

# Strategy of the Transportation Department to Overcome Traffic Congestion through the Utilization of Energy Based on Area Traffic Control System in the City of Bandar Lampung

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## Abstract:

Transportation problems are an actual problem in almost all major cities in the world, especially those that do not have good or adequate public transportation. The country of Indonesia is a developing country but its economic growth is very rapid, this has an impact on urbanization or the migration of people from villages to cities is very significant. Then as the population grows in an urban area and the growth rate is relatively high and the urbanization is quite heavy, it causes an increase in the number of motorized vehicles, causing congestion. The method used in this research is Development Research with a qualitative-descriptive approach that is to make exposure and to find out carefully and deeply about the social phenomena associated with Energy Utilization Based on Area Traffic Control System in The City of Bandar Lampung, Indonesia.

The preliminary findings in this study is socialization which has not yet thoroughly into all layers of society, especially road users so that not many people know about the Area Traffic Control System and the society was not able to monitor traffic conditions quickly, so that the service information regarding the state of the traffic in Bandar Lampung has not been obtained the public as road users. Through this research it will generate an appropriate strategy for the Department of Transportation to overcome traffic congestion in the City of Bandar Lampung.

**Keywords:** strategy of the transportation, traffic control system, society, urban area.

**JEL:** K4, R4, R5, R58

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## 1. INTRODUCTION

Traffic and road transport in big cities are now

very important in increasing the social mobility of the community one of the main

functions of big cities is to organize a transportation system with effective and efficient services. Therefore urban transportation is the main supporting sector for community mobility and freight transportation which is an important element in economic activity and urban development (Rode et al. 2017).

The increasing mobility of people and goods resulting in congestion is also influenced by conditions where traffic facilities and infrastructure are still limited, traffic management has not functioned optimally, public and passenger transportation services are inadequate, and the traffic area used is not proportional the volume of existing vehicles, there will be traffic jams (de Palma, 2011). In addition, people who lack good discipline often violate traffic rules. For example, there are still traffic drivers who violate traffic signs. Even street crime often occurs in several traffic lanes.

The city of Bandar Lampung is a strategic city where roads are crossed or crossed by vehicles from the island of Java to the island of Sumatra or from the island of Sumatra to the island of Java. The road that became the crossing was one of them, namely Soekarno Hatta road. This road is relatively very dense and is crossed by several types of vehicles such as city transportation, transportation to areas in Lampung province, and inter-provincial city transportation.

The city of Bandar Lampung has relatively congested road sections that sometimes experience congestion, which is on the Teuku Umar road section which is located in the city center and is located in the trading center of Bandar Lampung City. Teuku Umar Road is crossed by vehicles originating from the city center and from the trade center to out of town. Vehicles on the Soekarno Hatta and Teuku Umar roads simultaneously used the lane at one time, which was the cause of congestion on these two roads.

The use of energy is a good breakthrough in increasing the effectiveness of a job. The Transportation Agency of Bandar Lampung City seeks to utilize existing Energy sources

in combination with technological developments, namely applying the Area Traffic Control System signaling tool to facilitate monitoring of traffic developments in Bandar Lampung City.

## 2. LITERATURE

The word "strategy" comes from the Greek word, *strategos* which means generalship or something done by the generals of war in making plans to win the war (Chandler, 1962; Pertusa-Ortega, 2010). Strategy for some organizations is a way to overcome and to anticipate every problem that arises as well as opportunities for the future. According to Jauch & Glueck (1988), interpreting strategy as a unified, broad, and integrated plan that connects the superiority of organizational or corporate strategy with environmental challenges and which is designed to ensure that the main goals of the organization or company can be achieved proper implementation by the organization. In another section identifies strategy as a broad basic plan of organizational actions that reaches a goal (Tregoe, 1980; Casadesus-Masanell, 2010; Bryson et al. 2015). According to Johnson (2003), strategy is an art of using battle to win a war. Strategy is a long-term plan to achieve goals. The strategy consists of important activities needed to achieve the goal. According to Vorhies (2005) and Adner (2006), strategy is a goal to be achieved, an effort to communicate what will be done, by who is working, how to do it, and to whom these things are communicated, and need to understand why the results the performance needs to be assessed. Ronda – Pupo (2012), says that the word strategy can be used in various ways or situations: 1) strategy is a plan, how to get something from here and there, 2) strategy is a pattern in action from time to time, 3) strategy is a position that reflects the decision to offer a product or a service in a particular market, and 4) strategy is a perspective that is vision and direction.

