OPTIMIZING INTEGRATION BETWEEN BUS RAPID TRANSIT (BRT) AND RIVER TRANSPORT IN PALEMBANG CITY THROUGH INSTITUTIONAL INTEGRATION

Thesis

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ABSTRACT

Public transportation system embraces people need to move from origin to destinations. In particular for people who do not have any private vehicle to travel and they rely only on public transportation. Regarding this issue, people actually expect that public transport can provide a reliable aspects such as comfort, safety and security. Therefore, providing a superior service quality and its performance of public transportation should be maximalized. The main concern of providing public transportation to be more attractive for people (not only for public transport users themselves, but also for private vehicle users) is in term of time efficiency and accessibility to get public transport. Dealing with this, public transportation is expected to have an integrated system connected to other public transport modes. Integrating public transportation is not only about the physically integration or even operationally, but also it is mole related to organizational and/or institutional integration that involve many actors. One of the integration issues takes place in Palembang city, in which Palembang has been implemented the integration public transports between BRT and river transport. However, there is no integrated institution to support this integrated public transport services so far.

This research explores on public transport institutional integration concept, we choose Palembang as a case study of the research. Because the research is a single case study, collected data is only based on secondary data that obtained from documentations and literature reviews from many sources. In addition, a qualitative content analysis and descriptive analysis are demonstrated in this research. In taking some literatures, the author adapt the concept from Alexander (2012), Saliara (2014) as the core of making a conceptual model. It is also used to determine an appropriate institutional form for the case study which refers to a literature of Neuman (2012) on theory of institutional transformation.

This research is resulted a concept of public transport institutional integration based on three types of integration encompass organizational, physical and operational dimensions combining with three levels of institutional design (micro, meso and macro level). According to the proposed concept, an appropriate strategy for public transport institutional integration is reforming through the current institutions of public transport. In doing so, an additional division of public transport integration within transportation agencies in Palembang is the way to optimize public transport integration services. Moreover, collaborative approach among stakeholders in each level can also increase the capacity of institutions and develope master planning of public transport integration, resulting in recommendations to improve public transport integration in Palembang city.

Keywords: bus rapid transit, river transport, public transport integration, institutional design.

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Public transport integration is in tandem with transportation planning which embrace not only physical and operational integration, but also the main aspect is in institutional integration. Understanding the institutional integration in the domain of transport planning can give an insight on how to optimize public transport services to be more reliable and more attractive to reduce private vehicles usage from the institutional perspective. Therefore, this research presents on "Optimizing integration between bus rapid transit and river transport in Palembang city through institutional integration".

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Finally, I hope this thesis can contribute a lessons to policy maker in term of public transport integration in relation to the institutional design. I realize that this thesis might be far from perfect and needs to be improved and I will continue to challenge myself in the future with what I have learned.

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Windi Nopriyanto

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INTRODUCTION

CHAPTER 1
INTRODUCTION

1.1 Background

Land transportation plays an important role in regional economic development in one nation. Not only people, goods distribution also requires a suitable transportation mode to move them from one to another place. Therefore, an effective transportation is needed in order to develop the economic sector (Campbell, 1963). Particularly in industry field that requires numerous of distribution activities, distribution for both people and good should be correctly chosen because related to the cost and time efficiency. In addition, a good transportation encourages people to do travelling and increase people's mobility. In relation to people's mobility, many cities in developing countries, for example Bangkok, Manila, Mexico, Shanghai, Kuala Lumpur and Jakarta, are experienced by motorization issues that characterized by the increasing of private and motor cycle usage (Gwilliam, 2010). The impact of motorization is the existence of traffic congestion and the decreasing of public transportation usage. The public transportation interest is less attractive due to lack of quality service and performance that provided to citizens such as buses, trains, ferries and its variations (Litman, 2014; SUTIP, 2013).

In relation to traffic congestion issues, the improvement of public transport is very important in order to reduce motor vehicles usage, particularly car-based trip. Luke and Olszewski (2003) stated that the improvement of public transportation systems themselves cannot decrease car-based trip. Therefore, the development of an effective public transportation that leads to an integrated public transportation system is needed to restrain the car usage, especially in urban region. The activity intensity in urban region inevitably need transportation. The urban transportation emerges the impact on the local an even global environment that is influence on the quality of life for people and for the city itself it effects on the economic growth (Bertolini and le Clercq, 2002). Therefore, the importance of providing the other alternative of urban transportation modes that is not only focus on the usage of one mode, but also multimodal transport (integrated public transport) should be developed in order to optimize the public transport in term of travel time and cost effectiveness. This way will influence on increasing the public transport service.

Another issue, making an integrated system among different types of public transportation in developing countries like Indonesia has been really a great challenge. The institutional barrier has always been the most important part in solving this problem (Banister, 2005). It means that the institutional barriers also relate to the coordination actions that involve actors in different organizations and/or institution, particularly in government level. Many actors involved from different institutional form come up with their own perspectives and purposes. According to NEA (2003) integration concept refers to all characteristics of public transport service such as infrastructure, fare

system, information system and also the authorities of institution and/or organizations. It means that integrated public transport needs the role of institution and actors such as government and stakeholders, so the service quality of public transport for people can be enhanced.

Palembang, located in Sumatera Island (South Sumatera Province) is one of the big city in Indonesia that had been implemented the integrated public transportation since 2013. At that time, Palembang's government launched the integrated public transportation between bus rapid transit (BRT), namely Trans Musi and river transport. Unfortunately, the integrated public transport system has not been working effectively due to the different quality service (Dit.BSTP, 2013) in term of institutional management. In order to support about this issue, local government built the infrastructure such as interchange stations that is assisted by central government through Ministry of Transportation. One of the integration problems is having no institution to support the integration between BRT and river transport. Each public transport modes is operated and managed by different institutions. BRT is managed and operated by the local-owned enterprises or BUMD/*badan usaha milik daerah*, namely SPPJ *(PT. Sarana Pembangunan Palembang Jaya)*. On the other hand, the river transport (water buses/*bus air*) is managed by a local transportation agency or *Dinas Perhubungan Kota Palembang*. Consequently, both institutions are still independent and not integrated in term of operational plans and services. In principle, the purpose of integrated public transport is to provide an optimal service to people in order to achieve a high service performance so that passengers are willing to use public transport rather than private car (Austroads Research Report, 2008).

Through this research, we would like to give policy advices in order to optimize the using of integrated transport modes in Palembang. This kind of transport system requires the integrated-institution between BRT and river transport, which is one of the main instruments of integration concept. This research will also explore how to improve the service quality of both BRT and river transport using the integration concept mainly in institutional perspective.

1.2 Research Objective

The objective of this research is to explore on how to determine institution form to deal with the integration concept in the case of Palembang city in order to optimize the service and performance of public transport. In addition, this study also aims to identify and explore the concept of public transport integration linked to the institutional design concept, in which this research will propose a new concept of public transport institutional integration that will contribute to academic debate.

1.3 Research Question

To fulfill the research objectives, this research will explore research questions as the following:

1. What is the current institutional form both BRT Trans Musi and river transport in Palembang city?
2. How do institutional forms influence on the service quality of the integrated public transport in Palembang city?
3. What strategy should be conducted to optimize the integrated public transport service in Palembang city for both BRT and river transport from the institutional perspective?

1.4 Research Framework

This section will elaborate the research framework on a theoretical framework which consist of two theories used encompass integration concept including definition of integration, integration principle and integration in public transport system. The result of adopting both theory is the scheme of concept of public transport institutional integration that can be used to determine an appropriate institutional design for public transport. In relation to empirical framework, the concept resulted will be used to identify the current condition of institutional form of public transport. So that, it can be applied on the type of integrated public transport institution for BRT Trans Musi and river transport. Subsequently, the strategy of optimizing public transport integration will be proposed to result the policy recommendations as the outcome of this research. In relation to this, the research framework can be described in the following figure.

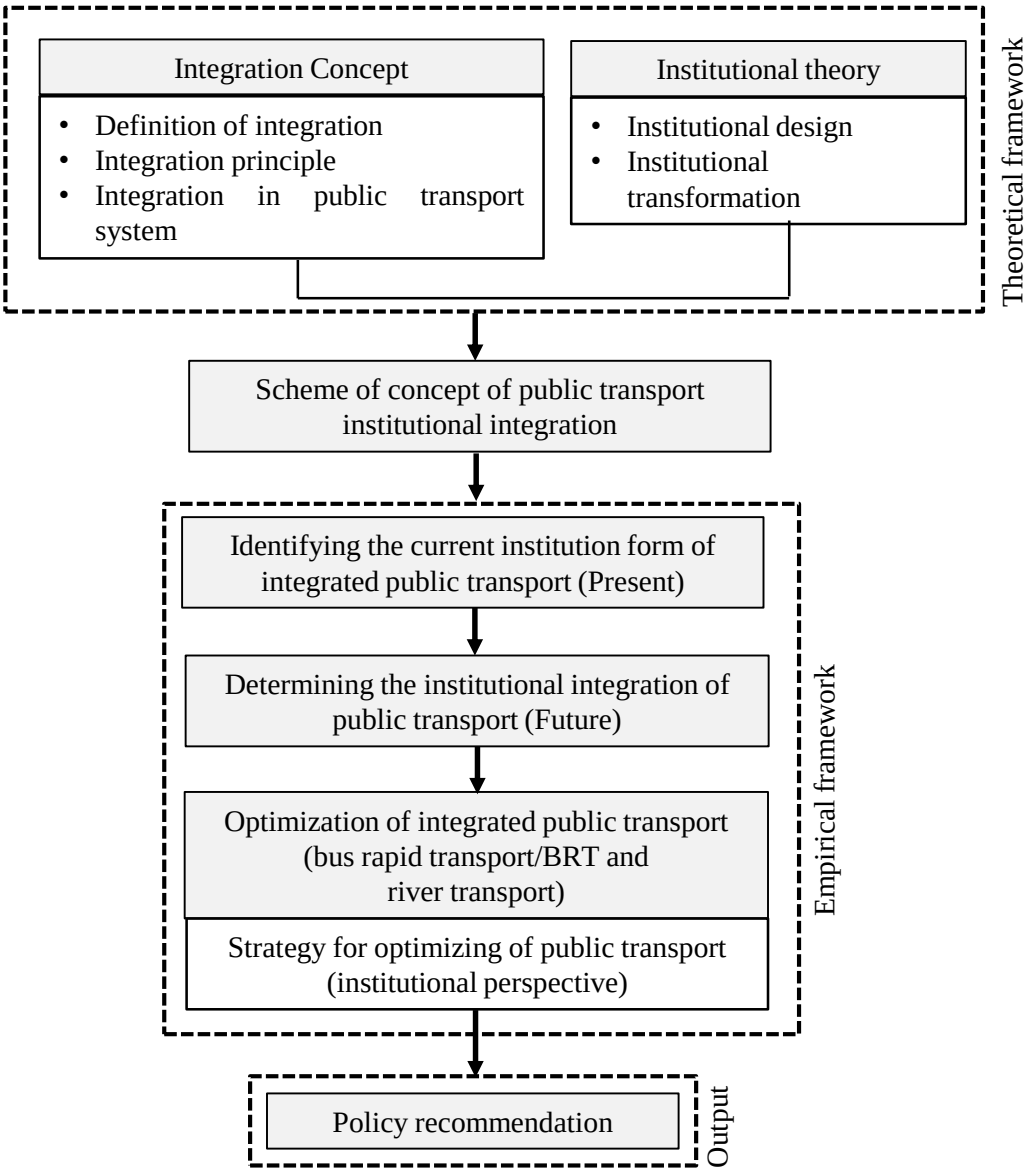

Figure 1.1 Research framework
Source: Author (2015)

1.5 Thesis Structure

This research consists of six chapters. Each chapter has different content and it can be described as follows:

Chapter 1 : Introduction

This chapter shows the background of this study, research problems, research objectives and questions, theoretical framework followed by research framework.

Chapter 2 : Theoretical Review

This section will elaborate a literature review in relation to two theories (integration concept and institutional theory) that were used to determine the integrated institutional form.

Chapter 3 : Research Methodology

This chapter shows the methodology of the research, data collection method and analysis conducted in this research.

Chapter 4 : Public transportation in Palembang city

This chapter explains about the current conditions of public transport in Palembang city both BRT and river transport. This part also elaborates the current institution form of integrated public transport.

Chapter 5 : Analysis

This chapter contains the analysis result in relation to the public transport institutional integration based on the concept of public transport institutional integration from theoretical framework and conceptual framework.

Chapter 6 : Conclusion and Recommendation

The final chapter of this research will conclude the research questions and provide policy recommendations followed by research findings.

THEORETICAL REVIEW

CHAPTER 2
THEORETICAL REVIEW

This chapter explains the background of theoretical review. In this chapter, selecting theories related to this research and determining a conceptual model as guideline is conducted. Additionally, a conceptual model of this research refers to theoretical review that interpreted as a guideline to determine the institutional form of public transport integration. Theoretical review of this research will explain the integration concept dealt with the integration in public transport system. The clarity of the core of this research on the integration concept in institutional perspectives is also elaborated in order to provide an understanding about institutional design and institutional transformation. Furthermore, the conceptual framework of this research is elucidated in the last part of this chapter which connects among theory, method, data requirements and analysis conducted. We present this theoretical review as mentioned, to make it easier to understand about the linkage between integration concept and institutional theory.

2.1 Integration concept

Integration concept in public transport system

The integration concept is defined with multiple meaning in academic literatures and different context. Integration is about obtaining the easiness factor to move from one place to another place using intermodal and/or multimodal facilities that also linked each other (Ibrahim, 2003). In transportation context, Preston (2010) stated that the integration concept can be seen as the level of rungs that comprises of seven rungs, as follows:

1. Integration of public transport facilities such as fares, service patterns, terminals/stops and information. It means that public transport integration have to be linked with another modes (intra-modes, inter-modes and multimode).
2. Integration of infrastructure requirement, management and pricing for public and private transport. This integration relates to the design of public transport facilities that can be accessed by all modes.
3. Integration of passenger and freight transport. It means that the integration concept refers to the distribution pattern of people (transfer points) and/or goods (goods movement points).
4. Integration of public transport authorities. This integration in institution for all modes to result the integrated public transport policy strategies.
5. Integration between transport and land use planning policies. The integration relates to the policy coordination between land use and transport planning system.
6. Integration between general transport policies and transport policies of the education, healthcare

and social services sectors. It means that integration is required to accommodate the needs of different social groups.

