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River Transportation Development Strategy in the South Daha and West Daha Sub-District South Kalimantan

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***Abstract*—** *River transportation is transportation that is commonly used by people in the interior. The area, which is partly surrounded by swamps, has the potential to be developed for future progress. The growth of river transportation for goods is increasing every year. River transportation is considered more efficient for transporting goods with large loads than land transportation. In addition, shipping costs are relatively affordable. This study aims to find out how the river transportation development strategy. The analysis used is a SWOT analysis, with internal and external factor approaches summarized into IFAS and EFAS matrices. Based on the results of the SWOT matrix analysis, river transportation is in quadrant I of the SWOT diagram, which is a progressive strategy. The strategy to be taken is to apply tariffs in accordance with the destination zone based on the agreement of all parties, the location of the pier which is adjacent to the land transportation route. Develop river tours, sell handicraft products around the dock, and floating market tours. Construction of docks in various locations. Provision of special floating piers for strategic locations such as South Daha. Disseminating to the public about using goods transportation to transport natural products more efficiently.*

***Keywords*—** *River, transportation, SWOT.*

I. INTRODUCTION

River transportation is a mode of transportation that has long been used by the community in the South Daha District of South Kalimantan. River transportation is the dominant transport in inland areas of Kalimantan, as a mode of the link between the land and the river. The role of transportation in an area and other regions is very dependent, it is caused by differences in natural resources or the needs needed by the community. Therefore, (Morlok, 1998) argues that, due to differences in natural resources and the limited needs that exist in an area. For this reason, there was an exchange of goods or services between regions. This exchange will begin with requests and offers. As a tool for this process, transportation is needed for the smooth mobility of river transportation.

The rapid growth of population, economy, agriculture, plantation, industry, trade has an influence on the development of river transportation, especially for cargo ships. River transportation has its own attraction that is still used by the public as a means of transportation to support the public economy. Although at present there are many other modes of transportation that have their respective advantages, river transportation can still compete. Based on data from the Department of Transportation South Hulu Sungai Regency, the amount of river transportation for goods has increased by about 37% from 2015 by 213 units and in 2018 there were 291 freight motor boats. This means, cargo ships are currently still needed by the community.

Increased yield of natural resources and the pottery and metal industry also have a major contribution to the development of river transportation. The advantages offered by river transportation as a mode of carrying goods have several advantages over land transportation. As transportation is considered to be cost-effective, consumers have their own advantages such as being able to reduce operational costs for shipping goods to their destination. Moreover, if the destination is far and has a large volume, river transportation is more efficient than land transportation. River transportation has an important role in reducing the burden of land transportation using trucks, so that it can reduce the acceleration of road damage due to heavy truck traffic loads (Kusdian, 2011). Its large transport capability is very economical and environmentally friendly (Rohács & Simongáti, 2007). The condition of the area that is passed by river transportation is sometimes difficult to reach by land transportation because it is still in remote areas. Thus, it is considered to be very superior. River transportation can distribute goods to remote areas that have not been touched by road infrastructure, not hampered by traffic congestion during the distribution process (Retna, Inland Port And Waterways In The SLC Member States, 2016).

This study aims to find out how the strategy to develop river transportation for goods. It is hoped that the results of this research will help various parties in the development of river transportation of goods in the future.

II. METHODOLOGY

In this research, to obtain a development strategy used SWOT analysis. By using a questionnaire, which will be answered by respondents. Where, respondents are stakeholders of the Department of Transportation, ship owners and public. Then the results will be obtained in the form of IFAS and EFAS matrix values. As for the research flow diagram can be seen in Fig. 1 below.

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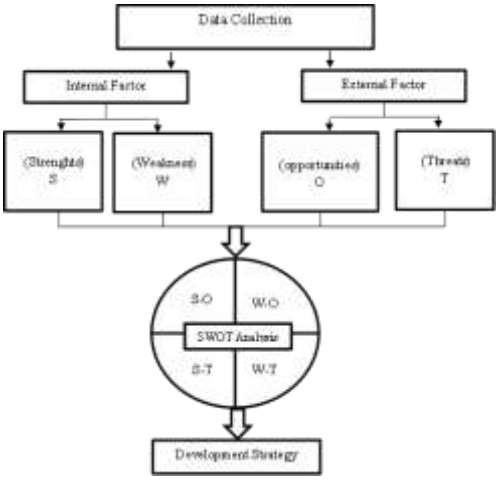

Fig. 1. Research flow diagram

III. RESULT AND DISCUSSION

A. *IFAS EFAS Analysis*

IFAS EFAS weight and rating calculations are performed to determine the coordinates position on the SWOT diagram. The results can be seen in the table below.