Basically the opinions above have the same core, namely strategy is an art and science in making (formulating), implementing, and

evaluating strategic decisions between functions that allow an organization to achieve goals in the future (Thompson, 1967). According to Payne (2005), the types of strategies referred to are as follows: 1) Organizational Strategy, 2) Program Strategy, 3) Resource Support Strategies, and 4) Institutional Strategy. Meanwhile, Whittington (2006) divided the type of organization into eight types, including the following: 1) Threatened strategies, 2) Entrepreneur Strategy, 3) Strategy of Ideology, and 4) Process Strategy

Basically the strategy is prepared to respond to relevant external changes from an organization (Benn, 2014). According to Chattopadhyay (2001), external changes will be responded by showing the internal capabilities of organizations that can take advantage of opportunities and minimize threats. Meanwhile, Tsang (2002) offers a system of implementing strategies that are considered to be able to solve various problems in its implementation consisting of 3 (three) elements, namely: (1) Integral Planning and Control Systems, (2) Leadership, Motivation, Systems Communication, (3) Human Resource Management and Organizational Culture.

According to Fernandes (2017), the word energy comes from Greek, which is energy, which means activity / activity. It consists of two words namely en (in) and ergon (work). So, Energy has a general meaning, namely the ability to do a job or business.

There are some experts who suggest energy, as follows: Campbell, Reece, and Mitchell, they think energy is an ability to rearrange matter. In summary energy is the ability or capacity to do a job (Mitchell, 2014). According to Dalamagkidis et al. (2007), and Desfiandi et al (2019); energy is the ability to make things happen. Whereas according to Wang et al. (2009), energy is a basic concept of thermo dynamics which is an important aspect of technical analysis.

According to Dalamagkidis et al. (2007), Energy has several forms, because energy can come from various sources. The following are

various forms of energy: Electrical energy, Light Energy, Kinetic Energy, Potential Energy, Nuclear Energy, Sound Energy, Chemical Energy, and Heat Energy.

In Law No. 22 of 2009 concerning Road Traffic and Transportation explained that the Tool for Giving Traffic Signs (APILL) is an electronic device that uses light signals that can be equipped with sound signals and utilizes energy from solar power to regulate traffic for people or vehicles in intersections or on roads (Sutandi & Surbakti, 2012).

Meanwhile, according to Mohan (2011), explained that the Tool to provide Traffic Signs is a traffic signal that is regulated automatically or manually, which is meant to regulate traffic in a crossroads by utilizing solar cell panels as a source of energy.

The Traffic Signal Intersection is to regulate traffic; the Giving Traffic Signal Tool is an increase of the usual intersection (without the Traffic Signal Tool) where the priority rule is applied which prioritizes traffic from other directions. The criteria for intersections that have to use the Traffic Sign Tool are: 1) a minimum flow of traffic that uses an average of over 750 vehicles / hour for 8 hours a day, 2) if the vehicle's waiting time or average delay is over 3 seconds, 3) used intersections on average more than 175 foot trips / hour for 8 hours a day, 4) accidents often occur at the intersection concerned, and 5) a combination of the reasons mentioned above. While, the types of Signaling Tools Traffic Signs consist of: 1) 3 color lights for vehicles, three-color lights for red, yellow and green light, 2) two-color lights, to arrange vehicles or pedestrians in two-color lighting are red and green, and 3) one color lamp, to give a warning to the road user, the light is yellow or red.

### 3. METHODOLOGY

This research used qualitative research methods. According to Johnson (2004), the qualitative research methods are used to examine the natural objects conditions, data collection techniques are triangulated, data analysis is inductive or qualitative, and the results of qualitative research emphasize on

the meaning rather than generalization. According to Xiangming (1996), qualitative methods are procedures used for social research related to humans and produce descriptive data from research that researches, while the type of research used is a type that is descriptive. This research took place at the Department of Transportation in City of Bandar Lampung. It's in Zainal Abidin Pagar Alam Street (Rajabasa Raya Station), Bandar Lampung.

#### 4. DISCUSSION

##### 1. Strategy

The presence of this technology-based traffic control system is one of the Strategies of the Bandar Lampung City Transportation Service in overcoming traffic jams and delays in every red light intersection in

Implementation of the Strategy of The Transportation Department To Overcome Traffic Congestion Through The Utilization of Energy Based On Area Traffic Control System In The City of Bandar Lampung contained in the Program in the form of activities namely Information and Information Services, Maintenance and Development of Tools

Giving Traffic Signal Based on Traffic Signal System by utilizing energy sources from solar cell panels (solar power) available (Wang et al. 2009), as well as monitoring and controlling intersections.

