minimum Service Standards (SPM) based on the Regulation of the Minister of Transportation (Permenhub) Number 98 of 2013 and Number 29 of 2015 namely security, safety, comfort, affordability, equality, and regularity.

Based on the vision above, to create a sense of reliability, comfort and humaneness is one of the specific factors that must be carried out by the Medan City government through planning that is adapted to the field conditions that occur. The Operational Standards that are built must have rules in accordance with the Regulation of the Minister of Transportation (Permenhub) Number PM 98 of 2013 and Number PM 29 of 2015 namely security, safety, comfort, affordability, equality, and regularity. In accordance with the current conditions.

The strategy developed by the Medan City Government can be seen in the policies and regulations for the addition of mass transportation in the city of Medan. The above effort is one of the strategies carried out by the Medan City government. Strengthening and increasing transportation is considered important by the Medan City government in overcoming and planning for Medan City transportation in the future (Aminah 2012).

B. Consequences Strategy

This strategy was built with the implementation and planning of Medan City Transportation going well. In Medan City Regulation Number 2 of 2014 concerning permits in issuing route permits, operating permits and supervision are carried out by the Department of Transportation. This is of course one of the goals built so that the Vision and Mission of the Medan City Transportation Service are well implemented in accordance with the actualization of the Minister of Transportation Regulation Number 98 of 2013 and Minister of Transportation Regulation Number 29 of 2015 regarding good service procedures. However, the Medan City government has carried out several strategies in overcoming the above problems, such as periodic inspections of vehicles regarding operations, revitalization of the construction of an integrated terminal in Sandpaper and others (Dewi 2017)

C. Customer Strategy (Customer Strategy)

The Minister of Transportation Regulation Number PM 98 of 2013 and the Minister of Transportation Regulation Number PM 29 of 2015 concerning Minimum Service Standards are the most important parts that the Medan City government must pay attention to. This planning concept is one of the efforts so that people understand and are comfortable using city transportation in their daily activities. Efforts made in this regard are improving several facilities and infrastructure related to the community, such as: Use of "SUMUT Card", Mandiri E-Money with Trans Metro Deli buses. Efforts made by the Medan City government in improving service to customers by seeking practical services in paying for the Deli Trans Bus. However, for other transportation, it has not done that.

D. Supervision Strategy (Control Strategy)

In this strategy, supervision is one of the standards carried out by the Medan City Government. Supervision of transport is part of the core strategy. The development of mass transportation supervision in Medan City is an important note because supervision is part of the control management system. This is of course to create a sense of security, comfort and reliability so that people feel that public transportation is in accordance with good service standards. Transportation development strategycarried out, namely the road infrastructure network for service systems, network nodes (Ali Sutardi and Martina 2015).

E. Cultural Strategy (Culture Strategy)

The Cultural Strategy in this case builds reinforcement with quality resource planning standards. This strategy is carried out by the Medan city government to prepare good quality transportation actors in the quality of service and the provision of infrastructure that is built. Culture is built with education and character training for transportation users. This

effort was carried out by the Medan City Government as a form of increasing capacity in providing services as well as a pioneer in health. Not only maintaining personal safety but also the safety of others Cultural problems become one of the indicators of problems in urban residents (Hendratno E.T 2009)

Achieved Outcomes

Description Of SWOT Analysis Results

Table 1. Kekuatan (*Strengh*)

No	Description
1	There is a policy in the form of the Minister of Transportation Regulation Number 98 of 2013 and Number 29 of 2015 concerning Security, Safety, Comfort, Affordability, Equality and Order.
2	Medan City Regulation Number 2 of 2014 concerning Permits in issuing route permits, operating permits and supervision by the Medan City DISHUB.
3	Vision and Mission DISHUB Medan City "Creating Reliable, Comfortable, and Humane Transportation with the actualization of programs in transportation planning and arrangement.
4	There is a commitment from the Medan City government in improving the transportation system, such as efforts to increase Mass Transportation Capital (such as Deli buses).