7. Integration between transport policies and policies for the environment and economic development. The concept of integration leads to the sustainable transportation that environment and economic aspect are also be considered in making policy.

Guiding to the integration concept as stated by Preston (2010), the benefits of integration concept in transportation field are to achieve a better service quality and its performance in term of price, frequency, the amount of vehicle operated; to decline traffic congestion and the decreasing of global and local environmental impacts. Regarding this issue, May et al. (2006) stated that the integration is practically categorized into four ways are integration between policy instruments including different modes; integration between policy instruments involving infrastructure provision, management, information and pricing; integration between transport and land use planning approach; and integration with other policy areas such as health an education.

In planning arena, the integration concept itself can be perceived in the domain of the institution that consists of many sectors involved. According to Geerlings and Stead (2003), the level of integration can be distinguished into four types which are vertical integration that take place between different levels of government; horizontal or inter-sectoral integration; inter-territorial integration between the same authorities with shared interests; and intra sectoral integration that exist between different parts in one department. It means that the integration concept can be characterized based on the authorities and/or territorial perspectives. In relation to the transportation sector, especially in public transport, integration concept can be connected to the needs of integrated-institution in various transport modes (road, railway, water transport etc.).

Table 2.1 The linkages theory of integration concept

Integration concept (seven rungs of integration concept) (Preston, 2010)	→	**The ways of integration (May et.al, 2006)** Integration concept links to on how to integrate among public transportation modes either intermodal transportation and/or multimodal transportation (the way of integration) that it closely relates to seven rungs. The way of integration is dependent on three dimensions. First dimension is physical integration of public transportation system which refers to the first, second and third rungs interpreted by providing all infrastructure facilities, such as interchange terminal/stations, transfer point facilities, information and technology, ticketing system and another facilities physically. Second dimension is organizational

		integration interpreted by the importance of institutions and/or organizations to manage physical integrations and it also involves actors as a whole (government institutions and non-government institutions such as private sectors, NGO and public). This dimension corresponds to the fourth rung (integration of public transport authorities), in which the authorityy as the organization and/or body that has task to control an integrated public transport system is needed. Third dimension is policy integration that refers to policy instruments and its strategies that will be required to support the implementation of public transport integration, for example the integration between land use and/or spatial planning policies and transportation policies.
The ways of integration (May et.al, 2006)	→	**Type of integration (Geerlings and Stead, 2003)** Integration concept links between the ways of integration that have been categorized (physical, organizational and policy integrations) and the authorities of integration either vertical integration (top-down and/or bottom up) and horizontal integration (intra-institutions). Additionally, it is associated with how the way to integrate three dimensions of public transport integration through vertical and horizontal integration within the authorities perspective.
Type of integration (Geerlings and Stead, 2003)	→	**Integration concept (seven rungs of integration concept) (Preston, 2010)** Integration concept links to level of authorities (within government institutions and non-government institutions) that execute three dimensions of public transport integration. It also deals with how the authorities facilitate those dimensions related to the capacity of authorities to embrace them in planning, implementation and evalution process that involve many actors.

Source: Author (2015)

The linkages of three theories used as shown in **Table 2.1** in this research can provide an understanding on the integration concept. The core of integration concept is in three dimensions categorized of public transport integration (physical, organizational and policy integrations), in which those dimensions will be used to interpret integration concept in public transport system that relates to the integration principles and institutional theory. Integration principles become criteria and institutional theory becomes a guideline to determine an appropriate institutional integration that leads to the institutional form of public transport integration in each level of integration (macro, meso and

micro). Therefore, the integration concept is the essential thing to find out the condition of public transport integration concept in both present and future development in relation to each level of institutions.

Basically, the integration concept in public transportation system aims to get a better accessibility (network) to transfer to other transport modes, to decrease travel time, to create more comfortable and convenience in using transport modes, to reduce traffic congestion, to decrease operational cost (Ibrahim, 2003). Moreover, the integration concept in public transport comprises of physical term such as the availability of public transport facilities (ticketing, information, network access etc.) and non-physical term such as the needs of integrated institutions and/or public transport operators in different transport modes.

Basically, definition of integration in public transport system can be interpreted based on the context of integration itself. It comprises of fare integration, information integration, physical integration, network integration and planning integrated through making collaboration in term of government agency and/or institutions itself (Ibrahim, 2003). Additionally, Wenban-Smith et al. (1990) explained four main types of integration in public transport system encompass integration between authorities; integration between measures including various transport modes; integration between measures incorporating infrastructure requirement, management and pricing; and integration between transport and land use planning. Moreover, Vuchic (1999) stated that the main focus of public transport integration is to improve the quality service of public transport itself and to be more attractive for ridership. Furthermore, in order to make more clear about definition of public transport integration, Saliara (2014) divided the public transport integration into three levels as written in the following table.

Table 2.2 Three levels of transit intermodal integration

Organizational Integration	Operational Integration	Physical integration
Arrangements between operators	Network layout	Access to facilities
Existence of an independent authority for the coordination of functions and cooperation of operators	Schedules	Location of facilities
	Transfers	Design of stations
	Information	Control of vehicle movements
	Fares	
	Tickets	

Source: Saliara (2014)

According to **Table 2.2**, the tension of organizational integration is dependent on the collaborative approach among stakeholders involved in making covenant and/or cooperative agreement, whilst the operational integration emphasizes on public transport planning system and how to operate the system in the practice, such as scheduling, public transport network (even transfer system), ticketing and information system. Meanwhile, physical integration relates to the physical design of public transport, for example integration of new routes, development of station and transfer points, the location and facilities of transfer point and/or station. Thus, the importance of integration concept in public transportation system is essential to make sure that performance of optimization can be achieved. Consequently, the service quality in public transport becomes more advance which also affected on declining of private vehicles usage. Significantly the impact emerged is modal shift from private vehicles usage towards public transportation usage. This modal shift indicates that public transportations have become more attractive than private vehicles.

According to Ferdiansyah (2009), in order to support an increase of service quality of public transport that can be conducted is the determination of minimum service standard, the reliability of service and the reinforcement of integration system of intermodal transportation network. Integrating transportation network is required to support a reliable public transport service, in which the tensions of public transportation are emphasized on two aspects are public transport feeder and transfer points (Ferdiansyah, 2009) that both provide an easy way for people to move from one point or transport node (e.g. railway stations, bus station, airport and port/harbor) to other points. Public transport feeders relates to the accessibility from origin to destinations which can be accessed by using small vehicles with medium or low capacity, whilst transfer points refers to time efficiency interpreted by

the accuracy of time scheduling of public transport. Thus, the concern of both aspects in integrating public transportation will significantly impact on modal shift, in which to shift people (particularly private vehicles users) to be more attractive in using public transportation is through optimizing the service quality of public transport, mainly in term of integrating public transport modes.

Integration principle in public transportation system

Integration concept, in term of approach, has principle basis to pursue the superior performance in providing services, mainly in the transportation sector. According to May et.al (2006), there are two principles of integration concept. Firstly, its principle focuses on the pursuit of synergy that incorporate the policy instrument (integrated public transport) to make the changes and also to strengthen the transportation system itself to become more effective and efficient in making the plan strategy and operationalization in the real field (May and Robert, 1995; May et.al, 2006). Additionally, the concept of synergy is depicted as the positive impact of interaction among policy instruments and how they interrelate each other. In relation to this principle, integration concept can be classified into four categories (May et.al, 2006), as follows:

1. Complementary

   This term of integration is the connection between two independent instruments that has a good benefit to each other without any merging process. Gained benefits for both instruments is bigger than if they gained for alone, as described using the notation below:

   Benefit gain (A+B) > Benefit gain A and Benefit gain (A+B) > Benefit gain B

2. Additivity

   This term of integration is the connection between two or more instruments that has the equal benefit if all the instruments involved are sum independently. This can be seen as:

   Benefit gain (A+B) = Benefit gain A + Benefit gain B

3. Synergy

   It means that the benefit of integration using two or more instruments are continuously higher than the sum of all instruments involved,as presented below:

   Benefit gain (A+B) > Benefit gain A + Benefit gain B

4. Perfect substitutability

   The emergence of this term exists when the use of one instrument can represent for the whole instruments involved in the integrated system. This can be described as:

   Benefit gain (A+B) = Benefit gain A = Benefit gain B

As previously explained, integration principles constitute criteria that are used to evaluate public transport integration, in which become a provision that should be complied to integrate public

transport modes in each level of public transport integration. In addition, dealing with the first principle of integration that comprises four categories (complementary, additivity, synergy and perfect substituability), the focus of this principle is in policy instruments, specifically transport policy instruments. According to Santos et.al. (2010), policy instruments relate to three categories; physical policies, soft policies and knowledge policies. Physical policies deal with physical infrastructure elements encompass integrated public transport, land use, walking and cycling, road construction and freight transport. Soft policies emphasize on people's behavior or travel behavior such as car-sharing and car-pooling, teleworking and teleshopping, eco-driving, advertising campiagn that supported by information and technological facilities. Knowledge policies deal with the importance of research and development to support policies themselves for future. Nevertherless, in association to public transport integration concept, our main focus is in physical policies that are closely related to physical infrastructure elements encompass integrated public transport, land use, walking and cycling, road construction and freight transport. Additionally, an integrated policy is the integration accros different public transport modes, different government targets (e.g. economy, health and environment issues), the considerations of the needs of different social groups (e.g. disable and/or difabel people, elderly) and a coordinative action among government institutions.

Second principle of integration is removal barriers. It means identifying barriers as the impediments of the integration implementation. Some barriers encountered will influence the ineffectiveness strategy resulted in the integration implementation. Barriers can be classified into four categories, which explained as follows (May et.al, 2006):

1. Legal and institutional barriers

   This barriers relate to the legal framework where institutions and/or agency do not have a power and capacity to implement the policy instruments.
2. Financial barriers

   This term associated with the absence of financial support to implement the policy instruments.
3. Political and cultural barriers

   This barriers deal with the political support and the public interest to agree on the integration implementation.
4. Practical and technological barriers

   Practical and technological barriers link to the drawback of skill and expertise (either the users and/or operators) practically and the technological use to implement the instruments.

In response to those barriers, they will impact on the pursue of integration principles, in which they become a trigger to achieve public transport integration. Besides that, those barriers can influence the gained benefits, so they should be eliminated.

2.2 Institutional theory

Institutional design

An essential thing of plan implementation is institutional design which planned interventions (plans, policies, programs and projects) require institutional design because it deals with how those are implemented. Regarding with this, changing the institution either create a new institution or reform it, will impact on planned interventions themselves which needs institutional design (Alexander, 2012). Therefore, before going deeper into the explanation of institutional design, the defininition of institution itself is important to recognize at the first step in order to find out the elements of an institution and provide an insight on the constraints and barriers of institutional design.

North (1991) stated that "institutions are the humanly devised constraints in which structure politic, economic and social interaction consist of both informal constraints (sanctions, taboos, customs, traditions, and codes of conduct) and formal rules (constitutions, laws, property rights)". On the other hand, Alexander (2012) also mentioned that institutions are "the rules of the game in society… the humanly devised constrains that shape human interaction…complexes of norms and technologies that persist over time by serving collectively valued purposes…some have an organizational form, other exist as pervasive influence on behavior". In order to understand about the definitions of institutions, Alexander (2012) explained about the institutional design that means devising an institutions, identifying rules, procedures and organizational structure to enable and constrain behavior and action; to adjust them in order to create values; to achieve an intended objectives. Moreover, the institutional design will be needed when policy or plan implementation require new organization or re-organization, legislation and new procedure. In conjunction to this, Alexander (2012) also distinguished the institutional design into three levels which explained as follows:

1. Macro-level

   At the highest level, institutional design for whole societies or significant macro-societal process and institution (e.g. 'constitution writing' and generic rules). In this level, there is a social dispute that impact on the needs of revolution within the institution.

2. Meso-level

   On the middle level, institutional design engages planners, planning and implementation, establishing and operating inter-organizational network, creating new organization or transforming existing ones, devising and applying incentives and constrain in the form of law and resource deployment. This level is associated with the planners field of practice, such as land use planning, local economic development, transportation planning, environmental policy and social services (e.g. policies, programs, projects and plans).

3. Micro-level

   At the lowest level, institutional design applies to intra-organizational, addressing organizational sub-units and small semi-formal or informal social units. The planners are often involved in administrative-managerial roles, even though this level is not related to planning practice properly (Alexander, 2007) (e.g. communities, teams, task forces and work groups).

The other literature on institutional theory is based on Scott (1987). He stated that the institution is products of interaction and adaptation that result a value that can be used as learning process to gain the knowledge that it is useful to improve the performance of institution. The needs of adaptation in the circumstance become the institution should be changed both in internal (the structure of institution) or external changes (e.g. political power, market needs and social issue). This changes will lead to the determination of goal and the objectives of institution.

According to a different three level of institutional design, the needs of institutional design is not only to achieve the objectives of institutions interpreted by devising and/or reorganize the institutions and/or the organization structure, legislation and procedure, but also to embed a value or 'instill value' (Scott, 1987) as the process of interaction and adaptation of actor's behaviors to achieve an intended goals of institutions (institutionalization process). The instilled values from the process of interaction and adaptation will emerge the changes of actor's behaviour that influence on the attainment of objectives or targets of institutions. This will impact on policy making which actors have the role to determine the direction of institution for the future. Additionally, if there is a change to achieve the objectives of planned interventions (plans, projects, programs and policies), the first thing that should be changed is the institutions itself because it relates to actors involvement. For example, as the case study of this research, in order to achieve the optimizing of an integrated public transport services between land transport (BRT Trans Musi) and river tranport in improving quality service and performance in term of physical and operational aspects, the first thing that should be conducted is through changing the institutions (organizational aspect), in which Saliara (2014) proposed the dimensions of integration into three levels (organizational, operational and physical integration). In relation to levels of institutional design (Alexander, 2012) and levels of transit intermodal integration (Saliara, 2014), an integrateds concepts, particularly in public transportation, is not only emphasized on physical and operational integration, but also organizational (institutional) that differentiated in each level of institutional design (micro, meso and macro level) that also leads to policy making. Thus, the institutional design is not only related to the attainment of the objectives of institution, but also the synergy of an integrated policy instruments.

