Determining Strategy to Improve Tourism Transportation Services

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Abstract—In order to accelerate tourism development in Indonesia, the government has already running development program at 25 KSPN (Strategic Region of National Tourism Development), by huge investment on tourism transportation infrastructure. That investment causes the transportation cost become higher, meanwhile tourist want the transportation cost more accessible. In theoretical manner, tourism transportation will be more accessible if merged with public transport, whereas to unity both types are difficult causes they have different characteristic. For those need a sharp strategic to integrate both types. This research propose to find a simple method in determining strategy to improve public transportation services at once becoming more accessible tourism transportation. This research deve on public transportation at 6 KSPN, and analysis through inductive approach uses trajectory analysis, VOC, Crosstab analysis, and literatures. As result of this research, when will make public transport at once becoming tourism transport too, can be supported by: reduce waiting time at terminal or port, reduce VOC, reduce travel time, or other supported which can be converted base on travel time preference (Rp/hour) or distance travel preference (Rp/Km) to public transportation.

Keywords: tourism transportation, public transport, trajectory, VOC, Crosstab, KSPN

I. INTRODUCTION

A. Background of the Research

The government regulation of Republic Indonesia, Number 50/2011 about National Tourist Masterplan Development for 2010-2025 has determined 25 KSPN (Kawasan Strategis Pariwisata Nasional/ Strategic Region of National Tourism Development) as regionalism reference for tourism development in Indonesia, and realized by supporting it with huge investment on transportation infrastructure [1]. Tourism activity almost depend on transportation availability, which can move many people, from one country to other countries, from an area to another, and from a location to other locations, and so on. Improving transportation services will push increasing tourism and in vice versa the growth of tourism industries will create new transportation demand to deserve tourism flow. Penelope said the tourist expenditure for transportation approximate to 21% as shown at figure 1 [2]. Decreasing tourism transportation cost as one of main key for tourism development [3]. It is in-line with 3 A Tourism Destination Development jargon (Attraction, Accessibility and Amenities), where the distance, time and cost factor are very influencing to the willingness of people to travelling [4]. It clearly that tourism activities interdependent with the Transportation System Infrastructure availability no Tourism without transportation [5]. Preparing especially tourism transportation need great investment, and the question: is the public transportation services network which has already available can be used too for tourism transportation? Even though that both type transportation have different characteristic.

B. Research Objectives

This research objective is to find a simple method which can be used to determine improvement strategy of the existing public transport at once as tourism transportation too, in order to decrease cost for providing especial tourism transportation.

Fig. 1. Percentages of the tourist expenditure.

C. Scope of Research

This research deed on public transportation at 6 KSPN, which potential to improve as tourism transportation operation. This research wished will become as considering material when will operate public transportation at once as tourism

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transportation, which it will make tourist more accessible to reach tourism object, in short time and more accessible cost.

II. METHODOLOGY

A. Basic Concept to Provide Tourist Transportation

Base on the problem of tourist transportation services, Komain Kantawateera et al. said that provide special tourist transportation services is too expensive and not efficient [6]. So it will better to provide tourist transportation at once can be used by local people traveller for their daily activities, or improving existing public transportation [7], till proper to use as tourism transportation too, as shown at figure 2 Conceptual Framework of the Tourist Transportation Development.

Fig. 2. Conceptual framework of the tourist transportation development [6].

B. Steps of the Research

In order to achieve this research objective, the method for research completion can be seen at figure 3.

Fig. 3. Research completion steps.

III. RESULTS AND DISCUSSION

In this paper only showing 1 of 6 KSPN location have been researched, that is KSPN Lake Toba as an example. Next discussion suitable with the steps of research completion as showed at figure 3.

A. Determine Research Location

In this case will be delivered research result at KSPN Lake Toba in North Sumatera. There are 6 routes of public transport which can be used to reach KSPN Lake Toba, that are:

| No | Route | Time (Hour) | Cost (IDR) |
|----|-------|-------------|------------|
| 1  | Medan – Tebing Tinggi – Pematang Siantar-Parapat | 5 | 80,000 |
| 2  | Kutacane (Provinsi Aceh)– Kabanjahe – Tongging | 5 | 60,000 |
| 3  | Kutacane (Provinsi Aceh) – Sidikalang – Pangeran | 4 | 45,000 |
| 4  | Rantau Prapat - Kisaran – Tebing Tinggi – Pematang Siantar – Parapat | 4 | 45,000 |
| 5  | Rantau Prapat - Balige | 3 | 60,000 |
| 6  | Sibolga – Tarutung - Balige | 3 | 60,000 |

Other than that, air transportation also available to use, that is Jakarta (Soekarno Hatta) – Medan (Kualanamu) route with flight time approximately 1 hour and 50 minutes and fare between Rp. 700.000,- - Rp. 1.100.000,-, or Jakarta (Halim Perdanakusumah) – Silangit, with flight time around 2 hours, and fare between Rp. 750.000,- - Rp. 1.100.000,-. Tourist average expenditure at Toba is Rp. 2.000.000,- with average spending time 3 Days and 2 Nights.

B. Determine Origin – Destination of the Tourist

In this case, all of the traveller head to KSPN Lake Toba, as like Parapat, Merek, Tongging, Pangururan etc. The matrix of distance, cost, mode among point at KSPN Toba Lake can be saw at figure 2, meanwhile the ideal condition can be saw at figure 4, and the ideal condition can be saw at figure 4.

C. Determine Modal Choice (Public Transportation)

In this case, the mode will be used is public land transportation. The data as result of the research can be saw at figure 4 Matrix of the traveller at KSPN Lake Toba. It consist distance, availability of public transportation, travel time and travel cost, right for existing condition or for ideal condition.
Fig. 4. Ideal condition transportation matrix of KSPN Lake Toba.