Source: Authors Analysis, 2021

Table 2. Kelemahan (*Weakness*)

No	Description
1	Supervision of the Medan City DISHUB which is considered to be still lacking on the current conditions of the City's mass transportation (Angkot, Motorized Pedicabs and others)
2	The rules and strategies for improvement with the addition of supporting transportation facilities and infrastructure are still lacking
3	The guidance and support carried out by the Medan City government in fostering transportation actors such as drivers and others have not been maximized.
4	The Medan City Government does not yet have a master plan for controlling the quality and quantity of mass transportation in Medan City.

Source: Authors Analysis, 2021

Table 3. Peluang (*Opportunity*)

No	Description
1	The use of mass transportation in Medan City is quite high.
2	Medan City Government can develop environmental-based traditional city transportation
3	Taxes and levies from transportation vehicles are getting higher
4	Can establish cooperation with partners in the arrangement of transportation and improvement of transportation networks

Source: Authors Analysis, 2021

Table 4. Ancaman (*Threat*)

No	Description
1	Competition for online transportation and city transportation services, resulting in a decrease in driver income
2	Reduced interest and desire of urban people in using city transportation services
3	Use of Road Facilities that exceeds the commensurate use of the road.
4	Social conflicts that occur between online transportation drivers and city transportation that are not online.

Source: Authors Analysis, 2021

Table. 5. Qualitative Matrix SWOT Analysis- IFAS- EFAS

INTERNAL FACTORS / **EKSTERNAL FACTORS**	**Strengh (S)**	**Weakness (W)**
	1. There is a policy in the form of Regulation of the Minister of Transportation Number PM 98 of 2013 and Number PM 29 of 2015 concerning Security, Safety, Comfort, Affordability, Equality and Order. 2. Medan City Regulation Number 2 of 2014 concerning Permits in issuing route permits, operating permits and supervision by the Medan City DISHUB. 3. Vision and Mission of Medan City DISHUB "Creating Reliable, Comfortable, and Humane Transportation with the actualization of programs in transportation arrangement and planning. 4. There is a commitment from the Medan City government in improving the transportation system, such as efforts to increase Mass Transportation Capital (such as Deli buses).	1. Supervision of the Medan City DISHUB which is considered to be still lacking on the current conditions of the City's mass transportation (Angkot, Motorized Becak and others). 2. Regulations and strategies for improvement with the addition of supporting transportation facilities and infrastructure are still lacking 3. The guidance and support carried out by the Medan City government in fostering transportation actors such as drivers and others has not been maximized. 4. The Medan City Government does not yet have a master plan for controlling the quality and quantity of mass transportation in Medan City.

Opportunity (O)	**Strategy (S+O)**	**Strategy (W+O)**
1. The use of mass transportation in the city of Medan is quite high. 2. Medan City Government can develop environmental-based traditional city transportation. 3. Medan City Government can develop environmental-based traditional city transportation. 4. Taxes and levies from transportation vehicles are getting higher. 5. Can establish cooperation with partners in the arrangement of transportation and improvement of transportation networks	1. Strengthening environmental-based Transportation Arrangement Policies with ministerial regulations and the strength of cooperation (S1 + O1, O2). 2. Utilization of the Medan City government program with the integration of DISHUB's vision and mission so that the use of mass transportation is increasing (S2 + O3). 3. Strengthening city taxes and levies with the commitment of the Medan City Government in adding transportation modes (S3,S4 +O4).	1. Supervise urban transportation with an environment-based system (W1, W4 + O1, O2). 2. Establish regulations and supporting facilities and infrastructure in the quality of transportation (W2+O4). 3. Improved coaching and support for transportation actors by maintaining quality and quantity in accordance with the vision of the Transportation Agency, reliable, comfortable and humane (W3 + O1, O2, O3, O4)
Threats (T)	**Strategy (S+T)**	**Strategy (W+T)**
1. Competition for online transportation and city transportation services, resulting in a decrease in driver income. 2. Reduced interest and desire of city people in using city transportation services. 3. Use of Road Facilities that exceeds the commensurate use of the road. 4. Social conflicts that occur between online transportation drivers and city transportation that are not online.	1. The existence of the Center and the Region in online and offline-based transportation arrangements (S1+T2,T4). 2. Strengthening the income of transportation service actors by arranging routes and improving transportation flows (S2, S3, S4 + T1, T3). 3. Strong policies and commitments in mitigating social conflicts by accommodating urban transportation (S3, S4+T3,T4). 4. Improvement of facilities and infrastructure by looking at transportation needs combining quality and quantity analysis (S3,S4+T1,T3,T4)	1. Training and coaching for drivers by strengthening character and good service (W1+ T1). 2. Increased supervision of transportation with feasibility and emission tests so that transportation can create comfort and safety (W1, W2+T2) 3. Increased income with commitment to environmental-based transport arrangements and reduction of social conflict(W3+T3)