Institutional transformation

The presence of institution is important in composing strategic plans and policy. It is featured by the emergence of interaction among stakeholders involved, such as government as regulator, operators (e.g. private bus companies, public transport association etc.), Non-Government Organization (NGO), and even citizens and/or common society as users. According to (Giddens, 1984; Neuman, 2012), the development of institutions can be transformed in term of its structure both in bottom-up form and top-down form. In addition, institutions are embraced by structures and/or organization's network, process (laws, regulations, procedures, codes, customs, and traditions) in which have a two-way relationship over the time (Giddens, 1984).

In relation to the transformation, institutions are also deeply guided by the conducting codes and norm that reflected by plans, goals, and objectives. Besides that, the transformation of institutions has the lifecycle that describes the changing stages reflecting on the emergence of institutions evolution. Those stages in the lifecycle of institutions are creation, development, reform, decline and demise as written in **Table 2.3**. Interpreted by four variables, institutional transformation is stimulus for the change, image constituting the institution and transformation outcome (Neuman, 2012).

Table 2.3 The lifecycle theory of institutional transformation

Type of change	Stimulus for change	Change to constituting image	Outcome of change
Creation	Dissatisfaction with status quo	New image	New institution
Evolution: Incremental change	No stimulus, or stimulus to maintain or improve slightly	Maintain existing image stability	Stability within existing societal frame
Reform: Major change	Internal or external recognition that major conditions are changing, thus institution must too	New image coexists and/or competes with existing image, and may replace it	Stability-preserving change within new societal conditions, or instability (unintended result)
Decline/destructuring	Internal disregard, external threat	Decline of faith in existing image	Atrophy, decline
Demise	External threat, internal disregard	No image, loss of image	Extinction

Source: Neuman (2012)

Regarding with institutional transformation in **Table 2.3**, first type is creation which means the formation of institution is induced by the disappointed of status quo and an encourage of social interest so the institution is required to be created (new institution). The second one is the evolution which means there is only a little motivation to preserve the current institutions where it merges the changes in term of formation, structure and status (for example the changes from public to private institution). Additionally, this type does not imply shaping a new institution, but this relates to maintain and to improve somewhat of the current institution to be more stable in societal domain. The

third one is the reform that the institution can only change in term of structure of institutions. The motive of changes is due to an internal and external condition that demand the presence of changes within the institutions, for example reorganize an organization structure of institutions to be more efficient in term of the availability of resources, sharing tasks and the attainment of objectives. The fourth one is decline/destructure which the motive of changes is caused by an internal and external threat that consequently deal with the shortcomings of progress achieved within the institution. So the institution becomes a decrease because of the incapability of its capacity and scope, for example, the transformation from large-scoped institution into the middle and/or small-scoped institution. The last type is demise which means the institution encounter an external threat that induce a collapse and loss of image that also impact on the incapability of preserving, so the institution become burnout.

2.3 Authority of public transport system: international experiences

Establishing the authority of public transport system has experienced and undergone in many metropolitan cities, such as in Singapore (Asia), New South Wales (Australia), Massachusetts, USA (North America) and Western European countries (UK, Denmark and Sweden).. The experience of making the organization of public transport systems in metropolitan areas mainly considers some aspects as Cox (1986) mentioned that there are seven aspects taken into account are the role of public agency, the ownership of service franchise, service planning responsibility, service operation, economic considerations, service orientation and driving factor in service delivery choices. Additionally, Cox and Love (1991) and Costa (1996) categorized three aspects that should be considered of organizing public transport service are the overall of planning system, service design and service operation. On the one hand, Van de Velde (1999) stated the common aspect considered of making the organization in public transport system, particularly in several European cities, is competition aspect both ‘competition on the road’ and ‘competition off the road’. The presence of competition on the road enables public transport operators to develop their service and competition off the road describe a strict services that should be generated but much differ greatly in the their implementation (Van de Velde (1999). This corresponds to the organization form of public transport system that tends to focus on the competition that also leads to the needs of building the authority of public transport with multiple operators as one of the organizational models of urban public transport (Costa, 1996).

In Asia, Singapore has had public transport authority namely the Land Transport Authority (LTA) as legal council under Ministry of Transport. LTA is in charge of planning, development and management of the land transport system. Additionally, the existence of LTA is to make sure that land transport systems are well-organized and integrated with urban developments, in which impact on the improvement of public transport usage to be more attractive than private vehicles (Ibrahim, 2003). Moreover, LTA is not only a board that focus on improving an integrated public transport system, but

also it undertakes an integrated planning system, for example maximizing the road capacity adjusted to the demand of transportation through conducting transport demand management to reduce traffic congestion. Thus, LTA is a legal board to control the exercise of land transport system as a whole that particularly corresponds to urban planning and its development.

European cities have experienced in establishing public transport authority in 1970's and 1980's such as Munich and Cologne (Germany), Vienna (Austria) and Zurich (Switzerland), London (United Kingdom), Copenhagen (Denmark) and Gothenburg (Sweden). London, Copenhagen and Gothenburg are examples of urban public transport organization where they use the organization model through the authority and multiple operators, in which the operators (public and private operators) are under the authority of public transport with tendering process either the full-cost contract or the net-subsidy contract (Costa, 1996). This way interprets the existence of competition and coordination among different public transport operators. The authority of public transport system in London, namely London Regional Transport (LRT) controls public transport services that executed by public and private operators, in which it divides into two public enterprises are London Buses (LBL) and London Underground, whilst private operators provide bus services through a competitive tendering process and the contract undertaken is for 5 years conducted by LRT (Costa, 1996). In Copenhagen, an integrated public transport service is controlled by the government under the Department of Traffic which is divided into two division, one division takes the responsibility for planning and acquiring transport provision and another division is bus operator. Whilst in Gothenburg, public transport authority or *Stadstrafiken* is in charge of network planning, service standards, finance, fares policy, information and marketing, administers the public transport budget and acts as a purchaser-operator and the choice of operators is also through a tendered-contracts (Costa, 1996). Therefore, the form of organizational option of public transport (authority and multiple operators) as London and Gothenburg implemented allows a bidding process led to a competitiveness between public and private operators and also emerges the coordination shaded by one public transport authority.

Meanwhile, the success of public transport system in Germany, Austria and Switzerland is encouraged by the existence of public transport organization model that characterized by the authority and operator, namely *Verkehrsverbund* that is responsible to provide an integrated regional public transport services, such as providing service expansion, improving the service quality that is well-coordinated, providing fares system that is well-managed and expanding an attractive marketing (Pucher and Kurth, 1996). The main feature of this model is the absence of competition among operators of public transport modes which they conduct under license and they can be public, semi-public or private (Costa, 1996). Each operator of public transport modes improve and develop their service quality without the competition and tendering process.

In North America, one of the experience of public transport integration system is in Massachusetts (Boston) through the Massachusetts Bay Transportation Authority (MBTA). MBTA is an authority which responsible for providing and operating public transport integration between land and water-based transit in the Boston area, such as service coordination, fare coordination, facilities integration and passenger information (TCRP, 2013).

An experience of New South Wales (Australia) in controlling public transport system is through the emergence of State Transit Authority of NSW as the government-owned authority that is in charge of the operationalization of Sydney Buses and Newcastle Buses and Ferries (integration between land-based transit and water transport (TCRP, 2013). The organization model of public transport in NSW also embraces multiple operators through tenders and contracts between buses and ferries operations that are executed by different operators within one public transport authority (State Transit Authority of NSW). In relation to this, an integrated public transport in the case of Palembang could adopt the experience of NSW, in which the form of single authority of public transport system is required to optimize public transport service in Palembang between BRT Trans Musi and river transport.

Dubai (United Arab Emirates) has also the success of the implementation of public transport integration system, in which the existence of Road and Transport Authority (RTA). RTA is the agency for bus, maritime and rail transport which responsible for planning, regulations and operations of public transport integration system in Dubai (Kaiser, 2007). The emergence of RTA created in 2005 as public transport integration become well-managed and its objective is to remove the conflict of interest. In doing public transport integration, RTA divides three level of organization function into three categorizations which are legislation and policy, planning and regulations and operations (Kaiser, 2007). Thus, single organization under RTA become public transport integration system in Dubai well-organized in providing services to people.

2.4 Conceptual framework

Guiding to the theoretical review, the conceptual of this research focuses on two concepts are integration concept, particularly in the public transport field and institutional design. In response to both concepts, this research elaborates three levelS of integration are organizational, operational and physical integration as Saliara (2014) explained that also combined with three level of institutional design (micro, meso and macro level) as Alexander (2012) mentioned. Collaborating both concepts will result a new conceptual model of public transport institutional integration as a guideline to determine an appropriate institutional form of public transport integration as a case study of Palembang city. The conceptual framework of this research can be seen in **Figure 2.1.**

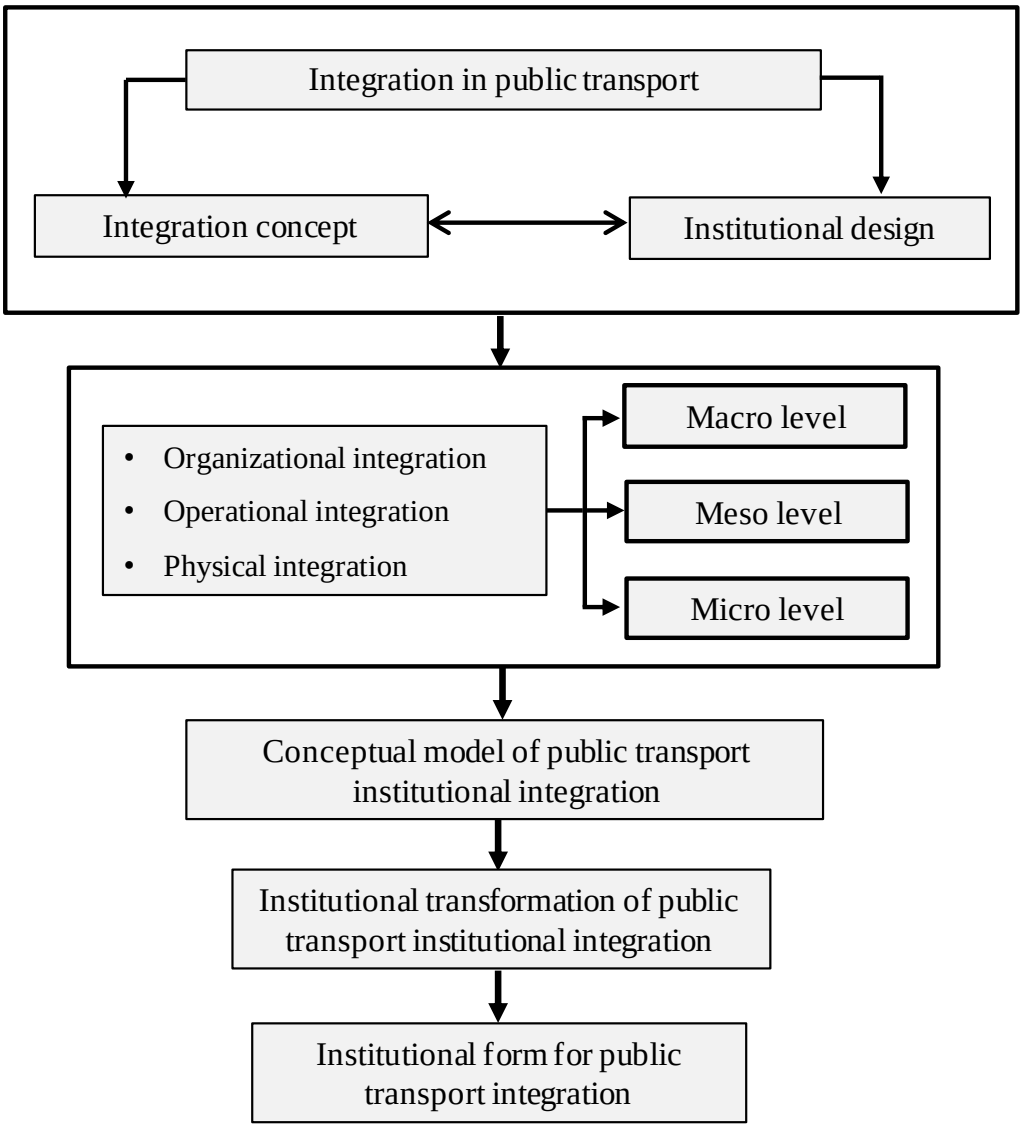

Figure 2.1 Conceptual framework of research
Source: Author (2015)

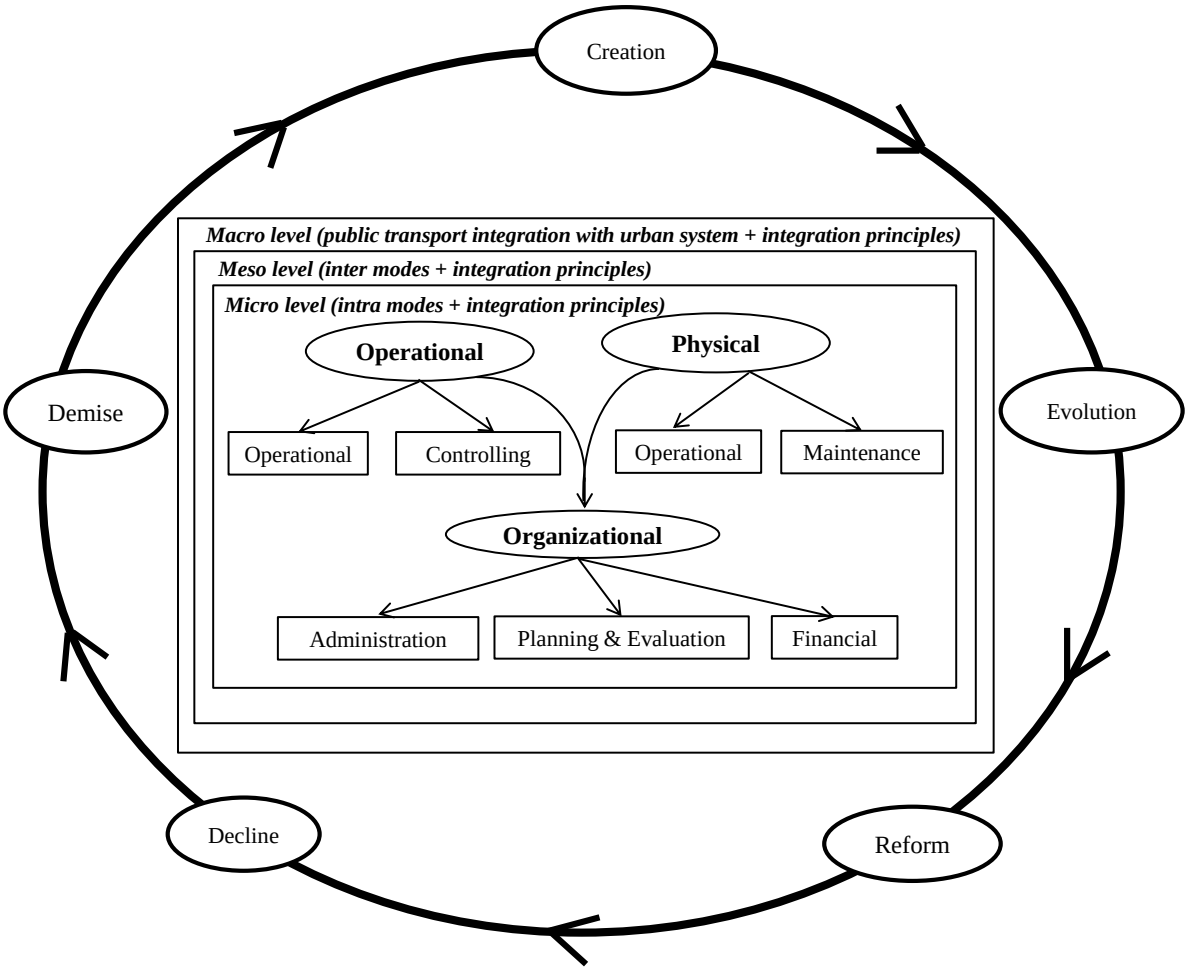

Figure 2.2 Conceptual model of public transport institutional integration
Source: Author (2015)