TABLE 1. IFAS Matrix

No	Internal Factor : Strength	Weight %	Rating	weight x Rating
1	River transportation selection trends	0,065	3	0,196
2	The integration with other transport modes	0,071	3	0,213
3	Transportation rates	0,069	4	0,278
4	Transportation infrastructure development	0,066	4	0,266
5	Commitment from the transportation agency to advance river transportation	0,064	3	0,191
6	Carrying capacity	0,064	2	0,127
7	Pollution level	0,067	3	0,202
8	Connectivity between regions	0,067	2	0,133
9	Potential natural resources	0,071	3	0,213
	Total	0,604		1,819
No	**Internal Factor : Weakness**	**Weight %**	**Rating**	**weight x Rating**
1	Route / route availability	0,065	2	0,130
2	Availability of Facilities and infrastructure	0,068	1	0,068
3	Duration of travel time	0,072	2	0,144
4	Security, service and safety	0,064	1	0,064
5	Waiting time duration	0,066	2	0,132
6	River transportation frequency	0,061	2	0,122
	Total	0,396		0,660
	Total Internal Factor	1,000		2,478
	TOTAL Strenght - Weakness	1,819 – 0,660 = 1,159		

Based on the table 1 and 2, obtained the coordinates of IFAS and EFAS SWOT matrix that is (1,159 and 0,095) in quadrant I. These coordinates will be plotted into the SWOT diagram quadrant as shown in Fig 2 below.

TABLE 2. EFAS Matrix

No	External Factor : Opportunity	Weight %	Rating	weight x Rating
1	The economic development of the South and West Daha sub-districts	0,068	2	0,137
2	Accessibility of river transportation	0,073	2	0,146
3	New infrastructure development	0,069	3	0,208
4	Development of natural resources	0,073	4	0,291
5	Government attention to river transportation for remote areas	0,074	2	0,148
6	Increased tourism sector	0,071	3	0,212
	Total	0,428		1,142
No.	**External Factor : Threat**	**Weight %**	**Rating**	**weight x Rating**
1	Increased use of land transportation	0,097	2	0,193
2	Factors of weather change	0,093	2	0,186
3	Land transportation network conditions	0,096	1	0,096
4	The development of transportation technology	0,095	2	0,190
5	Cleanliness of river transportation lines	0,094	2	0,189
6	Free transportation programs intersection of government	0,097	2	0,194
	Total	0,572		1,048
	Total External Factor	1,000		2,190
	Total Opportunity - Threat	1,142 – 1,048 = 0,095		

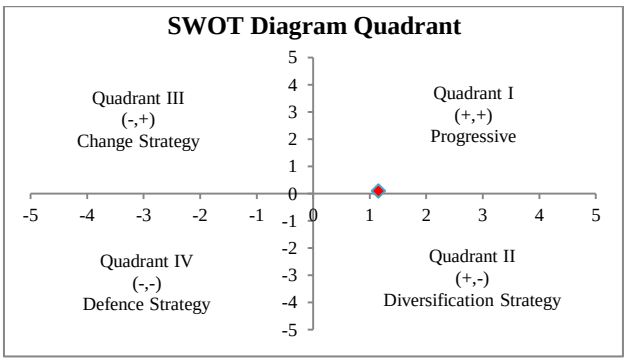

Fig. 2. SWOT diagram quadrant

B. *SWOT Matrix*

SWOT matrix made after determining the weighting of internal and external factors formulate strategies. The SWOT matrix is as follows

1. Matrix Strength – Opportunity
   - The tendency of people to use river transportation and affordable tariffs, especially for underprivileged people, will get the attention of the government especially areas that are difficult to reach by land transportation to smooth the movement
   - Integration between modes and high connectivity between regions makes the accessibility of this mode superior to other modes
   - The potential of large natural resources can be an opportunity to develop the economy of the southern and western sub-district of Daha and improve the tourism sector

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- Commitment from the transportation department and the development of transportation infrastructure from the government and also managers can improve infrastructure that is evenly distributed in all regions
- Large transport capacity and low pollution levels provide benefits and benefits to the community to use river transportation so that the potential to develop natural resource yields