Source: Authors Analysis, 2021

Table 6. Assessment, Weighting and Rating of IFAS Medan City Government Strategy in Planning the strategic mass transportation in Medan City

No	Internal Factors	Average Rating	Weight	Rating	Weight x Rating
Strengh (S)					
1	There is a policy in the form of Regulation of the Minister of Transportation Number 98 of 2013 and Number 29 of 2015 concerning Security, Safety, Comfort, Affordability, Equality and Order.	4,5	0,15	3,3	0,50
2	Medan City Regulation Number 2 of 2014 concerning Permits in issuing route permits, operating permits and supervision by the Medan City DISHUB.	4	0,14	3,1	0,43
3	Vision and Mission of Medan City DISHUB "Creating Reliable, Comfortable, and Humane Transportation with the actualization of programs in transportation arrangement and planning.	3,8	0,12	3	0,36
4	There is a commitment from the Medan City government in improving the transportation system, such as efforts to increase Mass Transportation Capital (such as Deli buses).	3,5	0,11	2,9	0,32
Total (S)		15.8	0,52		1,61
Weakness (W)					
1	Supervision of the Medan City DISHUB which is considered to be still lacking on the current conditions of the City's mass transportation (Angkot, Motorized Becak and others).	3.7	0,12	3,5	0.42

2	Regulations and strategies for improvement with the addition of supporting transportation facilities and infrastructure are still lacking.	3.6	0,11	3.3	0.36
3	The guidance and support carried out by the Medan City government in fostering transportation actors such as drivers and others has not been maximized.	3.4	0.11	3.2	0,35
4	The Medan City Government does not yet have a master plan for controlling the quality and quantity of mass transportation in Medan City.	3.2	0.09	2.8	0,25
Total (W)		13,9	0.43		1,38
Total (S+W)		29,7	1		2,99

Source: Authors Analysis, 2021

Table 7. Assessment, Weighting and Rating of EFAS Medan City Government Strategy in Planning the strategic mass transportation in Medan City

No	Internal Factors	Average Rating	Weight	Rating	eight x Rating
Opportunity (O)					
1	The use of mass transportation in Medan City is quite high.	4	0,15	2,8	0,42
2	Medan City Government can develop environmental-based traditional city transportation	4.5	0,15	2.8	0,42
3	Taxes and levies from transportation vehicles are getting higher	4	0,11	2.7	0,30
4	Can establish cooperation with partners in the arrangement of transportation and improvement of transportation networks	4.3	0.10	2,6	0,26
Total (O)		16,8	0.51		1,40
Treath (T)					

1	Competition for online transportation and city transportation services, resulting in a decrease in driver income	4,3	0.12	2,8	0,34
2	Reduced interest and desire of urban people in using city transportation services	4,1	0,12	2,7	0,32
3	Use of Road Facilities that exceeds the commensurate use of the road.	4	0,11	2,7	0,30
4	Social conflicts that occur between online transportation drivers and city transportation that are not online.	3,9	0,11	2,6	0,29
Total (T)		16,3	0,46		1,25
Total (O+T)		33,1	1		2,65