According to the **Figure 2.2**, the core of public transport institutional integration concept refers to three aspects as Saliara (2014) explained which comprises of three dimension encompass organizational integration, operational integration and physical integration. Adopting those dimensions, the proposed model in this research also adopts two main theories which are integration concepts that refer to the integration principles (May et.al, 2006) and integration in public transport system (Saliara, 2014); and institutional theories that consist of institutional design (Alexander, 2012) and institutional transformation (Neuman, 2012). Besides that, the core of this model focuses on the organizational dimension (administration, planning and evaluation and financial), in which this dimension is the main aspect that can impact significantly on the operational dimension (operational and controlling) and physical dimensions (operational and maintenance). Basically, designing public transport institutional integration tends to the compliance of those dimensions, in which each level of integration (micro, meso and macro level) should incorporate the integration principles as the criteria to evaluate and/or to assess public transport integration. Moreover, each level of institutional integration allows the institutional changes interpreted by the lifecycle of institutional transformation. The institutional transformation is based on a trigger factors (internal or external factors). The linkage

between lifecycle of institutional transformation and each levels of public transport integration is a complementary relationship, in which in determining the institutional changes the type of public transport integration (intra modes, inter modes and public transport integration with urban system) should be determined previously as the objective achieved of public transport integration. Furthermore, the determination of the changes of an appropriate institution is through a sequence process that depends on the circumstances within public transport institution itself or stimulus for changes (see **Table 2.3**). Thus, type of changes of public transport institutional integration should adhere the stages of institutional transformation as Neuman (2012) mentioned encompass creation, evolution, reform, decline and demise (see **Figure 2.2**).

The conceptual model of public transport institutional integration is a tool for making an integrated public transport, in which this concept has some challenges, possibilities and consequences if it would be applied in an empirical study. The possibilities of this concept might be applied only in public transport integration which three levels of integration are the main focus of designing the institution (macro, meso and micro levels). Additionally, the proposed integration concept is not only focused on physical and operational integration, but also precisely on the organizational integration as the core of integration itself. Besides that, the challenge of the implementation of public transport institutional integration concept is the emergence of barriers encountered, such as legal, financial, political and technological barriers, in which the consequence of those barriers will influence on three levels of integration (organizational, operational and physical integration) as the core of integration that consequently will impose in each levels of institutional design (micro, meso and macro levels). Therefore, this concept can be used merely in determining the institutional form for public transport integration.

RESEARCH METHODOLOGY

CHAPTER 3
RESEARCH METHODOLOGY

This chapter will elaborate the research methodology as the way to attain the objectives in relation to how the data are collected, what approach should be taken to obtain the information from data collection and what analysis should be used to interpret the information. Subsequently, the obtained information should be analyzed in order to get a new knowledge. In exploring a new knowledge, Kothari (2004) stated that the research methodology is one of the important parts in the research because it relates to answer the research problems systematically. Therefore, research methodology is needed as the way and strategy to achieve the research objectives.

3.1 Data Collection

The focus of this research is directly linked to a single case study on public transport institutional integration, in which Palembang city as an object to confirm an appropriate institutional form of public transport integration. The argument of choosing Palembang as an object of public transport institutional integration is because Palembang constitutes the first pilot project of public transport integration between land transportation (BRT Trans Musi) and river transportation in Indonesia (Dit. BSTP, 2011). On the other hand, the improvement of public transport integration service in Palembang should be developed, not only in term of physical and operational integration, but also organizational integration. As Dit. BSTP (2011) stated that one of the way to develop public transport integration is through reforming the institutions itself. In the light of both public transport institutions are still separated in operating public transport integration, an integrated public transport institutions is needed to enchance in term of services. The institutional form related to the case study interprets the concept of public transport institutional integration. Therefore, to produce an insight and knowledge on public transport institutional integration as a whole part, the single case study is an favorable research method.

Regarding to data collection method, Yin (2013) mentioned that data collection sources in case study research are interviews, direct observations, participant observations, documentations, archival records and physical artefact. Due to the limitation in term of time and resources, this research will only emphasize on using the information from documentations sources to achieve the research objectives and to answer the whole of research questions related to the case study. Besides that, most of data used in this research are only obtained from a secondary data, such as local transportation agency, PT. *Sarana Pembangunan Palembang Jaya* (SP2J), *Direktorat Bina Sistem Transportasi Perkotaan* (Dit. BSTP/Directorate of Urban Transport System Development). Additionally, asking directly by email to transportation agency of Palembang and also reviewing literatures from books,

journals, articles, reports and internet sources are also conducted as the method of data collection.

3.2 Analysis used

Analysis used of this research relates to a qualitative methods encompass a qualitative content analysis and descriptive analysis. Content analysis is a method of analysis used to distil the text into fewer content-related categories (Elo and Kyngäs, 2007). Besides that, a qualitative content analysis is exploring the objective content of the text to find out the meanings, themes and patterns (Zhang and Wildemuth, 2009). The outcome of content analysis is concepts and/or categories that purposes to construct the model, conceptual system, conceptual map or categories (Elo and Kyngäs, 2007). It means that data collection from many sources interpreted by writtens, texts and documents can use a content analysis that aims to constrict them to be more specific understood through establish a conceptual model.

In relation to the objective of this research, exploring on the concept of public transport institutional integration, a content analysis is likely appropriate to be used in analyzing the case study research, in which the output of this research is conceptual model of public transport institutional integration besides policy recommendations. The research methodology can be seen in Table 3.1.

Table 3.1 Research Methodology

No.	Objective	Data requirement	Sources	Data Collection Methods	How to Analysis	Output
1.	To identify the current institutions of public transport integration.	- Legal aspects (laws, regulations and policies) on public transport institutions, including tasks and functions of institutions. - Organization structures both BRT Trans Musi and river transport.	- Local transportation agency. - PT. SP2J - Dit. BSTP - Internet sources.	- Literature review. - Asking directly by email to local transportation agency. - Searching data from internet sources.	Descriptive analysis.	The current condition and institutions of public transport.
2.	To explore about public transport integration concept and institutional design.	- Legal aspects on public transport. - Document reports about integration concept and institutional design.	- Local transportation agency. - PT. SP2J - Book, journals, articles, document reports and internet sources.	- Literature review. - Document review - Searching data from internet sources .	Qualitative content analysis.	Concept of public transport institutional integration.

Source : Author (2015)

PUBLIC TRANSPORT IN PALEMBANG CITY

CHAPTER 4
PUBLIC TRANSPORT IN PALEMBANG CITY

This chapter will elaborate the current condition of public transport in Palembang city in general and the current institution of public transport both BRT (Trans Musi) and river transport (water buses/*bus air*). The collected data in this chapter relates to the objectives in research methodology in chapter 3 that aims to identify the current condition and institution of public transport and to support an analysis of the research about public transport institutional integration based on the conceptual framework that previously explained in chapter 2.

4.1 Current condition of public transport

Public transport system is essential thing to accommodate people movement from origin to destination using intermodal transportation of multi modal transportation that can fulfill people needs. Besides that, reliable public transportation is the expectations of people, in which the availability of public transportation facilities that provide comfort, safety and security aspects is needed to support the service quality to passengers. Consequently, it becomes more attractive for people. In addition, the multitude of various public transport can give many choices for passengers in making trip, particularly for commuter trip in order to support their daily activities, such as working, shopping, going school, tourism etc. Therefore, the need of mass public transport is required to accommodate people movement in Palembang city.

The current public transports in Palembang city consists of two types which are land transport (BRT/bus rapid transit namely Trans Musi, city buses, taxi, *angkot*, *bajaj*) and river transport (speedboat, ketek, water buses).

	
BRT Trans Musi	City buses

	
Taxi	Angkot

Figure 4.1 Kind of land transport in Palembang city

	
Water buses *(bus air)*	*Ketek*
	
Speedboat	

Figure 4.2 Kind of river transport in Palembang city
Source: [1]Sustainable Urban Transport Improvement Project (2015)

Regarding pictures shown above, actually, the current condition of land transport in Palembang city, particularly *angkot* and city buses have not complied a reliable transport in term of comfort, safety

[1] http://www.sutip.org/library/publication

and security aspect. Therefore, in 2009 Palembang's government have launched BRT known Trans Musi in order to improve public transport service for passengers to be more attractive. In addition, The Trans Musi is still serving eight corridors to accommodate passengers demands on land transportation. According to data obtained from PT. SP2J, the average number of passengers of BRT Trans Musi is increasing about 16% in 2013 (5.115.287) compared with 2012 (4.329.714 passengers).

Table 4.1 BRT Trans Musi corridors

No.	Corridor	Routes	Number of buses (unit)
1.	Corridor 1	Under Ampera bridge bus station – Alang-alang Lebar bus station	26
2.	Corridor 2	Sako bus station – Palembang Indah Mall point	25
3.	Corridor 3	Plaju bus station – Palembang Square Mall point	20
4.	Corridor 4	Jakabaring bus station – Karya Jaya bus station	12
5.	Corridor 5	Alang-alang Lebar bus station – sultan Mahmud Badaruddin II airport	5
6.	Corridor 6	PUSRI point – Palembang Square Mall point	10
7.	Corridor 7	Kenten point – JM Plaza point	On progress
8.	Corridor 8	Alang-alang Lebar bus station – Karya Jaya bus station	On progress

Source: PT. *Sarana Pembangunan Palembang Jaya*/SP2J (2013)

In association to river transport in Palembang city, *ketek* and speedboat are less attractive because it lacks of service quality in term of safety and comfort aspect, in which both modes experience accident and even crash that induce passengers got injured. Hence, Palembang's government attempt to improve service quality through providing water buses. Water bus is another alternative of public transport for accommodating people movement that operated in the Musi river that also positioned in strategic location in city center of Palembang. Besides that, the emergence of water buses can decrease traffic congestion and as the alternative modes choice for people. In serving people's activities against the needs of public transport, today water buses provide two corridors that connect areas in Palembang city along the Musi river.

Table 4.2 Water buses *(bus air)* corridors

No.	Water buses corridors	Routes
1.	Corridor 1	Dermaga 16 Ilir – Dermaga 7 Ulu – Dermaga Kampung kapiten, – Dermaga 3-4 Ulu – Tangga Buntung – Dermaga Kertapati
2.	Corridor 2	Dermaga 16 Ilir – Dermaga 7 Ulu – Dermaga 10 Ulu – Dermaga lawang kidul – Civo – Dermaga pulau kemaro – Dermaga Sei Selincah.

Source: Local transportation agency (2013)

In order to optimize transport modes service to passengers, one of way that have been conducted by Palembang's government is integrating public transport modes. In the mid of 2013, Palembang's government had launched the integration between BRT Trans Musi and water buses. In doing so, government also provide the infrastructure and facilities to support those integration, such as interchange station located in under Ampera bridge.

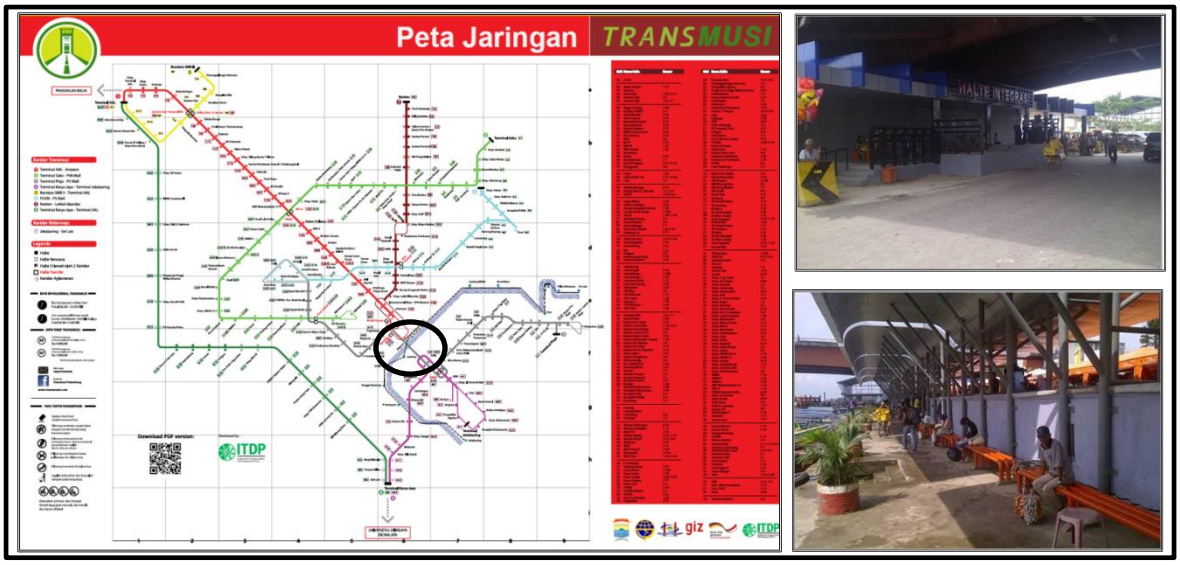

Figure 4.3 Integration map between Trans Musi and water buses and interchange facilities
Source: Local transportation agency (2013)

4.2 Current institution of public transport

4.2.1 Bus Rapid Transit (BRT) Trans Musi institution

The institution of BRT Trans Musi is PT. Sarana Pembangunan Palembang Jaya (SP2J) as single operator that pointed by government to operate and to manage the service. PT. SP2J is one of

local government-owned enterprise in Palembang city that established according to local government regulation No.4/2006 on the establishment of *Perseroan Terbatas (PT) Sarana Pembangunan Palembang Jaya*. Additionally, in operating BRT Trans Musi, PT. SP2J is supported by Palembang Mayor decree No. No.551-2/002394 as a legal aspect. In executing the operational function as the operator of BRT Trans Musi, PT. SP2J has another business branches such as rural bank *(Bank Perkreditan Rakyat/BPR)*, power plant, rental flat management and household gas operation as can be seen in Figure 4.4 below.