2. Matrix Weakness – Opportunity
   - The addition of routes / routes, frequencies, facilities and infrastructure will increase accessibility, and construction of new infrastructure
   - The renewal of the ship's engine and arranging the departure schedule are expected to attract the interest of the community towards river transportation so that regional economic development will increase
   - Pay attention to security, services and safety so that they have the opportunity to develop natural resources
3. Matrix Strenght – Threat
   - Maintaining affordable tariffs and building fair infrastructure to compete with land transportation and free crossings
   - Commitment from the government to regulate information systems such as weather conditions and river cleaning and ship technology updates
   - Low levels of pollution, connectivity between regions, and integration with other modes can minimize the construction of road networks
4. Matrix Weakness – Threat
   - The addition of routes in order to compete with the road transportation network
   - The addition of frequency, speed, punctuality, facilities and infrastructure in order to compete with road transport, free crossings
   - Improve security, service, and safety so as to avoid accidents caused by weather conditions and obstructed river lines

C. Strategy Formulation

Based on the results of the SWOT quadrant in Fig. 2, a development strategy for river transportation will be formulated as below:

1. Quadrant I (Progressive)
   - Take advantage of the interests of people who tend to still want to use river transportation and maintain affordable tariffs. This will be the government's attention to the development of river transportation, especially for isolated or remote areas in order to expedite the movement and participation of the regional economy.
     For example: applying rates according to the destination zone based on the agreement of all parties
   - Increasing intermodal integration and high connectivity between regions makes accessibility of this mode superior to other modes.
     For example: the location of the pier adjacent to land transportation lines or in strategic locations
   - Utilizing the potential of natural resources can have the opportunity to develop the economy of the South and West Daha sub-districts and improve the tourism sector
     For example: developing river tourism tours, selling natural products or handicrafts around the pier and adopting floating market tourism such as in Banjarmasin
   - Equitable distribution and improvement of infrastructure development in the form of infrastructure from the commitment of the government and managers
     For example: construction of docks in various locations. Provision of special floating piers for strategic locations such as South Daha
   - Utilizing a large ship carrying capacity and a low level of pollution compared to land transportation, is an advantage for the user community, where river transportation is preferred to develop the results of natural resources in various regions.
     For example: socializing to the public the use of transportation of goods to transport natural products more efficiently
2. Quadrant II (Diversification Strategy)
   - Maintaining economical tariffs and equitable infrastructure development in all regions in order to compete with land transportation as well as free crossings
     For example: applying rates according to the destination zone based on the agreement of all parties
   - Implement commitments from the government to regulate information systems such as weather conditions and river cleaning and ship technology updates
     For example: The government is working with BMKG on weather conditions and the Office of the Environment related to river cleanliness and encouraging people not to throw garbage into the river. In addition, the government has socialized the latest ship technology such as engine upgrades to be faster. Or by replacing the ship with a newer one
   - Utilizing low pollution levels, connectivity between regions and integration with other modes can minimize the construction of road networks
     For example: Renewing a ship with colorful paint, developing a tour of the river along a certain day, a floating market
3. Quadrant III (Change Strategy)
   - The addition of routes, frequencies, facilities and infrastructure will increase accessibility and the development of new facilities that can adequately minimize disparities between regions.
     For example: the addition of docks in many residential locations, adding routes that have not been traversed by river transportation
   - The renewal of the ship's engine and arranging the departure schedule are expected to attract the interest of the community towards river transportation so that regional economic development will increase

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For example: replacing a ship's engine, the government coordinates with the ship owner regarding the operational schedule

- Paying attention to security, service and safety in order to have the opportunity to develop natural resources.
  For example: the provision of life jackets, the presence of security officers in the dock area. Provide special scales for transporting goods that transport natural resource products.

4. Quadrant IV (Defence Strategy)
   - The addition of river transportation routes so that the community can more freely determine its destination and this is also an advantage for ship owners.
     For example: add route which is currently not skipped transport stream
   - Increase the number of travel frequencies, speeds, timeliness, facilities and infrastructure so that they can compete with land transportation and free crossings
     For example: adding hours of operation to the afternoon
   - Improve security, service and safety both at the port and inside the ship in order to avoid hazards caused by weather conditions and obstructed river lines For example the provision of life jackets, the security officers in the dock.

IV. CONCLUSSION

Based on the result of data analysis and discussion described in section 3, and also referring to the purpose of this research, the following conclusions can be concluded:

The strategy to be carried out for the development of river transportation is

1. Applying rates according to the destination zone based on the agreement of all parties
2. The location of the pier adjacent to land transportation lines or in strategic locations
3. Developing river tourism tours, selling natural products or handicrafts around the pier and adopting floating market tourism such as in Banjarmasin
4. Construction of docks in various locations. Provision of special floating piers for strategic locations such as South Daha
5. Socializing to the public the use of transportation of goods to transport natural products more efficiently

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