##### 2. Socialization and Information Services

Socialization and Information Service Process is an important process in a program because through socialization the community can be related to the program, as well as socialization as a term that encourages a program (Mohan, 2011). This socialization is an activity to provide insight into ways that traffic can be good for the community, train community care for other fellow road users and for the environment to create order and smooth traffic in Bandar Lampung City and introduce Tool Facilities Giving ATCS Traffic Signs to society. In the socialization of the ATCS Traffic Signal Provider Tool, it was explained that Bandar Lampung City had a Traffic Control System (ATCS) technology, a CCTV, with CCRoom as its control center. From CCRoom the traffic conditions are monitored at each intersection that has been installed Area Traffic Control System.

**Table 1**  
**Installation Point of Area Traffic Control System in Bandar Lampung City**

Numbers	ATCS Mounting Points
1	The intersection of Rajabasa Station
2	The intersection of Abdul Muluk Hospital
3	The intersection of Kota Raja or TuguJuang
4	The intersection of Adipura
5	The intersection of Basuki Rahmat
6	The intersection of Governor office
7	The intersection of Hos Cokroaminoto
8	The intersection of Mayor's office
9	The intersection of Soekarno Hatta (Planning Phase)
10	The intersection of Soekarno Hatta Pusat in Suropati Street (Planning
11	The intersection of Soekarno Hatta in Urip Sumoharjo Street (Planning
12	The intersection of Soekarno Hatta in Sutami Street (Planning Phase)
13	The intersection of Soekarno Hatta in Teluk Ambon Street (Planning

*Source: Department of Transportation, Bandar Lampung City 2018*

Bandar Lampung City. Although socialization has been carried out to the public through voicemail in every red light intersection, through mass media, electronic media, there

are still many people as road users do not know that in Bandar Lampung City has used a technology-based traffic control system and the community has not been able to traffic using each hand phone, so that information services regarding traffic conditions in the city of Bandar Lampung have not been obtained by the community as road users.

Ineffective communication will hinder the set target, internal communication has been carried out by the Head of Service with employees handling the Area Traffic Control System has been running well due to the time to discuss the development of Area Traffic Control System, but external communication carried out by the Area Traffic Control The system with the Public Works Agency as a provider of road facilities, geometric improvements to roads and intersections and road equipment that is directly related to road users is not established (Rode et al. 2017). Although communication with the Police as the optimization of traffic engineering operations is well established, coordination with the Public Works Agency and the Police is a step to monitor intersection control and to achieve smooth, safe and orderly traffic and road transport goals (Sutandi & Surbakti, 2012).

To carry out the activities, the quantity of officers of the Transportation Office of Bandar Lampung City is needed, especially the CCRomm officers who are adequate. Because in the activities of the Traffic Control System Area, the Department of Transportation is required to master the field of traffic and transportation both the problems faced and the solutions to overcome these problems. Division of employee duties must also be adapted to their respective fields because if the division of tasks is not in accordance with their respective skills will certainly hinder them in carrying out the strategies that have been set (Whittington,

2006; Bryson et al. 2015). Without a human resource development program, it will hinder employees in terms of operating the components of the traffic control system area (Tsang, 2002; Adner, 2006; de Palma, 2011; Mitchell, 2014). Through the development of human resources will be able to improve the quality of resources so that it can operate the infrastructure APILL Area Traffic Control system optimally (Mitchell, 2014).

## 5. CONCLUSION

The Strategy of The Transportation Department To Overcome Traffic Congestion Through The Utilization Of Energy Based On Area Traffic Control System In The City of Bandar Lampung has gone well. This is based on the Implementation of the Strategy of the Transportation Service in the Application of Solar Cell Panel Energy (Solar Power) through the Traffic Giving Tool Based on Area Traffic Control system to overcome congestion in order to realize the smooth traffic in Bandar Lampung City.

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## REFERENCES

- [1] Adner, R., & Zemsky, P. (2006). A demand-based perspective on sustainable competitive advantage. *Strategic Management Journal*, 27(3), 215-239. <https://doi.org/10.1002/smj.513>
- [2] Benn, S., Edwards, M., & Williams, T. (2014). *Organizational change for corporate sustainability*. Routledge. <https://doi.org/10.4324/9781315819181>
- [3] Bryson, J. M., Crosby, B. C., & Stone, M. M. (2015). Designing and implementing cross-sector collaborations: Needed and challenging. *Public Administration Review*, 75(5), 647-663. <https://doi.org/10.1111/puar.12432>
- [4] Casadesus-Masanell, R., & Ricart, J. E. (2010). From strategy to business models