D. Trajectory Origin – Destination of the Tourist

Base on the data at figure 4, can be plotted trajectory path of the traveller (tourist) from the origin to the destination. For example can be saw figure 5 Trajectory path for the traveller from Belawan to Tomok using combination land transportation and water (lake) transportation.

E. Origin-Destination Isodaphane Map of the Tourist

Isodaphane is lines which draw point to point connection with the same value from a certain point, such as time, cost etc. The Isodaphane map of the tourist travel times from Pangururan point and Parapat point at KSPN Lake Toba can be saw at figure 6.
Fig. 6. Isodaphane map of tourist travel times at KSPN Lake Toba.

F. Vehicle Operating Cost Investigation (VOC)

Vehicle Operating Cost (VOC) commonly used as determination base for transportation services tariff. Transportation tariff level based on services cost consist direct cost and indirect cost. Vehicle Operating Cost is expenditure cost to operate vehicle. Vehicle Operating Cost influenced by various conditions as like: physical road, geometric, pavement type, operating speed, and various vehicle type. Important variable which influencing calculation result of Vehicle Operating Cost is direct cost, indirect cost, overhead cost, unpredictable expenditure, and profit for vehicle owner.

| No | Details of Cost Component | Cost Component /Year | Length of way (Km) | Way length/year (312 work days) (Km) | Way length/5 years (1,560 work days) (Km) | Cost detail/Km (5 years) (Rp/Km) | Percentage (%) |
|----|-------------------------|----------------------|-------------------|---------------------------------|------------------------------------------|---------------------------------|----------------|
| 1  | Depreciation cost of vehicle | 90,000,000 | 174 | 54.288 | 271,440 | 331,56 | 20,307 |
| 2  | Crew cost of vehicle | 50,402,796 | 174 | 54.288 | 271,440 | 185,69 | 11,373 |
| 3  | Fuel cost | 34,947,900 | 174 | 54.288 | 271,440 | 128,75 | 7,886 |
| 4  | Tyre cost | 26,838,948 | 174 | 54.288 | 271,440 | 98,88 | 6,056 |
| 5  | Maintenance cost/year | 2,500,000 | 174 | 54.288 | 271,440 | 9,21 | 0,564 |
| 6  | Great Services/year | 25,449,400 | 174 | 54.288 | 271,440 | 93,76 | 5,742 |
| 7  | Little Services/year | 1,533,321 | 174 | 54.288 | 271,440 | 5,61 | 0,344 |
| 8  | Machine sparepart & Body repair/year | 73,214,755 | 174 | 54.288 | 271,440 | 269,73 | 16,520 |
| 9  | Cost of vehicle washes/year | 9,360,000 | 174 | 54.288 | 271,440 | 34,48 | 2,112 |
| 10 | Terminal retribution/year | 6,240,000 | 174 | 54.288 | 271,440 | 22,99 | 1,408 |
| 11 | Vehicle tax | 1,800,000 | 174 | 54.288 | 271,440 | 6,63 | 0,406 |
| 12 | Business permit | 7,123 | 174 | 54.288 | 271,440 | 0,03 | 0,002 |
| 13 | Route permit | 9,863 | 174 | 54.288 | 271,440 | 0,04 | 0,002 |

**Indirect cost**

| No | Details of Cost Component | Cost Component /Year | Length of way (Km) | Way length/year (312 work days) (Km) | Way length/5 years (1,560 work days) (Km) | Cost detail/Km (5 years) (Rp/Km) | Percentage (%) |
|----|-------------------------|----------------------|-------------------|---------------------------------|------------------------------------------|---------------------------------|----------------|
| 14 | Overhead cost (Employees)/year | 112,167,504 | 174 | 54.288 | 271,440 | 413,23 | 25,309 |
| 15 | Management cost/year | 8,730,000 | 174 | 54.288 | 271,440 | 32,16 | 1,970 |
| **Total** | | **443,191,610** | 174 | 54.288 | **271,440** | **1,632,74** | **100,00** |

Source: Analysis result, 2018.
G. Intervention to the Public Transportation System

Base on the above trajectory analysis and VOC analysis, can be decided what kind subsidies can be gave to the public transportation for improving to become tourist transportation. That alternatives subsidies will influences to reduce direct cost and/or indirect cost, and that subsidies can be used to improve public transportation at once proper as tourism transportation. For example, can be seen at figure 7, impact subsidies to public transportation, such as:

- Subsidies for vehicle depreciation (influencing 20.307% of cost)
- Subsidies for sparepart (influencing 16.520% of cost)
- Subsidies for overhead/ year (influencing 25.309% of cost)
- Etc.

Then, to make more applicable the subsidies pattern to decrease the tariff, can be given base on Time travel preference (Rp/hour) or distance travel preference (Rp/Km).

![Figure 7](Image)

**Fig. 7. Alternatives intervention to the public transportation.**

IV. CONCLUSION AND RECOMMENDATION

- Base on the above discussion, can be concluded that the supporting services for tourist transportation can be gave by improving the public transportation in the form: reducing waiting time at terminal/ port/ airport, Vehicle Operating Cost (VOC) reduction as like subsidies on vehicle depreciation, subsidies on spare part, subsidies on overhead/year etc., reduction on travel time etc. That all can be converted to time travel preference (Rp/hour) or travel distance preference (Rp/Km) to improve tourist transportation satisfaction.
- Base on the discussion has been done, the recommended method for Determining Strategy to improve tourism Transportation Services can be drawn as like flow diagram at figure 3 Research Completion Steps.

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