

THE INTERNATIONAL JOURNAL OF HUMANITIES & SOCIAL STUDIES

Traffic Management of Bangkok to be a City of Transport

Dr. Anatchai Rattakul

Director General, Public Policy and Management Center (Doctorate School),
Kasembundit University, Thailand

Dr. Pradit Deewattanakul

Lecturer, Rajapark Institute, Thailand

Dr. Wasana Khongsakunsap

Director, Department of Finance Division, Nakhonpathom Municipality, Thailand

Dr. Thuchapon Yodthong

Associate Professor, Academic Committee, California University, U.S.A.

Dr. Ornpapha Chutikorntaweasin

Associate Professor, Academic Committee, California University, U.S.A.

Abstract:

The purposes of this research were 1) to study and analyze problems and obstacles of traffic management of Bangkok to be a city of transport, 2) to study factors of traffic management of Bangkok to be a city of transport, and 3) to present the guidelines for traffic management of Bangkok to be a city of transport. This study has been designed as the mixed methodology research. The research results show that problems and obstacles of traffic management of Bangkok to be a city of transport consisted of 1) a lack of overall management system, 2) the traffic controller cannot effectively enforce traffic laws and the commuters did not respect the law, and 3) the traffic technology was not up-to-date and the relevant organizations did not see its importance. With regard to factors of traffic management of Bangkok to be a city of transport, unity (U) had the highest mean score, followed by use of traffic technology (U), creation of traffic controller discipline (C), and participation in generating traffic discipline (P) respectively. These four factors can be determined as guidelines of traffic management of Bangkok to be a city of transport, called by the researcher, "UUCP".

Keywords: Traffic management, Bangkok, city of transport

1. Introduction

'Bangkok', as the capital city of Thailand, is the center linking the transport to both domestic regions and other countries conveniently. With its readiness on various types of potential of transport infrastructure, Bangkok is the center of supply chain and also in the top ranking of the city of transporting for tourism. The important factors are that Bangkok Metropolitan Administration and the government collaborated to drive on Bangkok to have equal transportation potential to other capital cities in the world. In addition, Bangkok is planned to be the transportation center of Southeast Asia (Strategy and Evaluation Department, 2009). Due to the fact that the transport demand in Bangkok metropolitan area is as high as 18 million trips per day based on the present readiness of infrastructure, including the goal about city development and rapid growth of city, the government precipitates the construction of infrastructure to cover every area of Bangkok and to connect the vicinity and neighbor provinces.

Apparently, Bangkok has made great strides in preparing for becoming the major vibrant of the region. However, the present fact is that there are many organizations responsible for solving traffic problems in Bangkok and its vicinity; thereby, the troubleshooting is not systematic and lacks continuity. Another important point is that there is a lack of unity in management, coordination and collaboration, also an organization responsible for dealing with traffic problems that require 24 hours of continuous operation, and the use of modern technology in all traffic service system. In addition, the problems of traffic management include, first, a lack of discipline of commuters who do not follow traffic rules; and second, regarding the application of laws in solving traffic problems, the laws cannot be enforced effectively because the law enforcers still lack strict and continuous supervision (Committee on Transportation, the National Legislative Assembly, 2017). This is relevant to the study of Sarpanya (2015) that over the past several years, there have been many organizations involved in trying to find a way to handle traffic problems, but traffic conditions have not been resolved and are experiencing heavier problems every year, and it is going to be harder in the future. This is due to the reason that most policies can only solve the immediate problems; when there is a change of supervisor or policy maker, the policy or project will be also changed in order to create the work of each supervisor, by neglecting the implementation of the existed policy that is already effective. Therefore, the troubleshooting is directionless and discontinuous. Furthermore, there is also a problem on the coordination between relevant organizations because each organization is independent and does not

depend on the command of each other; hence, the coordination and collaboration are not effective as expected and make the traffic management system ineffective.

From the information mentioned above, the traffic management is the key to solve the traffic problems and to develop Bangkok in order to become the vibrant of Asia according to the vision of Bangkok in 2032 in the 20-year Development Plan for Bangkok Metropolis in Strategy 1: Bangkok as a Safe City, especially, Supporting Strategy 1.3: Free from accidents. The essence linking to the traffic management is that building knowledge on traffic discipline at all education levels; create public relations media to make people aware of the safety of using the road; create a traffic discipline for the driver; use technology to detect traffic law offenders; and improve the risk or hazard points (Strategy and Evaluation Department, 2018). In addition, the researchers realized the importance of studying the practical traffic management. Therefore, this research is built on from the report of Committee on Transportation, the National Legislative Assembly, by focusing on the concrete policy utilization as guidelines for effective traffic management to meet everyone's transport needs.