- and onto tactics. Long range planning, 43(2-3),195  
215.<https://doi.org/10.1016/j.lrp.2010.01.004>
- [5] Chandler Jr, A. D. (1962). 1998, Strategy and Structure: Chapters in the History of the American Industrial Enterprise.
- [6] Chattopadhyay, P., Glick, W. H., & Huber, G. P. (2001). Organizational actions in response to threats and opportunities. *Academy of Management Journal*, 44(5), 937-955.
- [7] Dalamagkidis, K., Kolokotsa, D., Kalaitzakis, K., & Stavrakakis, G. S. (2007). Reinforcement learning for energy conservation and comfort in buildings. *Building and Environment*, 42(7), 2686-2698. <https://doi.org/10.1016/j.buildenv.2006.07.010>
- [8] de Palma, A., & Lindsey, R. (2011). Traffic congestion pricing methodologies and technologies. *Transportation Research Part C: Emerging Technologies*, 19(6), 1377-1399. <https://doi.org/10.1016/j.trc.2011.02.010>
- [9] Desfiandi, A., Singagerda, F. S., & Sanusi, A. (2019). Building an Energy Consumption Model and Sustainable Economic Growth in Emerging Countries. *International Journal of Energy Economics and Policy*, 9(2), 51-66. <https://doi.org/10.32479/ijeep.7353>
- [10] Fernandes, C. (2017). A Contribution to the Analysis of Energy Security. *Geopolitics of Energy and Energy Security*, 61-78.
- [11] Jauch, L. R., & Glueck, W. F. (1988). *Strategic management and business policy*. McGraw-Hill.
- [12] Johnson, G., Scholes, K., & Whittington, R. (2003). *Exploring corporate strategy* 7th Edition.
- [13] Johnson, R. B., & Onwuegbuzie, A. J. (2004). Mixed methods research: A research paradigm whose time has come. *Educational researcher*, 33(7), 14-26. <https://doi.org/10.3102/0013189X033007014>
- [14] Mitchell, C. A. (2014). Revolutionising how we think about infrastructure. *ATSE Focus*.
- [15] Mohan, D. (2011). Analysis of road traffic fatality data for Asia. In *Proceedings of the Eastern Asia Society for Transportation Studies Vol. 8 (The 9th International Conference of Eastern Asia Society for Transportation Studies, 2011)* (pp. 351-351). Eastern Asia Society for Transportation Studies.
- [16] Payne, A., & Frow, P. (2005). A strategic framework for customer relationship management. *Journal of marketing*, 69(4), 167-176. <https://doi.org/10.1509/jmkg.2005.69.4.167>
- [17] Pertusa-Ortega, E. M., Molina-Azorín, J. F., & Claver-Cortés, E. (2010). Competitive strategy, structure and firm performance: A comparison of the resource-based view and the contingency approach. *Management Decision*, 48(8), 1282-1303. <https://doi.org/10.1108/00251741011076799>
- [18] Rode, P., Floater, G., Thomopoulos, N., Docherty, J., Schwinger, P., Mahendra, A., & Fang, W. (2017). Accessibility in cities: transport and urban form. In *Disrupting mobility* (pp. 239-273). Springer, Cham. <http://doi.org/10.1007/978-3-319-51602-8>
- [19] Ronda-Pupo, G. A., & Guerras-Martin, L. Á. (2012). Dynamics of the evolution of the strategy concept 1962–2008: a co-word analysis. *Strategic Management Journal*, 33(2), 162-188. <https://doi.org/10.1002/smj.948>
- [20] Sutandi, A. C., & Surbakti, E. M. (2012). Identification of Factors of Road Safety Problems in Indonesia and Recommended Solutions to Improve Road Safety.
- [21] Thompson, J. D. (1967). *Organizations in action*. New York: McGraw-Hill. *Thompson Organizations in Action* 1967.
- [22] Tsang, A. H. (2002). Strategic dimensions of maintenance management. *Journal of Quality in Maintenance Engineering*, 8(1), 7-39. <https://doi.org/10.1108/13552510210420577>
- [23] Vorhies, D. W., & Morgan, N. A. (2005). Benchmarking marketing capabilities for sustainable competitive advantage. *Journal of marketing*, 69(1), 80-94. <https://doi.org/10.1509/jmkg.69.1.80.55505>
- [24] Wang, J. J., Jing, Y. Y., Zhang, C. F., & Zhao, J. H. (2009). Review on multi-criteria decision analysis aid in sustainable energy

- decision-making. Renewable and sustainable energy reviews, 13(9), 2263-2278.<https://doi.org/10.1016/j.rser.2009.06.021>
- [25] Whittington, R. (2006). Completing the practice turn in strategy research. *Organization studies*, 27(5), 613-634.  
<https://doi.org/10.1177/0170840606064101>
- [26] Xiangming, C. (1996). Qualitative research methods for the social sciences. *Social Sciences in China*, 6, 93-102.