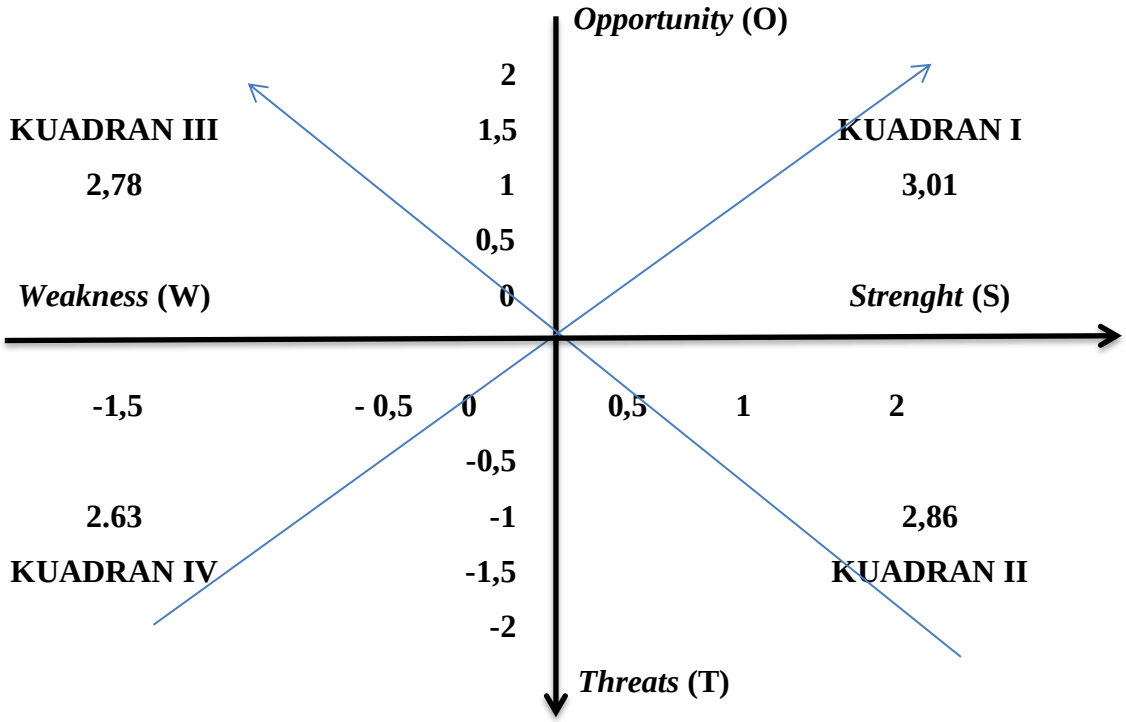
Source: Authors Analysis, 2021

Table 8. Strategic Priorities for Policy

Priority	Strategy and Policy	Value Weight
I	*Strengh - Opportunity (SO)*	1,61 + 1,40 = 3,01
	1. Strengthening environmental-based Transportation Arrangement Policies with ministerial regulations and the strength of cooperation (S1 + O1, O2). 2. Utilization of the Medan City government program with the integration of DISHUB's vision and mission so that the use of mass transportation is increasing (S2 + O3). 3. Strengthening city taxes and levies with the commitment of the Medan City Government in adding transportation modes.	
II	*Strengh – Threats (ST)*	1,61 + 1,25 = 2,86
	1. The existence of the Center and the Region in online and offline-based transportation arrangements (S1+T2,T4). 2. Strengthening the income of transportation service actors by arranging routes and improving transportation flows (S2, S3, S4 + T1, T3). 3. Strong policies and commitments in mitigating social conflicts by accommodating urban transportation (S3,S4+T3,T4). 4. Improvement of facilities and infrastructure by looking at transportation needs combining quality and quantity analysis (S3,S4+T1,T3,T4)	
III	*Weakness – Opportunity (WO)*	1,38 + 1,40 = 2,78
	1. Supervise urban transportation with an environment-based system (W1, W4 + O1, O2). 2. Establish regulations and supporting facilities and infrastructure in the quality of transportation (W2+O4). 3. Improved coaching and support for transportation actors by maintaining quality and quantity in accordance with the vision of the Transportation Agency, reliable, comfortable and humane (W3 + O1, O2, O3, O4).	
	Weakness – Threats (WT)	1,38 + 1,25 = 2,63