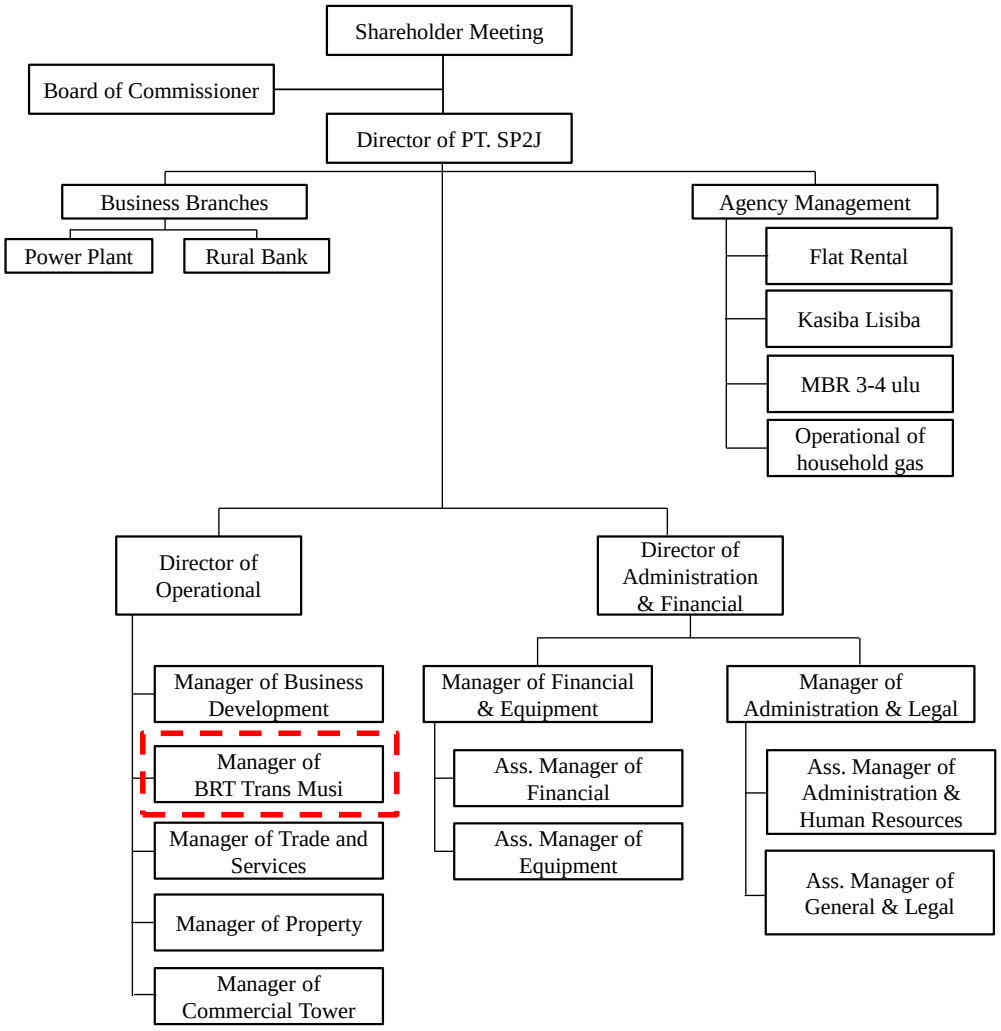

Figure 4.4 Organization structure of PT. SP2J
Source: PT. SP2J (2013)

Figure 4.4 shows that the position of BRT Trans Musi in the organization structure of PT. SP2J is under the operational department that supervised by a manager, in which that department

conducts other divisions, such as business development, trade and service, property and commercial tower. Consequently, this impacts on a less focus on executing public transport service that also influence on decreasing the quality service and performance of public transport integration, especially in BRT Trans Musi and river transport.

In executing the service, manager of BRT Trans Musi has five assistants which are assistant manager of pool, assistant manager of operational, assistant manager of administration, assistant manager of financial and assistant manager of analysis and evaluation.

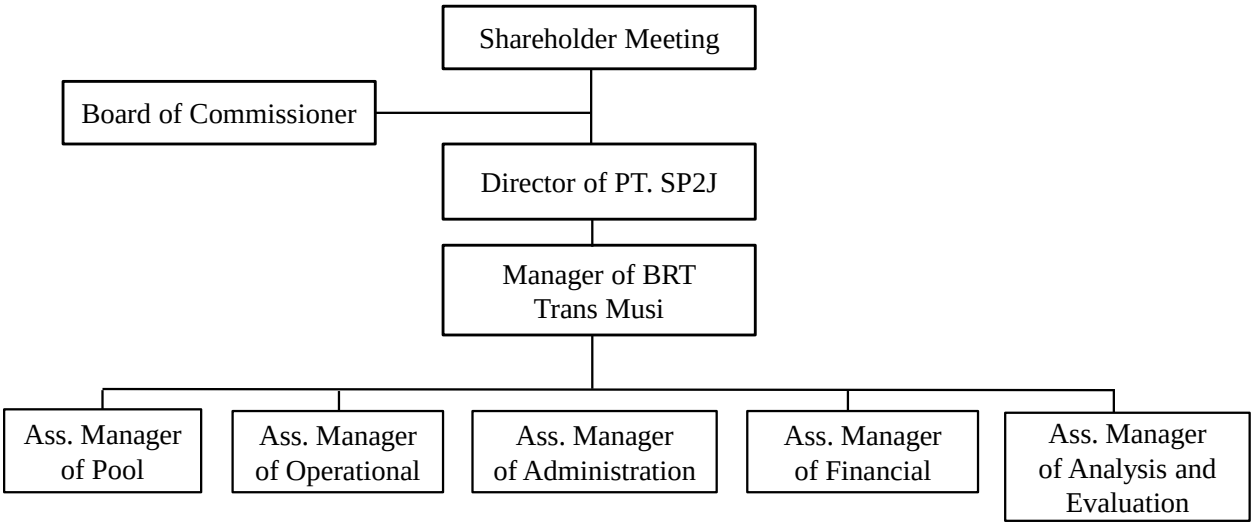

Figure 4.5 Organization structure of BRT Trans Musi
Source: PT. SP2J (2013)

4.2.2 River Transport institution

Planning of river transport in Palembang is actually under the local transportation agency which the organization structure consists of four divisions encompass division of planning and air transportation; division of sea, inland water and ferries transportation; division of land transportation and railways; division of traffic monitoring and controlling. The main position of river transport institution is in the division of sea, inland water and ferries transportation that comprises of three sub-divisions are sub-division of sea and river traffic management, sub-division of sea and river boat, sub-division of infrastructure of sea and river.

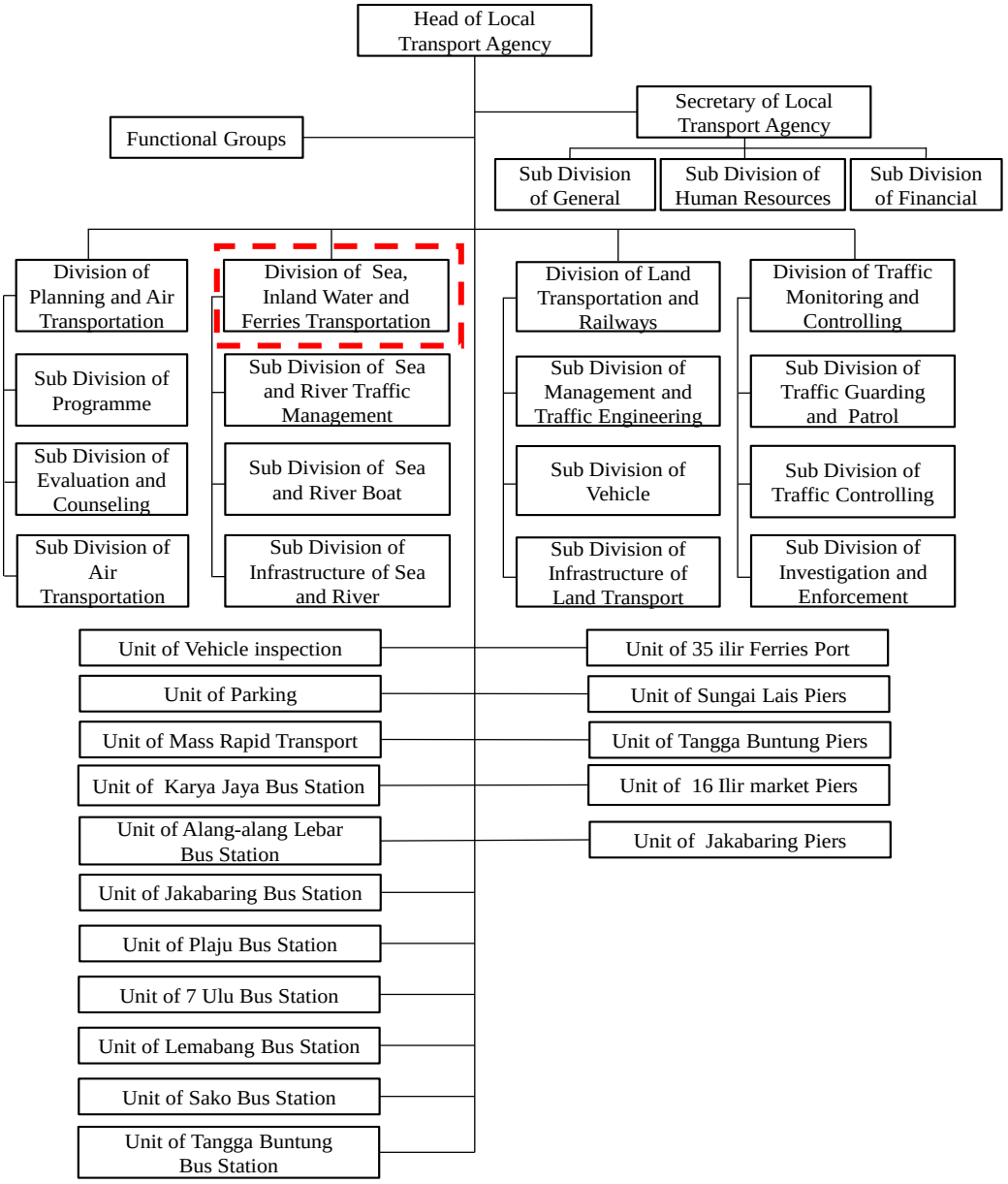

Figure 4.6 Organization structure of transportation agency of Palembang

Source: Local transportation agency (2013)

Figure 4.6 shows the organization structure of Palembang transportation agency which the operational of river transportation is based on local government regulation No. 8/2009 on organization structure of local transportation agency of Palembang that mainly explain on the tasks and function of each divisions. Additionally, this organization is not specifically concern or accommodate the public transport integration in a specific division that impact on the declining of quality and the performance of public transport service.

ANALYSIS

CHAPTER 5
ANALYSIS

This chapter explains in more detail about the conceptual model of public transport institutional integration in three levels which are the concept in micro level, meso level and macro level. The proposed concept refers to a theory used in this research are integration in public transport (Saliara, 2014), integration concept specifically integration principles (May et.al, 2006), institutional design (Alexander, 2012) and institutional transformation Neuman (2012). Finally, all the mergerd concept in this research also refers to an empirical study of the current public transport institutions both BRT and river transport, in which the case study of Palembang is a part of the public transport institutional integration concept.