2. Research purposes

- To study and analyze problems and obstacles of traffic management of Bangkok to be a city of transport.
- To study factors of traffic management of Bangkok to be a city of transport.
- To present the guidelines for traffic management of Bangkok to be a city of transport.

3. Literature review

3.1. Concepts about Public Policy

Public policy means the determination of goals, values, and practices of state project which is not only the thing that the government intends to or presents to be active, but also classifies to see the explicit differences between the policy and the decision of the government. The public policy will be presented to solve the problems of people, by that the authority is the government. The qualifications of public policy consist of 1) to be able to assess the environmental impact on the policy, 2) to be able to analyze the phenomenon occurring from the policy by the political movement, 3) to be able to verify the results from the policy affected by the political system, and 4) to be able to assess the impact of the policy on the society in terms of expected and unexpected way (Easton, 1953; Friedrich, 1963; Lasswell and Kaplan, 1970; Dye, 1984; Anderson, 1994).

Lester and Stewart (2000) prioritized the viewpoint called 'Sub-government Perspective' with the reason that the work of sub-government consists of the personnel connecting to politicians and experts in council systems to solve public problems, including the working system of government officials and scholars to solve public problems by implementing the policy to connect the government officials and relevant organizations. Regarding the important factors influencing the decision making to select the policy, Etzioni (1961) presented the concepts about the mixed scanning that covers the important components of both directions. The mixed scanning is suitable to the decision maker with different capability; or generally said that the more ability to gather power, the more ability to take advantage of the overall considerations the decision maker has. Moreover, the more comprehensive an overview is, the more likely it is that the decision will be made. Therefore, the study of traffic management of Bangkok to be a city of transport necessitated this theory.

3.2. Concepts about Public Management

Fayol (1964) presented the principle 'POCCC' which is the guidelines for every executive can manage their work to succeed their goal. POCCC consists of 1) Planning, 2) Organizing, 3) Commanding, 4) Coordinating, and 5) Controlling.

In addition, Fayol (1964) also presented the 14 management principles which consist of 1) Division of work, 2) Authority, 3) Discipline, 4) Unity of command, 5) Unity of direction, 6) Subordination of individual interests to the general interests, 7) Remuneration, 8) Centralization, 9) Scalar chain, 10) Order, 11) Equity, 12) Stability of tenure of personnel, 13) Initiative, and 14) Esprit de corps.

Gulick and Urwick (1973) presented the management principles as seven important duties of executives, shortly called 'POSDCoRB', consisting of P = Planning O = Organizing S = Staffing D = Directing Co = Coordinating R = Reporting, and B = Budgeting.

Hood (1991) described the important qualifications of new public management or NPM that 1) Hands-on professional management of public organization, 2) Explicit standards and measures of performance, 3) Greater emphasis on output controls, 4) Shift to disaggregation of units in the public sector, 5) Shift to greater competition in the public sector, 6) Stress on private-sector styles of management practice, and 7) Stress on greater discipline and economy in public sector resource use.

3.3. Concepts about Traffic Management

The traffic management is any action that makes use of existing roads for maximum traffic efficiency. Wilson and McLaren (1977) presented the concept of traffic management, held as the universal principle, consists of 3 important basic principles (Three Es): 1) traffic engineering - this field of work requires special expertise in planning the road construction, urban planning, traffic routing diversion, installation and maintenance of road marking equipment, design and layout of traffic in intersections, ramps or pavement, including other operations related to the traffic surface; 2) traffic education - this is to educate people as the road user about laws and regulations in order to develop the safety habits in

practices and to cultivate the safety consciousness; and 3) traffic enforcement – in addition to the punishment, this includes surveillance, warning, and application of appropriate measures to stop traffic offenses.