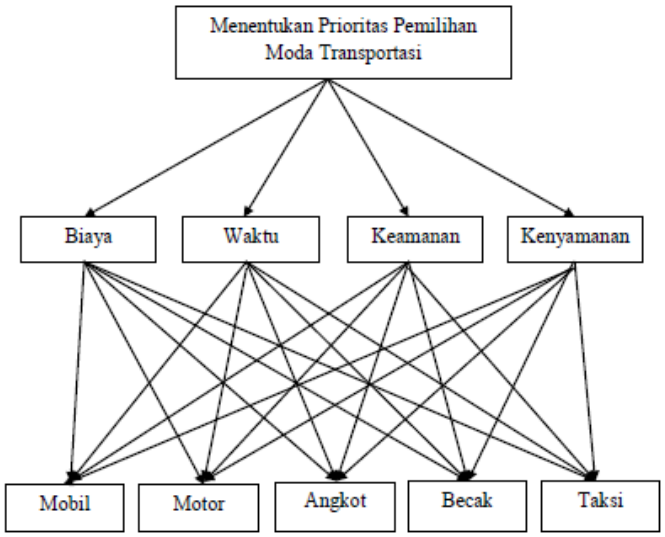
IV	1. Supervise urban transportation with an environment-based system (W1, W4 + O1, O2). 2. Establish regulations and supporting facilities and infrastructure in the quality of transportation (W2+O4). 3. Improved coaching and support for transportation actors by 1. Training and coaching for drivers by strengthening character and good service (W1+ T1). 4. Increased supervision of transportation with feasibility and emission tests so that transportation can create comfort and safety (W1,W2+T2) 5. Increased income with commitment to environmental-based transport arrangements and reduction of social conflict(W3+T3) 6. Maintaining quality and quantity in accordance with the vision of the Transportation Agency, reliable, comfortable and humane (W3 + O1, O2, O3, O4)

Source: Authors Analysis, 2021



Picture 1. SWOT Quadrant Results

Process Hierarchy Analysis (AHP)



Picture 2. Transport Mode Priority Determination Structure

Based on the data that has been obtained in the field, there are several priority determinations based on Ficture 1 above. Then the weighting can be obtained as follows:

Table 9. Weghting Matrix

Hierarchical Weighting					
No	**1**	**2**	**3**	**4**	**5**
1		**Fee**	**Time**	**Security**	**Convenience**
2	Fee	1	2	3	4
3	Time	2	3	4	3
4	Security	3	4	1	2
5	Convenience	4	1	2	1

Source: Authors Analysis, 2021

Table 10. Weghting Matrix in Percentage

Hierarchical Weighting					
No	**1**	**2**	**3**	**4**	**5**
1		**Biaya**	**Waktu**	**Keamanan**	**Kenyamanan**
2	**Fee**	1,0000	2,0000	3,0000	4,0000
3	**Time**	2,0000	3,0000	4,0000	3,0000
4	**Security**	3,0000	4,0000	1,0000	2,0000
5	**Convenience**	4,0000	1,0000	2,0000	1,0000
	$\sum$	10,0000	10,0000	10,0000	10,0000

