Strategic Issue in Smart Mobility Development in Surakarta

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Keywords: Increased urbanization current and increased vehicle population in urban areas have generated urban transportation challenges. To deal with it, a smart mobility concept is developed constituting a concept deriving from smart city using ITS, a system that can give an opportunity of optimizing and improving the efficiency of urban transportation system. This research aimed to find out and to analyze strategic issues emerging in Smart Mobility Development. The method employed was qualitative research, data collection was conducted using interview method, and data was analyzed using SWOT analysis. The result of SWOT analysis showed the following issues: (1) E-gov application, (2) masterplan development, 3) inter-mode integration development, 4) government aid optimization, 5) between-stakeholder cooperation, 6) transportation facility accessibility, 7) feeder transportation optimization, and 8) policy synchronization.

Abstract: Strategic Issue, Smart mobility, ITS

1 INTRODUCTION

The increased urbanization current impacts the urban problem complexity, particularly the increased need for population mobility, so that the vehicle population increases; moreover social-economic condition change has brought new challenge to urban transportation.

At the same time, ITS (Intelligent Transport System) technology development has given the urban area an opportunity of answering the transportation challenges. To deal with it, a smart mobility concept is developed constituting a concept deriving from smart city using ITS (Intelligent Transport System),

Smart Mobility, according to Nam (2011), is one of topics on Smart City implementation. However, Arena (2013) states that Smart Mobility is an important topic, impacting some dimensions of smart mobility, a variety of aspects creating citizen's life quality and all potential stakeholders expecting the benefit of Smart City implementation.

Meanwhile, according to Elisa Alberti (2011) in Muliarto (2015), Smart City with Smart Mobility is the city with "easy" mobility. It ensures the good availability of innovative and sustainable public transportation vehicles.

Keong and Ong (2015) in their study on *Smart Mobility 2030-ITS Strategic Plan for Singapore* state that technology advance the ITS has can change the public perception's on their ability of using ITS to deal with transportation challenge. Benevolo, et.al, (2016) states that Smart mobility "is a concept of city development as a part of Smart City concept that is expected to provide easy, safe, comfortable transportation service, fast service and affordable price to the public through information technology". Alberti (2011) in Pratiwi (2015) states that "Smart Mobility with smart transportation will facilitate the citizens' trip through the availability of innovative and sustainable public transportation vehicles with low environmental effect". Meanwhile, Cohen (2011) states there are three indicators of Smart Mobility: Mixed modal access, prioritized clean and non-motorized options, and integrated ICT.

Giffinger, R., at al (2007) states "The Smart Mobility (SM) policies focus on local and international accessibility as well as the availability of information and communication technologies and modern and sustainable systems". Considering the variable suggested by Giffingger, et al (2007) and Cohen (2011), there are 3 main variables in smart mobility: accessibility, information technology availability (ITS) and (intermode and ITS) integration. It is confirmed by Keong and ONG (2015) in Smart Mobility 2030 –ITS Strategic Plan for Singapore.

To bring Smart Mobility or Smart Transportation into reality, a reliable strategic plan is required through the formulation of strategic issue. Strategic issue, according to Dutton and Dukerich (1991) in Kunnas (2012), and Bryson (2007), is a condition requiring organization's response through policy making in order to evolve in the future, raised from internal and external relations or in other words by taking the environmental change agitation into account. Thus, strategic issue is defined as "the most appropriate or suitable organization choice" to its environment.

This research aimed to formulate strategic issue in Smart Mobility Development. Through identifying strategic issue, we can analyze the internal environmental requiring consideration to be improved, the relevant strategy, and the direction to which the organization development will go, and etc.

2 METHOD

This study was a descriptive qualitative study aiming to explore anything that cannot be quantified. Techniques of collecting data used were interview and documentation; data was obtained through data source selected using purposive sampling technique. Data analysis was carried out using SWOT analysis, as suggested by Hunger (2005).

3 RESULT AND DISCUSSION

To formulate the strategic issues, the early step taken is to identify internal factor consisting of Strength and Weakness and external factor consisting of Opportunity and Threat. The result of identification of internal and external factors shows: internal environment: strength consisting of 1) e-government application, 2) authority of regulation maker, 3) smart mobility master plan, 4) BST corridor and route; weakness consisting of: 1) limited fund source/budget, 2) limited number of BST fleets, 3) less maximum BST operation, and 4) limited number of feeder.

External environment: Opportunity: 1) the presence of transportation mode, 2) ITS development, 3) between-Stakeholder cooperation, 4) support from Central and Provincial Government. Threat: 1) the increasing number of private vehicle, 2) the presence of online transportation, and 3) people's low consciousness of using public transportation.