According to Police Education Bureau (2009), the future traffic management of many big provinces in Thailand would be changed. First, establishment of traffic control centers for the professional management of traffic in order to analyze the situation and command the traffic service. Second, the use of traffic control technology, in the future, it will be necessary to install the traffic command control system on the road to build the connection as much as possible, and work through the command center. This includes other technology, for example, Intelligent Transportation System (ITS), and tools used in the work of the staff. Third, other visions and activities in Royal Thai Police that must be operated in the future are traffic specialist exam, establishment of Traffic Development Division under Royal Thai Police, establishment of a department or traffic corps in the Police Cadet Academy, establishment of Traffic Division for Traffic Police in Royal Thai Police, establishment of traffic training center or traffic school.

3.4. Concepts about Public Participation

The public participation is the active and powerful participation of people, which is the results of agreement on the need and direction of change. That agreement must be enough to initiate the operational project, by focusing on the active involvement of people which is the full participation from start to finish (WHO and UNICEF, 1978; Erwin, 1976; Chinnaphong, 2008; Kokpol, 2009; Ua-jongprasit, 2008) In addition, Cohen and Uphoff (1980) ordered the participation in 5 steps: 1) participation in planning, 2) participation in decision making, 3) participation in implementation, 4) participation in benefits, and 5) participation in evaluation.

Reeder (1974) summarized 11 factors influencing the preservation of public participation: 1) comply with the basic trust, 2) standard of values of individuals and groups, 3) promoting, protecting, and preserving their own goals, 4) unusual experience, 5) treat others as they expect from others, 6) self-centered, 7) coercion, 8) habits and traditions, 9) Opportunity, 10) the ability to do what he wants to do in such a situation, and 11) the practice started when he felt he was getting enough good support.

The benefits of public participation are 1) to improve the quality of decision making, 2) to reduce expenses and time loss, 3) to create consensus, 4) to create the feeling of ownership of that work or decision, 5) to increase creditability and righteousness, 6) to be self-reliant at last, 7) to reflect the sincerity of the government to support the people liberty, 8) to be the channel to reflect the true local problem and need, 9) to develop the individual performance, and 10) to support the development of their love and their local affection (Bunthonrngkham, 2012; Inseesangworn, 2009).

4. Research Methodology

This study has been designed as the mixed methodology research. Regarding the qualitative research, it began with reviewing and understanding the issues related to traffic management of Bangkok from the documents, then conducting the content analysis by grouping the issues and interpreting it in order to create the analytic induction. After that, the researchers analyzed the factors of traffic management of Bangkok and rearranged them to be the rating-scale questionnaire for the quantitative research. Regarding the quantitative research, the populations in this research were people in northern Bangkok: Chatu chak District, Bang Sue District, Lat Phrao District, Lak Si District, Don Mueang District, Sai Mai District, and Bang Khen District. The population numbers cannot be estimated, thereby, the researchers determined the sample sizes from infinite population formula, retrieving 400 samples, then used the accidental sampling. The research tool is the questionnaire in rating scale, which passed the inspection of Index of Item-Objective Congruence (IOC) then was tried out with 30 virtual samples, and the try-out results were used to calculate the reliability of the questionnaire before the questionnaire was actually used. The descriptive statistics used in this research were frequency, percentage, mean, and standard deviation.

5. Research Results

5.1. The Analysis Results of Problems and Obstacles of Traffic Management of Bangkok to be a City of Transport

The results show that the problems and obstacles of traffic management of Bangkok to be a city of transport were as follows;

With regard to the management system, there was a lack of overall system setting to indicate the direction of traffic management between relevant organizations. Bangkok Metropolitan Administration, traffic officers and each organization performs its own tasks due to the reason that it works under different affiliations, therefore, the order or action must be based on the policy of that organization. There is a lack of unity when these organizations work in the same mission.

With regard to the fact that the traffic technology was not up-to-date, the automatic traffic signal system does not cover all area, consequently, when traffic congestion is tight, it cannot be solved effectively. With the advance in information and technology, the traffic service in foreign countries has been well developed; while Bangkok has a problem that the responsible organizations' limit is the inadequate officers to provide traffic service, but the relevant organizations do not still realize the importance of applying the technology in traffic management.

With regard to the inability of traffic directors to effectively enforce traffic laws, this may be because some officers are not strict in enforcing the law, or do not maintain discipline. In addition, the commuters do not respect the law but violate it. Therefore, the present situation reflects a lack of discipline of traffic directors and commuters.

5.2. The Analysis Results of Factors of Traffic Management of Bangkok to be a City of Transport

The results show that factors of traffic management of Bangkok to be a city of transport were as follows; With regard to the unity (U) of the organizations, the effective traffic management must begin with the unity of the organization that is the center of traffic planning and information system about overall traffic; that its duty is to be responsible for traffic control with the total authority; and that coordinate with both central and local organizations, including the metropolitan area.