Source: Authors Analysis, 2021

Table 11. Weghting Matrix For All Criteria

Hierarchical Weighting							
No	**1**	**2**	**3**	**4**	**5**	**6**	**7**
1		**Biaya**	**Waktu**	**Keamanan**	**Kenyamanan**	**Vektor Eigen**	**Rangking**
2	**Fee**	0,1000	0,2000	0,3000	0,4000	0,2500	2
3	**Time**	0,2000	0,3000	0,4000	0,3000	0,3000	1
4	**Security**	0,3000	0.4000	0,1000	0,2000	0,2500	3
5	**Convenience**	0.4000	0,1000	0,2000	0,1000	0,2000	4

Source: Authors Analysis, 2021

Table 12. Matrix Of Cost Weighting Evaluation Factors

Hierarchical Weighting						
No	**1**	**2**	**3**	**4**	**5**	**6**
1		**Angkot**	**Car**	**Becak**	**Taxi**	**Motorcycle**
2	**Angkot**	2	3	3	3	1
3	**Car**	3	3	1	1	2
4	**Becak**	1	1	2	1	3
5	**Taxi**	4	2	2	2	2
6	**Motorcycle**	2	1	1	2	1

Source: Authors Analysis, 2021

Table 13. Simplifield Cost- Weighting Evaluation Factor Matrix

Hierarchical Weighting						
No	**1**	**2**	**3**	**4**	**5**	**6**
1		**Angkot**	**Car**	**Becak**	**Taxi**	**Motorcycle**
2	**Angkot**	2,0000	3,0000	3,0000	3,0000	1,0000
3	**Car**	3,0000	3,0000	1,0000	1,0000	2,0000
4	**Becak**	1,0000	1,0000	2,0000	1,0000	3,0000
5	**Taxi**	4,0000	2,0000	2,0000	2,0000	2,0000
6	**Motorcycle**	2,0000	1,0000	1,0000	2,0000	1,0000
	$\sum$	11,0000	10,0000	9,0000	9,0000	9,0000

Source: Authors Analysis, 2021

Table 14. Cost Weighting Evaluation Factor Matrix (*Combined*)

Hierarchical Weighting								
No	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
1		**Angkot**	**Car**	**Becak**	**Taxi**	**Motorcycle**	**Vektor Eigen**	**Rangking**
2	**Angkot**	0,1818	0,3000	0,3333	0,3333	0,1111	0,2519	1
3	**Car**	0,2727	0,3000	0,1111	0,1111	0,2222	0,2034	3
4	**Becak**	0,0909	0,1000	0.2222	0,1111	0,3333	0,1715	4
5	**Taxi**	0,3636	0,2000	0,2222	0,2222	0,2222	0,2460	2
6	**Motorcycle**	0,1818	0,1000	0,1111	0,2222	0,1111	0,1452	5

Source: Authors Analysis, 2021

Table 15. Time Weighting Evaluation Factor Matrix

Hierarchical Weighting						
No	**1**	**2**	**3**	**4**	**5**	**6**
1		**Angkot**	**Car**	**Becak**	**Taxi**	**Motorcycle**
2	**Angkot**	3	2	1	2	3
3	**Car**	2	3	2	1	2
4	**Becak**	1	2	3	4	3
5	**Taxi**	2	1	4	3	2
6	**Motorcycle**	3	4	1	2	3

Source: Authors Analysis, 2021

Table 16. Simplified Time Weighted Evaluation Factor Matrix

Hierarchical Weighting						
No	**1**	**2**	**3**	**4**	**5**	**6**
1		**Angkot**	**Car**	**Becak**	**Taxi**	**Motorcycle**
2	**Angkot**	3,0000	2,0000	1,0000	2,0000	3,0000
3	**Car**	2,0000	3,0000	2,0000	1,0000	2,0000
4	**Becak**	1,0000	2,0000	3,0000	4,0000	3,0000
5	**Taxi**	2,0000	1,0000	4,0000	3,0000	2,0000
6	**Motorcycle**	3,0000	4,0000	1,0000	2,0000	3,0000
	$\sum$	11,0000	12,0000	11,0000	12,0000	13,0000

Source: Authors Analysis, 2021

Table 17. Time Weighted Evaluation Factor Matrix (Combined)