5.1 Analysis of public transport institutional integration in micro level (intra-modes)

Basically, this concept adopts the institutional design in micro level (Alexander, 2012) that means institutional design refers to intra-mode of public transport. For example, the integration in land transport modes between *angkot* as the feeder transport for BRT that serves the passengers with a low demand in small service area such as residential location and BRT Trans Musi that serve a major locations (e.g. arterial roads) such as office and business center with high demand. Additionally, the integration can also occur in the same river transport modes, for example between water buses *(bus air)* that serves intra-city (urban area) and speed boat that serve inter-city (rural area). In relation to this, the integration concept in micro level is not only making integration in physical and operational dimensions, but also the integration in term of institutional. Furthermore, those dimensions of public transport institutional integration consistently have to be complied in micro level (operational, physical and organizational dimensions) because they are the core of institutional design for public transport integration. Therefore, the concept of public transport institutional integration in micro level can be conducted in the same modes that have similar characteristics, particularly in the use of infrastructure (e.g. road infrastructure, water infrastructure). The analysis of institutional integration in public transport can be seen in **Table 5.1.**

Table 5.1 Analysis of public transport institutional integration in **micro level** (intra-modes) of BRT Trans Musi and river transport

No.	Types of integration	Before adopting the integration concept of BRT Trans Musi and river transport (present)	After adopting the integration concept of BRT Trans Musi and river transport (future)	Input	Output
1.	**Organizational dimension**	BRT Trans Musi is managed by PT. SP2J as an independent institution (local government-owned enterprise). The coordination function is only integral to local government (transportation agency). River transport is managed by government-owned enterprises under transportation agency of Palembang (division of Sea, Inland Water and Ferries Transportation) as an independent institution.	The coordination function have to be integrated among three dimensions of integration in public transport (operational, physical and organization), in which the organizational dimension is the core. Additionally, in the organizational dimension, there are three elements that should be existed to support the integration are administrative, planning and evaluation and financial.	1. Legal aspects 2. Tasks and functions of organizations 3. Organization structure	Design of organization structure
2.	**Physical dimension**	Service network, fares and ticket (using smart card that cooperate with commercial banks) have complied. Additionally, scheduling, interchange point and information and technology	In this dimension, the integrated is also required that is linked to the organizational dimensions, in which the supply of physical dimension also need integration, not only	1. Data on network services (routes network) 2. Data on fleet number	Design of physical facilities

No.	Types of integration	Before adopting the integration concept of BRT Trans Musi and river transport (present)	After adopting the integration concept of BRT Trans Musi and river transport (future)	Input	Output
		have not complied. Service network is still limited in serving to people's needs that is only two corridors served. In addition, interchange facilities is less to connect with another river modes (e.g. *ketek* and speed boat). Ticketing system is still using conventional means (cash payment).	coordination intra institutions, but also inter institutions (NGO, private sectors) to support the physical development. In addition, in the physical dimension, incorporating two elements encompass operational and maintenance is required.	3. Data on stop points in each corridors 4. Data on number of passengers 5. Data on vehicle dimensions	
3.	**Operational dimension**	The access to facilitate is only walking and design of stations are only for BRT which the other modes like *angkot* cannot use it. Besides that, the existence of stations do not accommodate the difabel person's needs and the control of vehicle movement in BRT have used GPS (global positioning system) tracking system.	The coordination of intra-mode in operationalizing to optimize the service of public transport. Moreover, the dimension of integration is connected to two elements are operational and controlling to improve the reliability of public transport service in intra-modes.	1. Data of number of fleet 2. Data of network service. 3. Travel time 4. Data frequency of transport modes. 5. Intelligent transportation	Operational design

No.	Types of integration	Before adopting the integration concept of BRT Trans Musi and river transport (present)	After adopting the integration concept of BRT Trans Musi and river transport (future)	Input	Output
		In river transport, the access to facilities is still limited (only for walking) and the number of piers is less. Moreover, the vehicle movement has not controlled by GPS.		system (e.g. GPS technology, traffic signal control)	

Source: Analysis (2015)

According to the analysis of public transport institutional integration in micro level, making integration in public transport also has to follow the integration principles that comprises of four categories. First one is the complementary that means the integration concept in intra modes can maximize the benefits, for example *angkot* can be as the feeder for BRT Trans Musi that is not covered and served by BRT (sub-urban). As a result, the gained benefits can be maximized, in which the service range of BRT Trans Musi and *angkot* can be larger, the routes both BRT Trans Musi and *angkot* are not overlapping. Second principle is additivity that refers to both BRT Trans Musi and *angkot* are still serving their routes and the gained benefits are equal. It also means that the benefits of each service of both modes will not be reduced at all, although each modes will be integrated. Third principle is synergy that relates to the benefits gained from the integration between BRT Trans Musi and *angkot* can be higher and even more developed, in which if the service range of BRT Trans Musi is increased (e.g. additional routes or corridors), the needs of *angkot* to serve the other area will also be developed. Fourth principle is perfect substitutability that means the gained benefits from integration both modes is in term of providing bus stops and ticketing system, in which the bus stops constructed is in one point of integration (transfer points) and this ticketing system can be used for multiple function (single ticketing system that can be used in both modes), so the conventional ticket in *angkot* will be eliminated. Thus, referring those principles, the integration concept in micro level (intra-modes) can be applied because it has complied the integration principles.

In relation to develop the institutional integration in public transport in micro level, the consideration on the institutional transformation is needed as Neuman (2012) stated. The type of change of institutional transformation is based on the lifecycle that consist of five categories (creation, evolution, reform, decline and demise) which the compliance of each types have to be sequential process as can be seen in **Figure 5.2.**

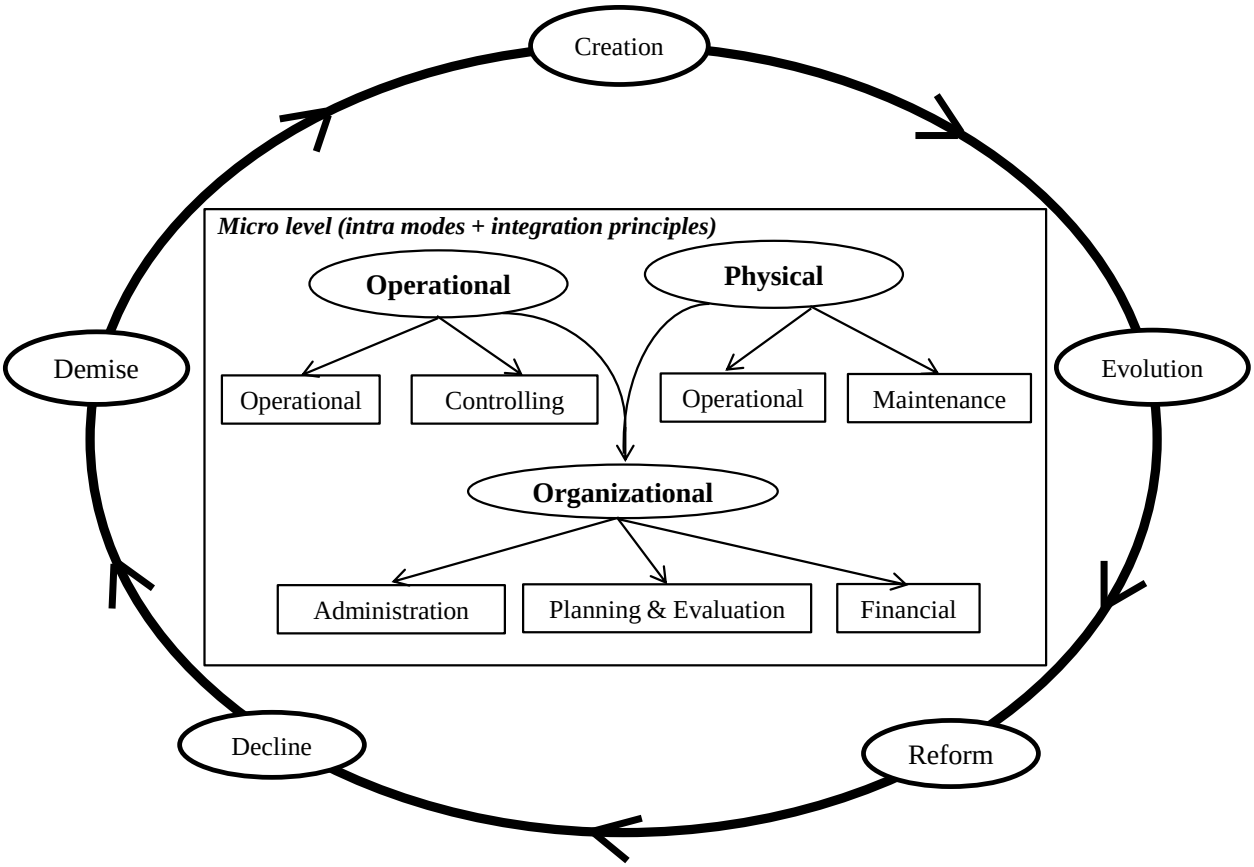

Figure 5.1 Concept of public transport institutional integration in micro level (intra-modes)
Source: Analysis (2015)

5.2 Analysis of public transport institutional integration in meso level (inter-modes)

In meso level, institutional design relates to inter-organizational that means there is integration between a different modes that also have a different characteristics, for example integration between land transport (BRT Trans Musi) and river transport (water buses/*bus air*). Combining both public transport modes also needs three dimensions to design an appropriate institution, in which the organizational dimension is the core of dimension that have to be fulfilled by the operational and physical dimensions. In association to this, the analysis of public transport institutional integration in meso level can be seen in **Table 5.2**.

Table 5.2 Analysis of public transport institutional integration in **meso level** (inter-modes)

No.	Types of integration	Before adopting the integration concept between BRT Trans Musi and river transport (present)	After adopting the integration concept between BRT Trans Musi and river transport (future)	Input	Output
1.	**Organizational dimension**	The absence of public transport institutional integration that merge between BRT Trans Musi and river transport such as in administration, planning and monitoring and funding (investment). The coordination function is also weak because a separated-organization impacts on a different vision and mission to achieve the objectives and goals.	The integration in organizational dimension is also needed. Making coordination and cooperation between inter-modes that involve administration, planning and evaluation and also financial elements as integration concept , in which the aims of integration is to achieve a common goals that influence on the attainment of vision and mission. The function of administration element is to carry out the tasks on regulation, contract agreement, human resource development and general administration. The function of planning and evaluation element is to plan related to operational and physical needs and to evaluate and monitor the performance of organization and	1. Legal aspects 2. Tasks and functions of each organizations 3. Organization structure	Design of organization structure

No.	Types of integration	Before adopting the integration concept between BRT Trans Musi and river transport (present)	After adopting the integration concept between BRT Trans Musi and river transport (future)	Input	Output
			implementation of the plans. The function of financial relates to the allocation of budget based the targets and policies; and the gaining of incentive funding with other parties in term of infrastructure and operational development.		
2.	**Physical dimension**	The network of between BRT Trans Musi and river transport have existed, but the point of integration (interchange facilities) is only one point under Ampera bridge. Additionally, information and scheduling have not synchronized.	The integration in physical dimension refers to operational and maintenance elements. The function of operational element is to operate the BRT Trans Musi facilities, river transport facilities, information and technology facilities, whilst the function of maintenance element is to maintain the whole of facilities and vehicles.	1. Data on network services (routes network) 2. Data on fleet number 3. Data on stop points in each corridors 4. Data on interchange points 5. Data on number	Design of physical facilities

No.	Types of integration	Before adopting the integration concept between BRT Trans Musi and river transport (present)	After adopting the integration concept between BRT Trans Musi and river transport (future)	Input	Output
				of passengers 6. Data on vehicle dimensions	
3.	**Operational dimension**	The access to facilities and design of stations is still limited and have not accommodate the difabel person's needs. Control of vehicle movement is only provided for BRT Trans Musi (GPS).	The integration in this dimension deals with the operational and controlling elements. The function of operational element is to operate activities that related to operational of BRT Trans Musi and river transport. Meanwhile, the function of controlling element is to control the service performance of public transport.	1. Data of number of fleet 2. Data of network service 3. Travel time 4. Data frequency of transport modes. 5. Intelligent transportation system (e.g. GPS technology, traffic signal control)	Operational design

Source: Analysis (2015)

According to the analysis of public transport institutional integration in meso level (inter-modes) the integration between BRT Trans Musi and river transport also have to comply the integration principles. Firstly, it is related to the complementary principle that means the integration both modes can maximize the gained benefits, in which the river transport modes (e.g. *bus air*) can accommodate the service range that is not covered by land transport modes (e.g. BRT Trans Musi). Second principle is additivity that refers to both river transport modes and land transport modes are serve their each routes and the gained benefits are equal, in which each services of both modes will not be reduced at all. Third principle is synergy that relates to the gained benefits from the integration between river and land transport modes can be higher and even both transport modes can be developed each other because the development of one mode can impact on the other modes. Fourth principle is perfect substitutability that relates to the availability of interchange points and ticketing system, in which the gained benefits from the construction of one facilities (interchange points) can be maximized in term of financial because of the use of facilities concurrently and multifunction ticketing system, so the conventional ticket in river transport or land transport can be eliminated by using single ticket. So, the integration concept in meso level (inter-modes) can be applied because it completely fulfills the integration principles.

Regarding with the institutional integration in public transport in this level, the needs of the type of change of lifecycle institutional transformation as Neuman (2012) stated (creation, evolution, reform, decline and demise), should also be considered as the sequential process **(Figure 5.3).**

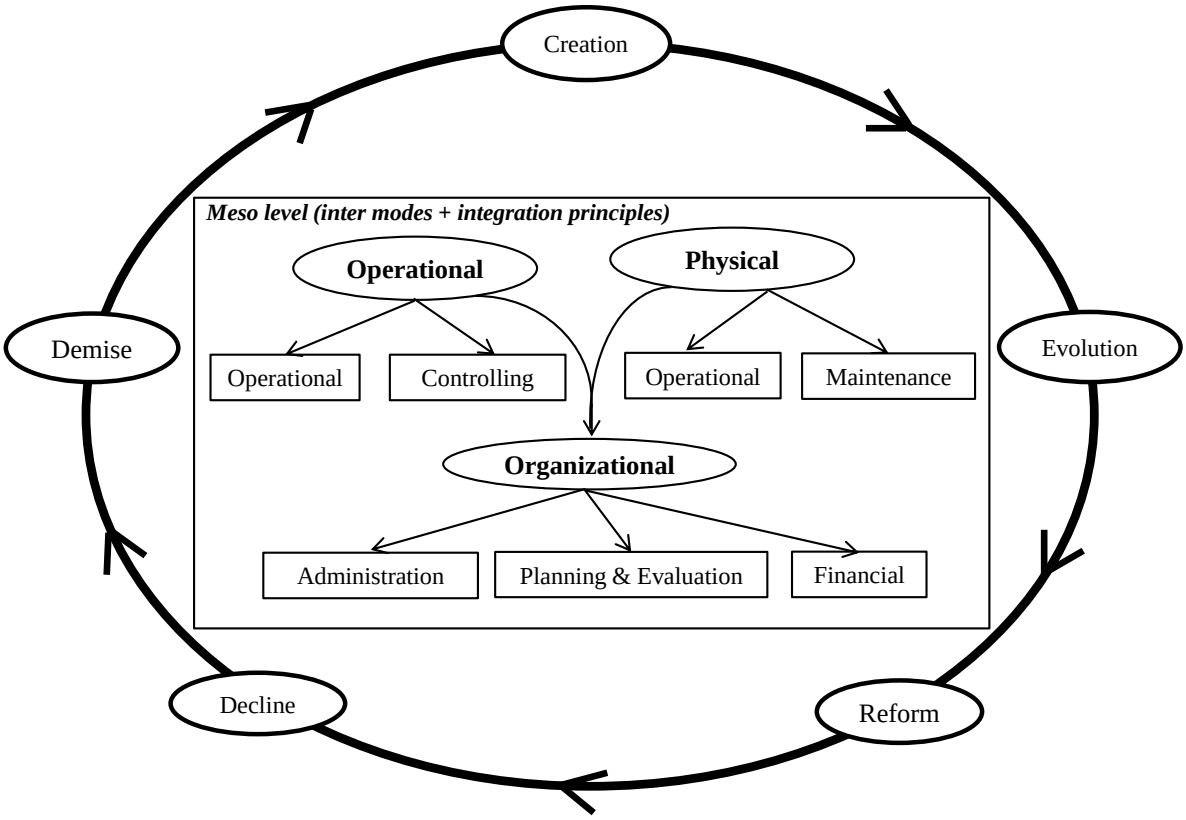

Figure 5.3 Concept of public transport institutional integration in meso level (inter-modes)
Source: Analysis (2015)