With regard to use of traffic technology (U), technology is important for the traffic management in many dimensions; thereby it should be used in providing service and solving present traffic problems; the setting of traffic system and light signal, the use of mobile applications or drone to report the traffic condition through social media to promote public access to information quickly and timely, including the technology of tracking and controlling the public transport, and reporting the offense, the traffic violation, and the accident notification.

With regard to creation of traffic controller discipline (C), strict traffic discipline and law enforcement are the important factors of effective traffic management. The traffic officers should exercise a rigorous duty to regulate and supervise people to comply with traffic rules without bias, and should work aggressively in the area to keep pace with the situation and to build good relationships with relevant organizations and communities in the area. In addition, the traffic officers should be trained about public service, and developed the skills of traffic management for the more effective operation.

With regard to participation in generating traffic discipline (P), traffic law compliance, traffic law violation, and monitoring the traffic offender are the important factors of effective traffic management. The opportunity of people sector and community to participate with the traffic officer in working as traffic volunteer to provide traffic service is the activity that needs the continual campaign to create the traffic discipline for people in every age and education level. In addition, the process of issuing a driver's license should be stricter in aspects of both training and testing; or in case of renewal of driver's license, there should be the driving readiness test.

5.3. The Analysis Results of Opinion towards Factors of Traffic Management of Bangkok to be a City of Transport

5.3.1. The Analysis Results of Demographic Profiles

With regard to the demographic profiles of 400 respondents, the results show that 64.00% were female, and 36.00% were male. 59.75% aged between 31-40 years, followed by 21.50% aged less than 30 years, 14.50% aged between 51-60 years, and 4.25% aged between 41-50 years respectively. 60.00% were freelance/private enterprise employees, followed by 16.75% were housewife, 16.00% were business owner, and 7.25% were officer/government official/state enterprise officer respectively.

5.3.2. The Analysis Results of Opinion towards Factors of Traffic Management of Bangkok to be a City of Transport

With regard to factors of traffic management of Bangkok to be a city of transport, the results show that in total the respondent agreed with factors of traffic management of Bangkok to be a city of transport at the highest level ($\bar{X} = 4.28$, S.D. = .46). In particular, unity (U) has the highest mean score ($\bar{X} = 4.34$, S.D. = .59), followed by use of traffic technology (U) ($\bar{X} = 4.27$, S.D. = .58), creation of traffic controller discipline (C) ($\bar{X} = 4.25$, S.D. = .55), and participation in generating traffic discipline (P) ($\bar{X} = 4.24$, S.D. = .56) respectively (see table 1).

Factors of Traffic Management of Bangkok	\bar{X}	S.D.	Level
Unity (U)	4.34	0.59	Highest
Use of traffic technology (U)	4.27	0.58	Highest
Creation of traffic controller discipline (C)	4.25	0.55	Highest
Participation in generating traffic discipline (P)	4.24	0.56	Highest
Total	4.28	0.46	Highest

Table 1 Mean and Standard Deviation of Opinion towards Factors of Traffic Management of Bangkok to Be a City of Transport

5.3.3. Guidelines for Traffic Management of Bangkok to be a City of Transport

The analysis result of problems and obstacles, and factors of traffic management of Bangkok was used to determine the guidelines of traffic management of Bangkok to be a city of transport, which consisted of unity (U), use of traffic technology (U), creation of traffic controller discipline (C), and participation in generating traffic discipline (P), called by the researcher, "UUCP Model" (see figure 1).