Hierarchical Weighting								
No	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
1		**Angkot**	**Car**	**Becak**	**Taxi**	**Motorcycle**	**Vektor Eigen**	**Rangking**
2	**Angkot**	0,2727	0,1666	0,0909	0,1666	0,2307	0,1855	4
3	**Car**	0,1818	0,25	0,1818	0,0833	0,0769	0,1547	5
4	**Becak**	0,0909	0,1666	0,2727	0,3333	0,2307	0,2188	2
5	**Taxi**	0,1818	0,0833	0,3636	0,25	0,0769	0,1911	3
6	**Motorcycle**	0,2727	0,3333	0,0909	0,1666	0,2307	0,2188	1

Source: Authors Analysis, 2021

Table 18. Safety Weighting Evaluation Factor Matrix

Hierarchical Weighting						
No	**1**	**2**	**3**	**4**	**5**	**6**
1		**Angkot**	**Car**	**Becak**	**Taxi**	**Motorcycle**
2	**Angkot**	3	1	1	2	2
3	**Car**	4	2	2	3	1
4	**Becak**	1	2	1	3	3
5	**Taxi**	2	1	2	2	2
6	**Motorcycle**	3	2	2	1	1

Source: Authors Analysis, 2021

Table 19. Simplified Safety Weighting Evaluation Factor Matrix

Hierarchical Weighting						
No	**1**	**2**	**3**	**4**	**5**	**6**
1		**Angkot**	**Car**	**Becak**	**Taxi**	**Motorcycle**
2	**Angkot**	3,0000	1,0000	1,0000	2,0000	2,0000
3	**Car**	4,0000	2,0000	2,0000	3,0000	1,0000
4	**Becak**	1,0000	2,0000	1,0000	3,0000	3,0000
5	**Taxi**	2,0000	1,0000	2,0000	2,0000	2,0000
6	**Motorcycle**	3,0000	2,0000	2,0000	1,0000	1,0000
	$\sum$	13,0000	8,0000	8,0000	11,0000	9,0000

Source: Authors Analysis, 2021

Table 20. Safety Weighting Evaluation Factor Matrix (Combined)

Hierarchical Weighting								
No	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
1		**Angkot**	**Car**	**Becak**	**Taxi**	**Motorcycle**	**Vektor Eigen**	**Rangking**
2	**Angkot**	0,2307	0,1250	0,1250	0,1818	0,2222	0,1769	5
3	**Car**	0,3076	0,25	0,25	0,2727	0,1111	0,2382	1
4	**Becak**	0,0769	0,25	0,1250	0,2727	0,3333	0,2115	2
5	**Taxi**	0,1538	0,1250	0,25	0,1816	0,2222	0,1865	3
6	**Motorcycle**	0,2307	0,25	0,25	0,0909	0,1111	0,1865	4

Source: Authors Analysis, 2021

Table 21. Convenience Weighting Evaluation Factor Matrix

Hierarchical Weighting						
No	**1**	**2**	**3**	**4**	**5**	**6**
1		**Angkot**	**Car**	**Becak**	**Taxi**	**Motorcycle**
2	**Angkot**	2	3	1	2	1
3	**Car**	4	3	1	2	2
4	**Becak**	3	2	1	2	1
5	**Taxi**	1	2	2	1	3
6	**Motorcycle**	2	1	2	3	1

Source: Authors Analysis, 2021

Table 22. Simplified Convenience Weighted Evaluation Factor Matrix

Hierarchical Weighting						
No	**1**	**2**	**3**	**4**	**5**	**6**
1		**Angkot**	**Car**	**Becak**	**Taxi**	**Motorcycle**
2	**Angkot**	2,0000	3,0000	1,0000	2,0000	1,0000
3	**Car**	4,0000	3,0000	1,0000	2,0000	2,0000
4	**Becak**	3,0000	2,0000	1,0000	2,0000	1,0000
5	**Taxi**	1,0000	2,0000	2,0000	1,0000	3,0000
6	**Motorcycle**	2,0000	1,0000	2,0000	3,0000	1,0000
	$\sum$	12,0000	11,0000	7,0000	10,0000	8,0000