Then, SWOT analysis is conducted. Considering the result of SWOT analysis, several strategic issues are obtained:

3.1 Strategic issue of E-gov application in ITS development (S1,O2)

The application of Information and Communication Technology (ICT) in transportation service is called *Intelligent Transportation System* (*ITS*). This system can give the transportation vehicle's passengers and operators information in such a way that the transportation process can run effectively and efficiently. ITS application in Surakarta involves:

- *Advanced Traffic Management System* used by road management to monitor traffic and to give real time information to the road users. It has not run optimally yet in Surakarta.
- *Electronic payment*; according to Cohen (2011), the presence of smart card or e-ticket gives payment service for continuous travel.
- *Bus Priority;* according to Utomo (2008), is one of attempts to give "a little" priority to the bus in the intersection gate with traffic sign. This seems to have not run optimally yet in Surakarta due to Mix Road condition.

3.2 Strategic issue of developing cooperation with stakeholders to develop Smart Mobility MasterPlan (S2,O3 and O3,O4)

In Smart City Master Plan of Surakarta City and Local Medium-Term Development Plan (RPJMD), there should be cooperation among stakeholders to meet the need for transportation service (providing Bus fleet and feeder).

3.3 Strategic issue of developing transportation intermode integration by optimizing the existing BST and feeder fleets (W2,W4 and O1)

Multimode access, according to Besong (2007) in Pratiwi (2015), consists of integration between bus and train modes, between bus and plane modes, and between train and plane mode. Intermode integration in Surakarta is the integration of bus mode (in Tirtonadi Terminal) and train (from Balapan and Purwosari Stations) using feeder. Meanwhile, the integration of train mode (Balapan and Purwosari stations) and plane mode is conducted using BST.

3.4 Strategic issue of optimizing Central and Provincial Government's Grant to improve BST operational cost (W1,3 and O4)

Since its early development, urban public transportation service has received grant from central government, in this case Ministry of Transportation. Meanwhile, the operational cost is not subsidized so that it has not given service for free, just like other trans-buses.

3.5 Strategic issue of improving cooperation with stakeholders to optimize BST and Feeder's operation (W3, W4 and O1, O3)

Considering the limited operational cost and the limited fleet number in mass transportation management, Surakarta City Government attempts to establish partnership with third party. The partnership is established between:

- Surakarta City Government and PT. Bengawan Solo Trans in MoU No. 001/KS/PT.BST/VII/2013 about The Cooperation of Road-Based Mass Transportation Management in Urban Area of Surakarta.
- Cooperation Agreement between Surakarta City Government and Trans *Roda Sejati* Service Cooperatives Number: 119/860. Number: 002/Sek/TRS /III/2017 about Cooperation of Road-Based Mass Transportation Management in Urban Area of Surakarta, to provide feeders for corridors 9, 11, 14, and 15.
- Cooperation Agreement between Surakarta City Government and Trans *Bersama Satu Tujuan* Service Cooperatives Number: 119/860.1. Number: 088/BST/ III/2017 to provide feeders for corridors 8 and 13.

3.6 Strategic issue of developing accessible public transport facilities to user community (O3,O4 and T3)

In Smart City concept, according to Gifinger (2007), supporting public transport network is required to cater on all city areas. Therefore, the accessible supporting facilities (feeder and e-ticket) should be developed.

3.7 Strategic issue of synchronizing the policy to limit the number of private vehicle (O2,O3 and T1)

The synchronization of interests should be made in providing transportation service at Ministry level. For example, Ministry of Industry and Trade sees its performance by producing and selling as many as possible the private vehicle, while Ministry of Transportation limits the use of private vehicle.

3.8 Strategic issue of optimizing Feeder transportation to cater on the area unreached by BST, thereby reducing the use of online transportation and private vehicle (W4 and T1, T2)

The availability of supporting transporting vehicle or feeder, in addition to functioning to cater on thee transportation unreached by BST, is expected to cater on all corridors with the increasing number of feeders that will lead to the reduced online transportation and private vehicle use.

5 CONCLUSION

Considering the identification of internal environment factor consisting of Strength and Weakness and external environment factor consisting of Opportunity and Threat, SWOT analysis is then conducted, finding the following strategic issues (1) E-gov application, (2) masterplan development, 3) inter-mode integration development, 4) government aid optimization, 5) between-stakeholder cooperation, 6) transportation facility accessibility, 7) feeder transportation optimization, and 8) policy synchronization.

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