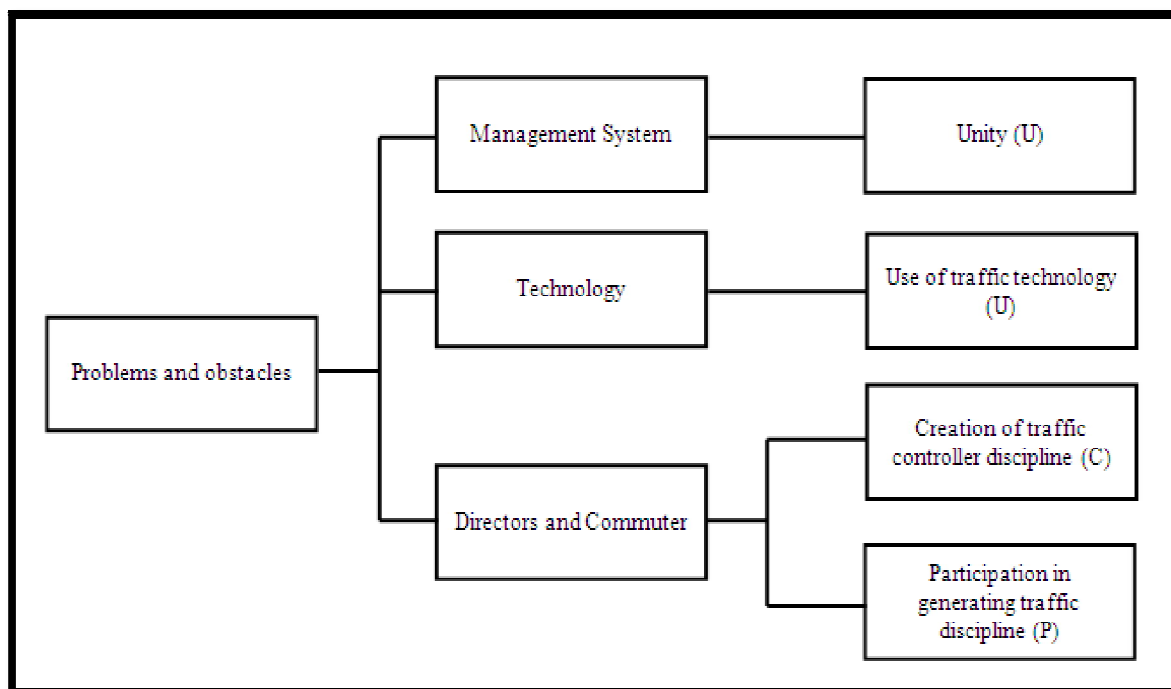


Figure 1: UUCP Model

The guidelines of traffic management of Bangkok to be a city of transportare described in table 2.

Factors of Traffic Management	Guidelines for Traffic Management
Unity (U)	<ul style="list-style-type: none"> • The traffic management should be operated by single organization. • That organization should have a single point of command to solve traffic problems both in the central and in various district areas. • That organization should work under the jurisdiction of Bangkok Metropolitan Administration. • That organization should be the center of all traffic planning. • That organization should have short-term, medium-term, and long-term plans. • That organization should coordinate with other organizations involved in traffic. • That organization has responsibility for traffic control in both overall and in various district areas. • That organization is the center of datasystem of traffic in every dimension. • That organization is responsible to coordinate the traffic between Bangkok and its vicinity. • That organization should be 24-hour traffic notification center.
Use of traffic technology (U)	<ul style="list-style-type: none"> • Use the drone to report the traffic condition and the offense. • Use the automatic traffic signal system. • Increase the installation of traffic control signal to control the lane in opposite direction to drain the car in rush hour. • Set the connecting system for traffic report through social media and traffic connection in that area. • Develop the efficiency of mobile applications for the timely report of traffic condition. • Use the tracking and controlling system with the public transport system. • Use the modern technology to set the traffic system. • Increase installation of traffic warning signs covering all areas. • Modernize the technology perpetually. • Increase the installation of CCTV for traffic covering all areas.

Factors of Traffic Management	Guidelines for Traffic Management
Creation of traffic controller discipline (C)	<ul style="list-style-type: none"> • The officer should strictly enforce the laws without bias. • The officer should work aggressively in the situation of traffic jam and rush hours. • The officer should increase the intensity of responsibility for areas with traffic problems to solve them in time. • The officer should be trained about the skills in solving traffic problems from first-hand experience expert. • The officer should adapt the traffic management methods to comply with daily situations. • The officer should be trained about knowledge and skills on traffic management. • The officer should explore the area constantly to collect information about traffic. • The officer should build good relationships with organizations in the area for good collaboration. • The officer should be trained about public service. • The officer should determine the measure to assess the performance of officer by people sector.
Participation in generating traffic discipline (P)	<ul style="list-style-type: none"> • There should be campaign to raise the public participation in creating traffic discipline continually. • There should be a driving test in every 5 years for drivers who already have a driver's license. • There should be public relations activities for safety among officers, traffic volunteers and community in the area. • The process of issuing a driver's license should be stricter in aspects of training and testing. • The traffic discipline should be cultivated in every level of education. • The traffic volunteers from people sector should be trained to provide traffic services in rush hour in all area. • Create a shared value that 'who causes the traffic jam, that person should be responsible to it' through social media. • Promote the youth as a traffic discipline agent for family members. • Increase the channel for people to participate in notifying clues that can confirm the identity of the whistle-blower. • There should be an award /certificate for the volunteer.