5.3 Analysis of public transport institutional integration in macro level (public transport integration with urban system)

The analysis of public transport institutional integration in macro level relates to three dimensions. firstly, the organizational dimension that means (existence of an independent authority for the coordination of functions and cooperation of operators); secondly the physical dimension that relates to the network layout, schedules, transfers and information, fares and ticket; thirdly the operational dimension (access to facilities, location of facilities, design of stations, control of vehicle movements). In relation to this, the analysis in macro level can be seen in the following table:

Table 5.3 Analysis public transport institutional integration in **macro level** (public transport integration with urban system)

No.	Types of integration	Before adopting the concept of public transport institutional integration in macro level (present)	After adopting the concept of public transport institutional integration in macro level (future)	Input	Output
1.	**Organizational dimension**	Lack of integrated public transport with urban system, for example the absence of integration between land use types (e.g. residential area, office, education area, tourism and business center/CBD) and transportation (e.g. private car, non-motorized transport/NMT and public transports), impacts on the unintegrated planning and policy.	The integration in organizational dimension is also needed. The function of administration element is to coordinate the control of public transport services and local land use policy. The function of planning and evaluation elements are to formulate policy strategies that relates to transportation, local strategies development and environmental; and to evaluate the policy (ex-ante and ex-post evaluation) based on the implementation and aspirations from stakeholders. The function of financial relates to allocate funding according to the targets and policies.	1. Legal aspects (land use policies and transportation policies) 2. Tasks and functions of each organizations 3. Organization structure	Design of organization structure

No.	Types of integration	Before adopting the concept of public transport institutional integration in macro level (present)	After adopting the concept of public transport institutional integration in macro level (future)	Input	Output
2.	**Physical dimension**	The absence of integrated infrastructure, for example the availability of park and ride facilities in bus stations, bike lane/path and pedestrians facilities. This condition leads to the service network of public transport is not optimized that impact on the increasing of private car usage (car dependency) and the decreasing of the interest of public transport.	This dimension relates to the operational element that aims to provide physical facilities to connect land use and public transport, such as park/bike and ride facilities, interchange facilities in each transport nodes (such as railway stations, bus station, airport and port/harbor), information, fares and ticketing system. Meanwhile, the maintenance element have the function to maintain physical facilities.	1. Data on characteristics land use 2. Data on number of population and passengers 3. Data on network services (routes network) 4. Data on fleet number 5. Data on corridors integration 6. Data on interchange points	Design of physical facilities
3.	**Operational dimension**	The access to facilities have not been integrated to land use, in which the	The integration between land use and transport is dealt with the operational elements that have to be connected and	1. Data on characteristics land use	Operational design

No.	Types of integration	Before adopting the concept of public transport institutional integration in macro level (present)	After adopting the concept of public transport institutional integration in macro level (future)	Input	Output
		accessibility to bus and river transport station is still far from residential area or CBD, so the walking access is high.	integrated with the other modes or multimodal transportation (railway transport, buses, river transport, paratransit, non-motorized transport). It means that it have to be linked with transport nodes, such as railway stations, bus station, airport and port/harbor. Meanwhile, the function of controlling element is to control the service performance of public transport.	2. Data of network service 3. Data on corridors integration	

Source: Analysis (2015)

The concept of institutional public transport integration in macro level do not perceive only in the context of public transport modes itself (transportation context), but also it relates to urban system as a whole (spatial development and transportation).

This concept also has to fulfill four integration principles. Firstly, the complementary principle is dealt with the open access in the peri-urban area (increase the accessibility) that is not accommodated by the availability of public transport system, consequently it will impact on increasing the economic growth and decreasing of private car usage. Secondly, the additivity principle means that the integration between public transport and urban system relates to the environmental impacts that impact on reducing pollution (e.g. noise nuisance and air pollution). Thirdly, synergy principle refers to the linkage between land use (e.g. residential area, office, business center or CBD/central business district) and transportation will result more benefits than the costs because there is decreasing on distance and reducing travel time that consequently it will impact on the declining of traffic congestion, particularly in urban area because of the increasing of public transport usage. Hence, the public transport is more attractive, not only for public transport users, but also for motor vehicle users (e.g. motorcyclists and private cars). Finally, the perfect substitutability principle means that the integration between transport and spatial will influence on modal shift from private car (decreasing of car dependency) to public transport.

In relation to this, the integration concept in macro level have to fulfill those principles and in association to the institutional integration, the transformation lifecycle is required (creation, evolution, reform, decline and demise) as the sequential process (Figure 5.4) in changing the institution.

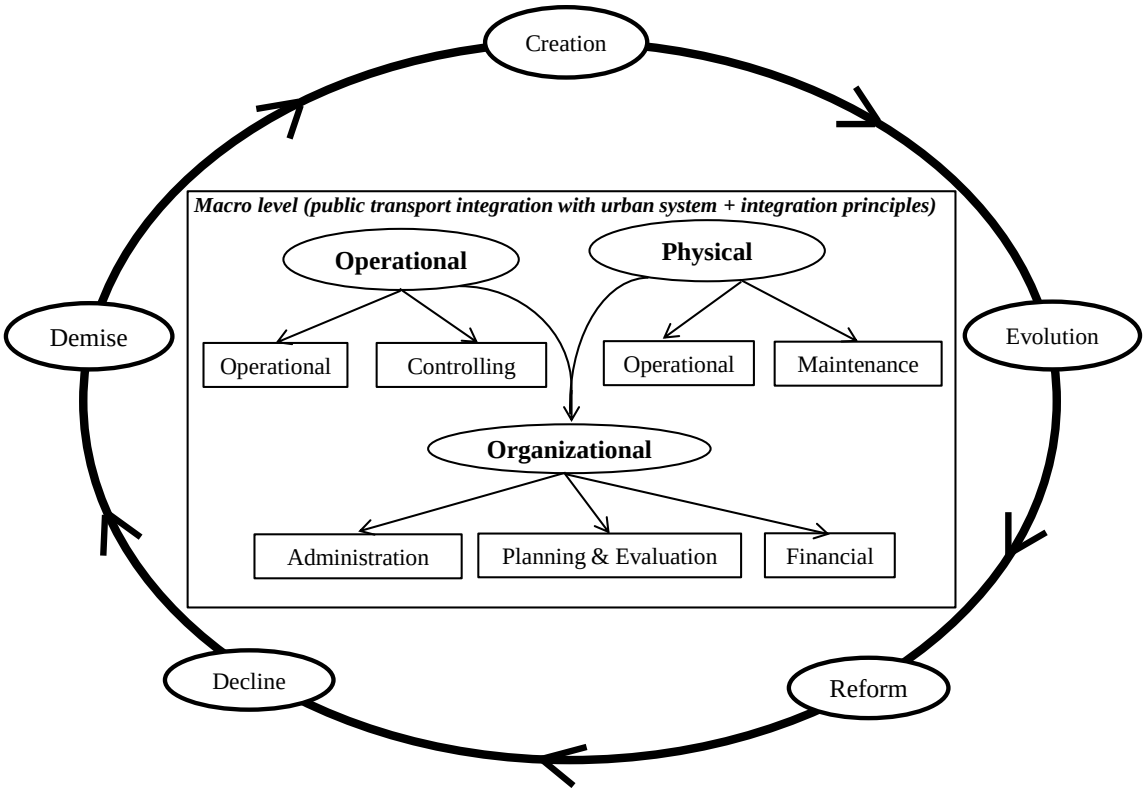

Figure 5.3 Concept of public transport institutional integration in macro level
Source: Analysis (2015)

5.4 Strategy of optimizing public transport integration between BRT Trans Musi and river transport

This part explains descriptively on an appropriate institution for BRT Trans Musi and river transport that refers to Neuman (2012) on the type of changes in institutional transformation, in which the result is shifting from independent institution toward the institutional integration on public transport service between BRT Trans Musi and river transport. This shift deals with the proposed strategy on institutional form for public transport integration in optimizing services.

According to Scott (1987), the institutional characteristics of organization environment forms the objectives and the way of actors. It means that the types of institutions will determine the direction of the attainment of planning targets and its outcome. The role of involved actors in institution is dependent upon the shape of institution itself, in which they can work based on the tasks and function of the organization that have been shaped and it depends on rule of the game. Due to the institution product of interaction among actors results a value that can be used as learning process to gain the knowledge, the changes in institution is needed to improve the performance of institution itself (Scott, 1987). In relation

to this, the institutions should adapt to the circumstances (adaptive change), so the institutional analysis is required.

Regarding with the current institution both BRT Trans Musi and river transport and the analysis results on the concept of public transport institutional integration in meso level (Table 5.2), the merge of institution have to be conducted in order to optimize the service quality and the performance both BRT Trans Musi and river transport is needed as Neuman (2012) stated on the lifecycle theory of institutional transformation. Additionally, BRT Trans Musi and river transport institutions have to be combined in order to maximize the gained benefit with referring to four integration principles. Dealing with this, type of change of institutional transformation to support integration between BRT Trans Musi and river transport is in reform categorization. The reason of choosing reform categorization is based on the analysis of public transport institutional integration that compare between the current condition of both institutions and the analysis conducted in meso level, in which reflects on the presence internal change condition. In addition, both independent institutions are still separated in executing the operational and physical dimensions, so the public transport integration has not interpreted the context of merging institution (organizational dimension) that impact on conducting the function and tasks.

In addition, the choice of the reform categorization in one of institutions whether in PT. SP2J or local transportation agency is based on that the form of a new institution (evolution and creation categorization) is not easy way because it relates to barriers encountered such as political will, legal procedure, budgeting, human resource needs etc. Therefore, in order to maximize the gained benefits and the function of institution existed, type of change of institutional transformation for optimizing integration between BRT Trans Musi and river transport in Palembang city is reform categorization that selected as an appropriate type of change. In relation to this condition, the merge of public transport institutional integration between BRT Trans Musi and river transport is better under the local transportation agency rather than PT. SP2J, in which PT. SP2J has many businesses in relation to power plant, rural bank, agency management in flat rental, operational of household gas, *kasiba lisiba* and MBR 3-4 ulu. As a results, PT. SP2J does not focus on optimizing the public transport integration services. Moreover, PT. SP2J will encounter the problem, particularly in making collaboration and coordination in micro and macro level. Thus, local transportation agency is chosen as the public transport institutional integration in order to make an easy way in collaboration and coordination, with other stakeholders in micro, meso and macro level. Consequently, this way will impact on the arrangement of policy making strategies that leads to the integrated planning and policy.

Dealt with the institutional transformation, the proposed strategy for optimizing public transport integration between BRT Trans Musi and river transport is reforming through creating a new division on the organization structure of local transportation agency. The division of public transport integration relates to three levels of public transport institutional integration concept consists of two divisions (directorates) which are operational and infrastructure directorates that headed by director. Directorate of operational comprises of three sub-divisions that headed by manager encompass manager of performance controlling, manager of BRT Trans Musi and manager of river transport, whilst the director of infrastructure also comprises of manager of BRT Trans Musi, manager of river transport and manager of maintenance. Meanwhile, the other divisions such as administration; planning and evaluation; and financial is directly in under the director of public transport integration

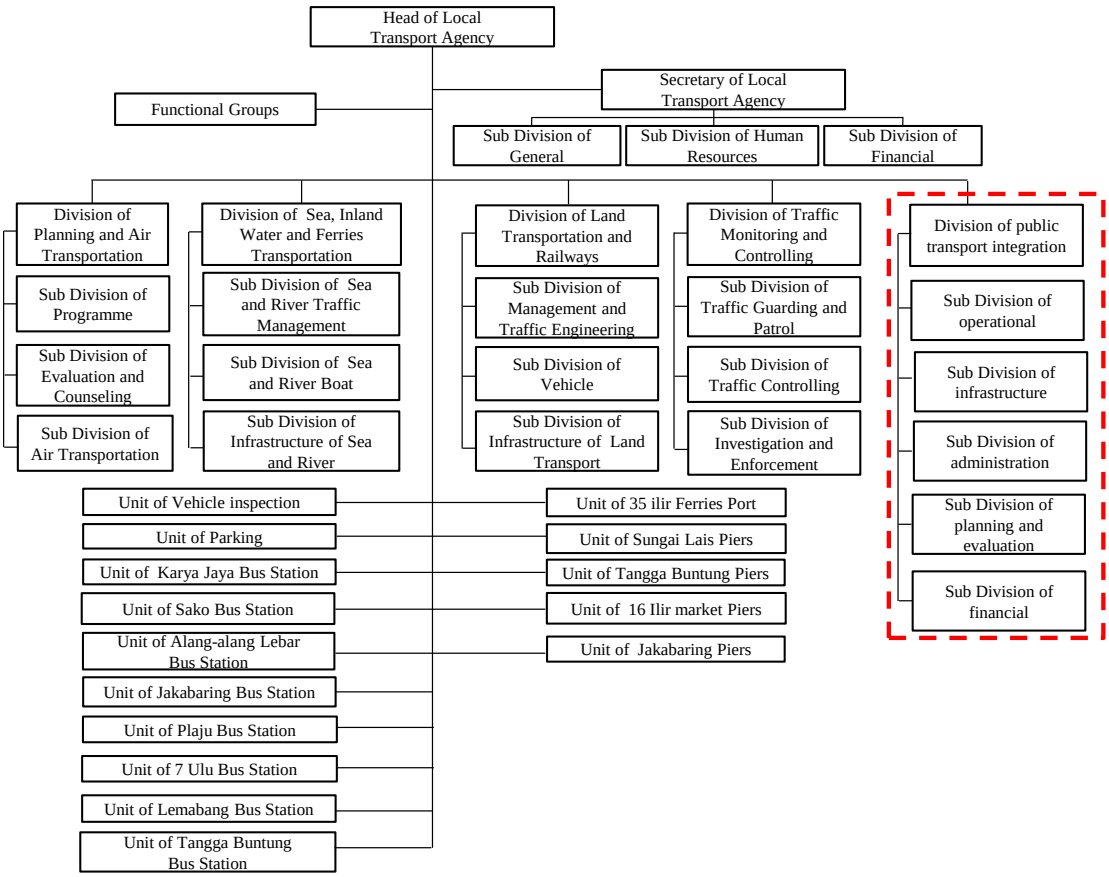

Figure 5.4 New organization structure of transportation agency of Palembang (institutional reform)
Source: Analysis (2015)

According to **Figure 5.4** above, there is a change of institution in the organization structure of transportation agency Palembang, in which the institutional reform incorporates a new division that is division of public transport integration as an additional division. The argument of creating this new

division on public transport integration within the organization of local transportation agency is to simplify the coordination and build good communications among intra-government institutions, and also to reduce the conflict of interest among involved actors. In relation to the changes of the organization structure of local transportation agency, the proposed strategy of institutional reform is dividing the division of public transport integration into five sub divisions which are sub divisions of operational, infrastructure, administration, planning and evaluation and also financial, in which those relate to the concept of public transport integration in meso level (inter-modes) including their tasks and functions that have been previously explained in the analysis part.