Source: Authors Analysis, 2021

Table 23. Convenience Weighted Evaluation Factor Matrix (combined)

Hierarchical Weighting								
No	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
1		**Angkot**	**Car**	**Becak**	**Taxi**	**Motorcycle**	**Vektor Eigen**	**Rangking**
2	**Angkot**	0,1666	0,2727	0,1428	0,2	0,1250	0,1814	4
3	**Car**	0,3333	0,2727	0,1428	0,2	0,25	0,2397	1
4	**Becak**	0,25	0,1818	0,1428	0,2	0,1250	0,1799	5
5	**Taxi**	0,0833	0,1818	0,2857	0,1	0,3750	0,2051	2
6	**Motorcycle**	0,1666	0,0909	0.2857	0,3	0,1250	0,1936	3

Source: Authors Analysis, 2021

a. Calculation of Total Ranking (Global Priority)

Based on all the criteria in the approach to the indicators of cost, time, security and convenience, the following combination relationship is obtained:

Table 24. Relationship Matrix (Combination)

Pembobotan Hirarki					
No	**1**	**2**	**3**	**4**	**5**
1		**Fee**	**Time**	**Security**	**Convenience**
2	**Angkot**	0,2519	0,1855	0,1769	0,1814
3	**Car**	0,2034	0,1547	0,2382	0,2397
4	**Becak**	0,1715	0,2188	0,2115	0,1799
5	**Taxi**	0,2460	0,1911	0,1865	0,2051
6	**Motorcycle**	0,1452	0,2188	0,1865	0,1936

Source: Authors Analysis, 2021

To find out the alternatives and combinations of strategy development that the Medan City government needs to develop. Thus, the evaluation of each need is obtained as follows:

Table 25. Total Rangking

1	**2**	**3**	**4**	**5**		**6**	**Total**
Angkot	0,2519	0,1855	0,1769	0,1814	X	0,1221	0,6364
Car	0,2034	0,1547	0,2382	0,2397	X	0,2231	0,6497
Becak	0,1715	0,2188	0,2115	0,1799	X	0,2083	0,6392
Taxi	0,2460	0,1911	0,1865	0,2051	X	0,3231	0,6898
Motorcycle	0,1452	0,2188	0,1865	0,1936	X	0,1345	0,5765

Source: Authors Analysis, 2021

From the above results, the priority that must be strengthened and planned by the Medan City Government is the online-based taxi mass transportation mode with 0.6898 or 68%, this is proven and actualized with online-based transportation planning which is almost the same as taxis, namely the Deli Bus Environmentally friendly trans with payment process using SMART CARD.

Conclusion

The conclusions in this study are: 1) The strategies developed by the Medan City government in Mass Transportation Planning include: Core Strategy (Core Strategy), Consequences Strategy, Customer Strategy (Customer Strategy), Supervision Strategy (Control Strategy) and Cultural Strategy (Culture Strategy); 2) The approach taken by using SWOT is in Quadrant I with a score of 3.01 so the main strategies that must be carried out are: a) Strengthening environmental-based Transportation Arrangement Policies with the existence of ministerial regulations and the strength of cooperation (S1 + O1, O2); b) Utilization of the Medan City government program with the integration of DISHUB's vision and mission so that the use of mass transportation is increasing (S2 + O3); c) Strengthening city taxes and levies with the commitment of the Medan City Government in adding transportation modes; 3) From the results of weighting calculations and evaluations carried out with AHP, the priority that must be strengthened and planned by the Medan City Government is the online-based taxi-based mass transportation mode with 0.6898 or 68%, this is proven and actualized by transportation planning based on which is almost the same as a taxi, namely the environmentally friendly Deli Trans Bus with a payment process using a SMART CARD.

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