Table 2: Guidelines for Traffic Management of Bangkok to be a City of Transport

6. Discussion

Both qualitative and quantitative research results were consistent in the same direction. With regard to factors of traffic management of Bangkok to be a city of transport, sorted by priority, the first is unity (U), followed by use of traffic technology (U), creation of traffic controller discipline (C), and participation in generating traffic discipline (P). In addition, the samples agreed with every factor at the highest level. Therefore, the results of this research reflected the demand of people toward the troubleshooting of traffic management of Bangkok to be a city of transport of people around the world. Although nowadays there are many problems and obstacles, all these 4 factors can lead to effective management, which is relevant to concepts and related researches, as followed;

With regard to the unity of the organization, it means the harmony of the organization as the center of traffic planning and overall traffic information system. The organization is responsible to supervise the traffic and has total power to order, including coordinating with both central and local organizations, including the metropolitan area. This is relevant to the concepts of Dye (1984) and Anderson (1994) that the policy was directly formulated from the leader; the government officials can only transmit that policy to people. The direction of policy formulation is vertical, from the ruling class down to the people. Moreover, it is relevant to the concept of Lester and Steward (2000) that the formulation of public policy came from sub-government perspective, as the personnel relating to politicians, experts in systematic council in solving public problem, and the working system of the government and academician in solving public problem by implementing the policy. The connector of these 3 parts is the government official and related organizations which have an influence on operation of public policy. This is also relevant to concept of Etzioni (1961) about theory of mixed-scanning; the more ability to gather power the decision maker have, the more ability to take advantage of the overall considerations the decision maker has. Moreover, the more comprehensive an overview is, the more effective the decision will be. Accordingly, the concept of new public management of Hood (1991) presented that the executive in public sector should have hands-on professional management, explicit standards and measures of performance, greater emphasis on output controls, shift to disaggregation of units in the public sector, shift to greater competition in the public sector, stress on

private-sector styles of management practice, and stress on greater discipline and economy in public sector resource use. In addition, this is relevant to the study of Police Education Bureau (2009), regarding the future traffic management of many big provinces in Thailand, there should be the establishment of traffic control centers for the professional management of traffic in order to analyze the situation and command the traffic service. Therefore, the unity of organization should be determined as the explicit policy from the government leader who has the highest power to appoint any organization under the jurisdiction of Bangkok Metropolitan Administration to be able to manage the traffic in total, as the integration of mission of related organization. In other word, it is the reform of working system of the government organization, which will enable the operation to be fast, explicit and continual, reduce the complexity and save budget.

With regard to traffic technology, it covers traffic management and troubleshooting, tracking, control, including information dissemination through the network. This is relevant to the study of Police Education Bureau (2009) that for the management in the future, it will be necessary to install the traffic command control system on the road to build the connection as much as possible, and work through the command center. This includes other technology, for example, Intelligent Transportation System (ITS), and tools used in the work of staff. It is also relevant to the study of Office of Transport and Traffic Policy and Planning (2015) which presented 9 measures to solve traffic problem in Tokyo, capital city of Japan. One of these measures was the use of Intelligent Transportation System (ITS), for example, Electronic Toll Collection (ETC), and Public Transport Priority System. Moreover the study of Committee on Transportation, the National Legislative Assembly (2017) presented about the management of traffic and transportation in Vancouver, British Columbia State, in Canada, that applied Intelligent Transportation System (ITS) in the public transport system in order to increase the efficiency and safety, for example, the installation of GPS in the bus and the development of software for the effectiveness and convenience in using public transport, by that the passengers can check the exact arrival time, including the intelligent sign that can update the information required for transport to the passengers. In addition, in Seattle, United States, the Intelligent Transportation System (ITS) was applied in controlling and supervising the public transport system and traffic, for example, the installation of censor under the road surface to monitor traffic on the road for the data analysis, the installation of CCTV to be traffic light signal control tools for the traffic controller. It can be seen that the capital city in many developed countries applied the ITS technology in traffic management. Therefore, the use of modern technology in providing traffic service is an important factor to traffic management of Bangkok to be a city of transport.