Regarding with this, both BRT Trans Musi and river transport institutions (PT. SP2J and transportation agency of Palembang) are responsible as the operators of public transport integration that only focus on operational function. In addition, both operators which are within the unit of multimodal transport are also under sub-division of operational. This way is the advantage for both institutions because they are still empowered in operating public transport integration. Moreover, the operational of river transport will be taken over to other operators instead of transportation agency of Palembang through open bidding that aims to select an appropriate operator due to get a better quality service of public transport. In relation to this, a new organization structure for division of public transport integration as the proposed strategy for optimizing public transport integrating in Palembang city as depicted in **Figure 5.5**.

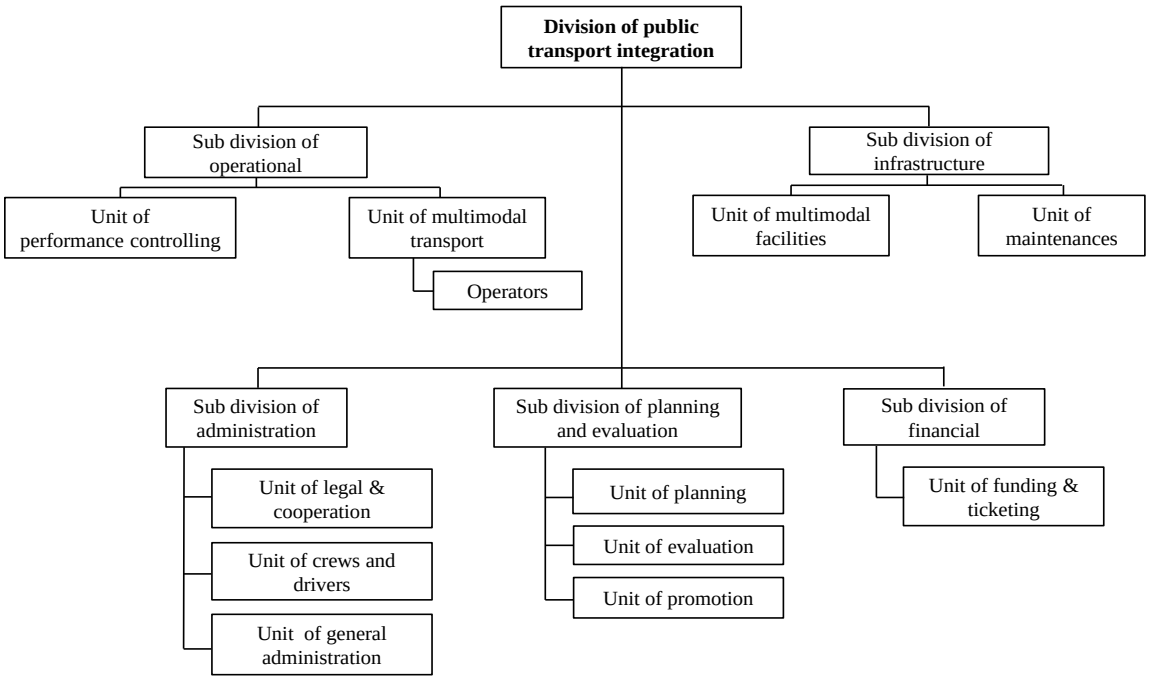

Figure 5.5 New organization structure for division of public transport integration
Source: Analysis (2015)

The implementation of a new organization structure of public transport integration has the structural impact on public transportation services. Firstly, it will emerge an internal and external coordination in making policies and reinforce the relationships within local transportation agency (intra-institutions) and even inter-institutions that leads to a horizontal and vertical policy integration. Secondly, it will simplify a coordination in the accomplishment of an integrated public transport without jointly agreement that it impact on reducing a transactional costs. Thirdly, this organization structure influences on reducing resource, for example if we build a new institution, it will relate to the needs of a large human resource, financial, legal and political aspects. This alternative is not an easy way to be conducted or even implemented. Finally, the organization structure will impact on the improvement of service quality of public transport integration in order to be more focus on executing in the operational and physical functions.

5.5 Lessons learning of public transport integration from the case study

From the aforementioned explanation of this chapter, the single case study of this research brings the lessons that could be learned from Palembang city, as resumed below:

1. Institutional public transport integration is not only required in micro level or intra public transport modes, but also the integration can be conducted in meso level that means integrating a different public transport modes as the case study of Palembang city which integrate public transport modes between land transport (BRT Trans Musi) and river transport (water buses). Moreover, the integration can also be employed in macro level which means the integration can be seen generally as the integral part of urban planning system that linked to the public transport system.
2. Designing institution for public transport integration should not have to build a new institution due to the limitation of human resources and funding (high cost process) and socio-political aspects. Therefore, it can be done through reforming and/or merging within the existing institution to be a single institution in order to support and optimize the public transport integration services.
3. Dealing with the optimization of public transport institutional integration, several divisions that should be incorporated in the organization structure of public transport integration are operational, infrastructure, administration, planning and evaluation and financial divisions.

CONCLUSIONS AND RECOMMENDATIONS

CHAPTER 6
CONCLUSION AND RECOMMENDATION

This chapter concludes the overall results of the research through answering the research questions, subsequently research findings are provided as the results of case study. Additionally, this research gives policy recommendations to support public transport integration based on the institutional perspective. The last part of this research is providing the possible further research dealing with public transport institutional integration.

6.1 Conclusions

This part explains on answering three research questions. First, in relation to the current institutional form both BRT Trans Musi and river transport in Palembang city which are still separated institutions and execute the tasks and functions independently, it causes the ineffectiveness of service quality and performance of public transport integration that impacts on a less optimal in accommodating Palembang's people needs on transportation.

Second, the integration in each level of institution which correlates among micro, meso and macro level, in which each level can influence the service quality of an integrated public transport in Palembang city. Public transport integration in micro level is interpreted by the integration in intra-modes and in meso level is in inter-modes, whilst in macro level is related to public transport integration with urban system. The case study research deals with the concept of institutional integration is in meso level interpreted by the integration inter-modes institutions. On the other hand, the analysis results in public transport institutional in meso level can be conducted not only focus on the organizational dimension, but also embrace the operational and physical dimensions, in which each dimension has the results as an output that can influence on the improvement of public transport integration. The output of organizational dimension is designing of organization structure and physical dimension which is designing of physical facilities, while in operational dimension is operational design. The overall result of three dimensions is used to determine the type of institutional transformation for public transport integration in Palembang city.

The third relates to the research question on strategy that should be conducted to optimize an integrated public transport service in Palembang. From the analysis between integration concept and institutional design, reforming the current institutions of public transport is a strategy to optimize the service and performance of public transport. It can be done by reforming the institution of local transportation agency with additional division of public transport integration within the organization

structure of transportation agency. A Proposed division of public transport integration is divided into five sub-divisions which refers to the conceptual model of public transport institutional integration encompass sub-divisions of operational, infrastructure, administration, planning and evaluation, and also financial. This proposed strategy emerges the impact on simplifying a coordination in policy making intra and inter institutions, decreasing a transactional cost because the absence of joined agreement.

6.2 Research Findings

Referring to the conceptual framework, this research explores the institutional design of public transport integration that was adapted from three kinds of theory used from Alexander (2012), Saliara (2014) and Neuman (2012). From those theories that were used, this research proposes a new conceptual model of public transport institutional integration. Dealing with proposed concept, this research provides the insight on how public transport institutional integration works in micro level (intra-modes), meso level (inter-modes) and macro level (public transport integration with urban system). Using a single case study of Palembang city, this research only emphasizes on public transport integration in meso level which the integration concept combines a different public transport modes both BRT and river transport. Additionally, the most important thing that should be conducted to adapt this concept is based on the contextual condition that means the institutionalization process of public transport integration needs the adaptation from internal and external factors which are influenced by hindered factors, such as the structure of the existing institution as an internal factor and political power, market needs and social issue as an external factors. Moreover, according to the analysis conducted (chapter 5), there are three kinds of dimensions that should be considered in designing the institution in each level which are operational, physical and organizational dimension. Besides those dimensions, the integrated principles such as complementary, additivity, synergy and perfect substitutability also become the considerations in which relates to the attainment of the objectives of public transport integration in micro, meso and macro level. Involving integration dimensions and integration principles, the determination of an appropriate institutional form in all levels can be selected which corresponds to the sequence of institutional transformation as Neuman (2012) stated with the stages which are creation, evolution, reform, decline and demise.

This study shows that the institutional design of public transport integration, on the one hand, not only means building a new single public transport authority like the experience of other cities in the worlds, for example Land Transport Authority in Singapore, London Regional Transport in London, *Stadstrafiken* in Gothenburg, *Verkehrsverbund* in Germany, Austria and Switzerlands, Massachusetts Bay Transportation Authority in Massachusetts, State Transit Authority of NSW in New South Wales and

Road and Transport Authority in Dubai. On the other hand, there is another option to design public transport institution particularly regarding with Palembang case through reforming the existing institution and/or merging the institution that not only conducted in local government level, but also in central government level. In local government level, the existing public transport institutions (BRT institution and river transport institution) can be managed to a single institution within transportation agency of Palembang, whilst in central level, public transport institutional integration can be organized into directorate general of land transportation under the ministry of transportation. This way leads to an integrated public transport planning, in which local and central should be cooperated in arranging strategic plan, law and regulation of public transport integration.

6.3 Recommendations

This part explores the recommendations for optimizing public transport integration in Palembang city, as follows:

1. Building a collaborative approach between micro, meso and macro level

The integration in public transport needs an interaction and communication among actors involved, not only the government (intra and inter-government institution), but also private sectors and public participation. Local government institution has the tasks in planning, controlling and monitoring function. Private sectors have the task in operating public transport integration and also as the government's partner to support funding in the development of public transport infrastructure, such as public private partnership (PPP) and corporate social responsibilities (CSR). Meanwhile, public (citizens) can participate in term of monitoring and evaluation of public transport integration, in which they can involve in improving the service quality of public transport through survey, public dialogue, public meeting, websites (e.g. face book, twitter etc.) and other participation methods.

2. Increasing the capacity of public transport institutional integration

Regarding with an additional division and the development of sub-divisions within transportation agency of Palembang, human resource is required to accommodate the tasks in a new division. An increase of capacity of public transport institutional integration can be conducted through the recruitment of human resources and the enhancement of policy. The capacity of human resource especially in public transport integration should be improved through improving skills and knowledge, such as education and training course, practical training etc. Meanwhile, to support the policies on public transport institutional integration, shadow of law is an important part to be incorporated, in which this policies not only include public transport policy instruments themselves, but also opposite policy instruments to support public

transport policies, such as vehicles restriction policies, congestion charging policy and an integrated policies between transport and land use.

3. Developing master plan of public transport integration

In the light of the absence of regulation on public transport integration, public transport integration master plan is required as an alternative way to support and reinforce the implementation of public transport integration. This master plan contains the objectives of public transport integration and its development for short term, medium and long term. Besides that, the arrangement of mater plan should involve many stakeholders (government, private sectors, NGO and public) as the inputs for the improvement of public transport integration.

4. Making an integrated public transport planning within the Ministry of Transportation

The core of the accomplishment of public transport institutional integration is in central level is in directorate general of land transportation under the Ministry of Transportation of Indonesia. This directorate have two divisions in relation to urban transport and river transport are directorate of inland waterways and ferries transport / *Direktorat Angkutan Sungai, Danau dan Penyeberangan* and directorate of urban transport system development / *Direktorat Bina Sistem Transportasi Perkotaan*. Actually, the exercise of public transport modes integration particularly between BRT and river transport is in sub directorate of integrating urban transportation modes / *Sub Direktorat Pemaduan Moda Transportasi Perkotaan* under directorate of urban transport system development. Dealing with the implementation of public transport integration between BRT and river transport, directorate of urban transport system development might be an appropriate organization to manage public transport integration. However, in corresponds to the development of public transport integration in the future, public transport integration should be developed by involving all public transport modes encompass, buses (land transport), rail (railway transport) and ferries (river transport), in which relates to the needs of single organizations and/or institutions to manage it. Dealing with this, the authority of public transport system should be separated from directorate of urban transport system development with making a new directorate of integrating urban transportation that focus only on the accomplishment of public transport integration. Making a new division within the Ministry of transportation, particularly in directorate general of land transport might be an appropriate way to focus on managing the integration between bus, rail and ferries transport. Therefore, institutional integration in a single institution within the Ministry of Transportation (collaboration between directorate of urban transport system development, directorate of railways and directorate of inland waterways and ferries transport) is needed to achieve a reliable public transport integration. This way can be conducted by referring to many cities in the world that have been

experienced with public transport authority, such as Singapore, Sydney, London, Munich, Cologne, Vienna, Zurich, Copenhagen, Gothenburg, Massachusetts, Dubai and other cities.

6.4 Further research

Regarding with a case study of Palembang city, an understanding on the concept of public transport institutional integration for optimizing the service and performance of public transport can be improved through conducting the further research as a new knowledge from other stakeholders. In doing so, involving stakeholders in both institutions and also public (citizens) in policy making is needed to support public transport service. From stakeholders perceptions, conducting an interview of actors is likely more suitable and also from public opinion (citizens) can be employed through conducting survey on stated preferences of the service quality and performance of public transport integration. Involving public in policy making is an essential thing to get the feedbacks, in which public (citizens) can evaluate directly on the service of public transport integration without public representatives. Additionally, public (citizens) can determine the type of institutional transformation for public transport integration through a deliberative process with public representatives, such as transportation experts, practitioners and academics in transportation field.

Another thing for further research that might be extended from this research is dealing with the implementation of public transport institutional integration concept. This concept should consider environmental and social issues, in which this consideration will lead to the attainment of sustainable transportation development that characterized by an integrated policy between transportation, environmental and social objectives.

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