With regard to creation of traffic controller discipline, traffic officers carry out rigorous duties in regulating and supervising. Enforcing the law strictly is the duty of government officials to deal with people. This is relevant to the concept of Wilson and Claren (1977) that basic principles of traffic management were traffic enforcement, punishment, such as fines, arrests, and criminal proceedings in order to control and enforce the commuters to comply with traffic laws, and lead to safety and orderliness. The traffic is streamlined and can be moved without traffic jam. It can be said that the law enforcement is a part of educating people who cannot learn with other methods. Therefore, in addition to be used as the punitive measures, the law enforcement also covers the monitoring, warning, and applying the proper measure to stop the traffic offense. There was a study result show that in case that the law is strictly enforced, it can reduce the accident rate at more than 40%. Speed limits and enforcement of helmets and seat belts can reduce injury, death, and disability from the accident. Accordingly, Police Education Bureau (2009) mentioned the components of present traffic management consist of manpower, law enforcement, and management of traffic service; the law enforcement to be the guidelines for officers, and to control the behavior. However, in order to succeed in enforcing the law, the officers must have knowledge about law, for example, Traffic Act, Transport Act, Car Act, and other regulations, and transmit this knowledge to the subordinates and control them to work without complaint, also has the ability to enforce the law to generate the traffic discipline for people, and makes the law sacred.

With regard to participation in generating traffic discipline, it is to open the opportunity for people sector and community to participate with the traffic officer in working as traffic volunteers to provide traffic service is the activity that needs the continual campaign. This is relevant to the study of Likho (2012) about participatory traffic safety project in La-ngu District, Satun Province; according to the results, leader volunteer group to build a road safety culture at the community level and network understood how to build road safety, applied model from research planning in solving traffic problem, which affected the increasing confidence in working. In addition, the results led to the guideline of participatory road safety, worker, department, organization, research, and project about accident. There was also coordination to organization activities, guidelines for coordinating and working together, for example, exchanging the information, coordinating between the organization and community to participate in activities about road safety. Moreover, it is relevant to the study of Sansiritaweessook, Sihawong, and Gongsade (2016) about model development for safety promotion on road traffic injuries and drowning by community participation, Khom-Kam Sub-district, Yang Chum Noi District, Srisaket Province, its results show that the collaboration creation of network partners by creating common understanding on problems, the creation of operational network consisting of the government, the leaders, and people in the area to determine the explicit role and duty of the network, to support the network to participate in thinking, planning, and evaluating by setting the goals and direction of collaboration. This also covers formulating the working plan, project, and activities to improve the safety of traffic injuries and drowning in communities, communicating and building good relationship between network partners, and continual exchanging the information on both formal and informal stage.

7. Recommendations

7.1. Policy Recommendations

- Government sector or related organizations should be assigned to integrate the work with other organizations in a concrete manner along with the policy presentation.
- Government sector or related organizations should revise the policy about traffic management of each organization to reduce duplication.
- Although rail transport system can be the solution of urban traffic problems, the government should revise the investment plan about infrastructure of rail transport system in order to avoid high public debt in the future.

7.2. Recommendations for Implementing the Policy

- Government sector or related organizations should be an urgent push to establish the organization 'Transport for Bangkok' that has unity and single manager.
- Government sector or related organizations can apply this research results in working concretely; and it should be continual for the effectiveness of traffic management. Even though the rail system covers all the tracks, if it lacks a good traffic management system, traffic problems solving cannot be implemented effectively.
- The education institution and other general people who are interested in traffic management can further this research results in the aspects of the study on the use of proper traffic management technology in Bangkok and its vicinity, or the in-depth study of public participation model in creating traffic discipline.

8. References

- i. Anderson, J. E. (1994). *Public Policy-Making: An Introduction* (2nded.). New York:Houghton.
- ii. Bunthornrungskham, N. (2012). *Public Participation in Formulating a Sub-district Development Plan of Thapphon Sub-district Administration Organization, Muang District, Phetchabun Province*. Faculty of Humanities and Social Sciences, Phetchabun Rajabhat University.
- iii. Chinnaphong, P. (2008). *Tourism Industry*. Valaya Alongkorn Rajabhat University under the Royal Patronage, Pathum Thani.
- iv. Cohen, J. M. and Uphoff, T. N. (1980). *Participation's Place in Rural Development: Seeking Clarity*. New York: McGraw-Hall.
- v. Committee on Transportation, the National Legislative Assembly. (2017). *Holistic Traffic Solutions in Bangkok and Vicinity*. Director Bureau of Committee 1, The Secretariat of the Senate acting as the Secretariat of the National Legislative Assembly.
- vi. Dye, T. R. (1984). *Understanding Public Policy*. EnglewoodCliffs:Prentice-Hall.
- vii. Easton, D. (1953). *The Political System*. New York:Knopf.
- viii. Erwin, W. (1976). *Participation Management: Concept Theory and Implementation*. Atlanta: Georgia State University.
- ix. Etzioni, A.(1961). *A Comparative Analysis of Complex Organization*. New York:Free Press.
- x. Fayol, H. (1964). *General and Industrial Management*. London: Pittman and Sons.
- xi. Friedrich, C. J. (1963). *Man and His Government*. New York:McGraw-Hill.
- xii. Gulick, L. and Urwick, L. (1973). *Papers on the Science of Administration*. New York:Columbia University.
- xiii. Hood, C. (1991). *A public management for all seasons*. *Public Administration*,69, 3 - 19.
- xiv. Inseesangworn, J. (2009). *Public Participation in Formulating a Three-Year Development Plan: A Case Study of Pong Phra Sub-district Administration Organization, Mae La District, Chaing Rai Province*. Independent Study, Master of Public Administration, Chiang Rai Rajabhat University.
- xv. Kokpol, O. (2009). *Public Participation Guide for Local Administrators*. Bangkok:Charunsanitwong Publishing.
- xvi. Lasswell, H. D., and Kaplan, A. (1970). *Power and Society*. New Haven:Yale University Press.
- xvii. Lester, J. P., and Stewart, J.(2000). *Public Policy: An Evolutionary Approach* (2nd ed.). Belmont:Wadsworth.
- xviii. Likho, S. (2012). *Participatory Traffic Safety Project in La-ngu District, Satun Province*. National Health Foundation, Thai Health Promotion Foundation.
- xix. Office of Transport and Traffic Policy and Planning. (2015). *Project Study on Demand Management to Support the Development of Traffic Network and Public Transportation System in Bangkok*. Retrieve from http://www.otp.go.th/uploads/tiny_uploads/Education_Report/2558/Project10-Demand/FinalReportTDM.pdf
- xx. Police Education Bureau. (2009). *Traffic Management and Traffic Troubleshooting in Practice*. Retrieve from http://pknow.edupol.org/Course/C3/Karnpolice_group/subj_traffic/tf1/doc/010107-01.pdf
- xxi. Reeder, W. W. (1974). *Some Aspects of the Informal Social Participation of Farm Families in New York State*. New York:Cornell University.
- xxii. Sansiritaweesoook, G., Sihawong, N., and Gongsade, S. (2016). *Model Development for Safety Promotion on Road Traffic Injuries and Drowning by Community Participation, Khom-Kam Sub-district, Yang Chum Noi District, Srisaket Province*. *Journal of Health Science*, 25(5), 812-822.
- xxiii. Sarapanya, W.(2015). *Traffic management in the downtown area and public transport: a case study in Rangsit City Municipality*. Master of Political Science (Politics and Governments), Thammasat University.

- xxiv. Strategy and Evaluation Department. (2009). 12-Year Bangkok Development Plan (2009–2020) Bangkok as the City of Sustainable Livability. Retrieve from [http://203.155.220.230/bmainfo/docs/plans/1plan%20development%2012%20year%20\(%202552-2563\).pdf](http://203.155.220.230/bmainfo/docs/plans/1plan%20development%2012%20year%20(%202552-2563).pdf)
- xxv. Strategy and Evaluation Department. (2018). Bangkok Metropolitan Administration's Annual Work Plan of the Year 2019. Retrieve from <http://www.bangkok.go.th/upload/user/00000130/planing/bma%20plan%2062.pdf>
- xxvi. Ua-jongprasit, S.(2008). Research in State Tourism Agencies. Tourism Booklet.
- xxvii. WHO and UNICEF.(1978). Report of the International Conference on Primary Health Care. New York:N.P. Press.
- xxviii. Wilson, O.W. and McLaren, R. C. (1977). Police Administration (4th ed.). New York:McGraw-Hill Publishing Co.