

## **THE STUDY OF KHITTAYAR MYOTHIT HIGHWAY BUS TERMINAL IN PYAY CITY: CASE OF PASSENGER TRANSPORTATION**

Nwe Yin Min<sup>1</sup>, Thi Thi Khine<sup>2</sup>, Thuzar Win<sup>3</sup>, Yin Minn Soe<sup>4</sup>

### **Abstract**

This paper examines the study of highway passenger bus transportation in Pyay City in which functional structure of passenger bus transport is also presented. In the study period, not only number of bus gates but number of buses increased. Highway passenger bus transport is analyzed by comparing the development of passenger flow pattern of 1991 and 2020. The high way gate becomes congested due to increase in number of passenger bus gates and passenger buses, and small area of high way gate. In 1991, the total passenger bus gates were 48 bus gates and increased to 65 bus gates in 2020. Objectives of the paper are to present the geographical background of the study area, to express the functions of highway passenger bus transport, to evaluate the development of passenger transportation in Khittayar Myothit Highway Buses Terminal, and to analyze the case on travel-time reduced due to upgraded roads and better passenger bus of Khittayar Myothit Highway Buses Terminal. The primary data collection methodology is interviews and field surveys. Secondary data were collected from department concerned, and GIS tools are applied.

**Keywords:** highway passenger, bus transport, bus gates, transport services, travel time

### **Introduction**

Passenger transportation, also called public transportation, includes the conveyance of people from one destination to another via avenue, air, or water travel (Taaffe, 1996). The rapid flow of passengers and commodities, the spread of new innovation and ideas and interaction between places including the rural and urban area depend on the effective transportation services (Rodrigue, 2006).

With increasing number of population, construction of new roads and bridges and the number of highway and intra-urban bus lines have been increasing notably after practicing market oriented economic system (Zaw Latt Tun, 2004).

Pyay City is the second largest City in Bago Region. Pyay was also an exchanged center between Upper and Lower Myanmar as well as Rakhine State. It is well connected with other parts of Myanmar by Motor Roads, Rail Roads and Waterway. No.2 Yangon-Mandalay Highway runs across the Bago Region (West) from north to south. To be able to control systematically the movement of the passenger bus lines, the PCDC (Pyay City Development Committee) has established at Khittayar Myothit.

The research work on “The study of Khittayar Myothit Highway Bus Terminal in Pyay City: Case of Passenger Transportation” was conducted to present choice of the place as a transport services. The paper stresses the development of passenger bus lines within Khittayar Myothit Bus Terminal from geographical point of view. The paper does not present bus lines terminated near Myoma Market connecting Pyay City with nearby towns and passenger bus lines crossing Nawaday Bridge and running between Yangon and Rakhine State as these bus lines do not use Khittayar Myothit Bus Terminal.

---

<sup>1</sup> Dr, Associate Professor, Department of Geography, Pyay University

<sup>2</sup> Dr, Associate Professor, Department of Geography, Hpa-an University

<sup>3</sup> Assistant Lecturer, Department of Geography, Pyay University

<sup>4</sup> Dr, Associate Professor, Department of Geography, West Yangon University

## Aim

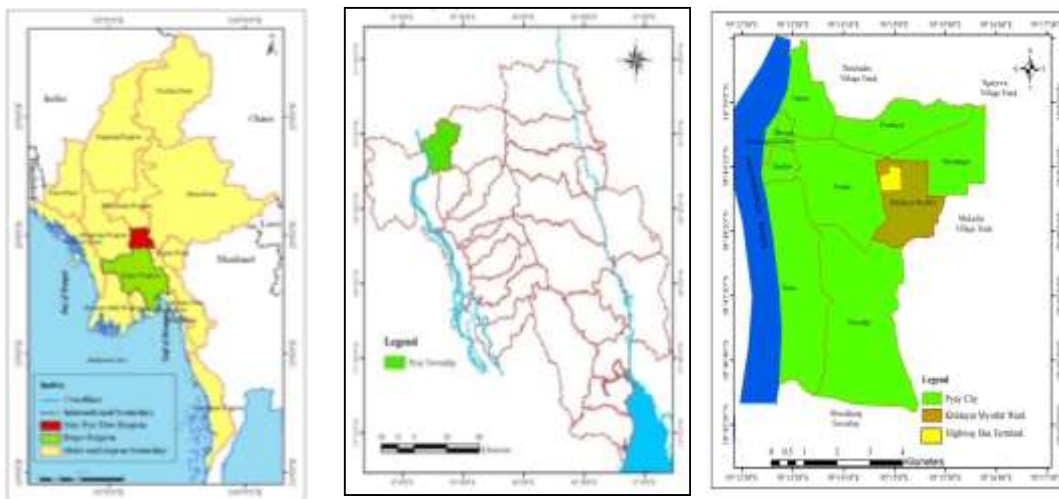
To investigate the passenger transportation of Khittayar Myothit Highway Buses Terminal in Pyay City.

## Objectives

- To present the geographical background of the study area,
- To express the functions of highway passenger bus services in Pyay,
- To evaluate the development of passenger transportation in Khittayar Myothit Highway Buses Terminal,
- To analyze the case on travel-time reduced due to upgraded roads and better passenger bus of Khittayar Myothit Highway Buses Terminal.

## Study Area

In Pyay City, highway passenger bus transportation is located in Khittayar Myothit Highway Passenger Bus Terminal. Population of Pyay City was 116,418 persons in 2020 and the growth of urban functions and economic condition is one of the factors supporting passenger transportation of Khittayar Myothit Highway Passenger Bus Terminal. The main focus is the functional structure of the terminal including the trend of passenger bus lines.



Source: Land Record Department, Pyay

**Figure 1** Location of Khittayar Myothit Highway Bus Terminal in Pyay City

## Data and Methodology

Field survey and interviews were done twice in July and August, 2020. During first-time filed survey, data on number of bus line and buses, number of bus gates, passenger carrying capacity of buses of Khittayar Myothit Highway Bus Terminal, constructed period and its development and location map of Khittayar Myothit Highway Bus Terminal were collected from Bus Control Committee. In second field survey period, types of passenger buses, number of passengers per trip, changing pattern of trip reducing time of the trips before and after Nawaday Bridge construction, plans for future development, factors affecting growth of passenger bus lines and types of buses were surveyed at each gate. To compare 2 periods (1991 and 2020), 20 interviews were done with authorities, bus drivers, etc.

Based on the data and information, analysis was made by using statistical methods. To present the paper, two periods (1991 and 2020) were compared.

## Results and Findings

### Functional Structure of Highway Passenger Bus Services

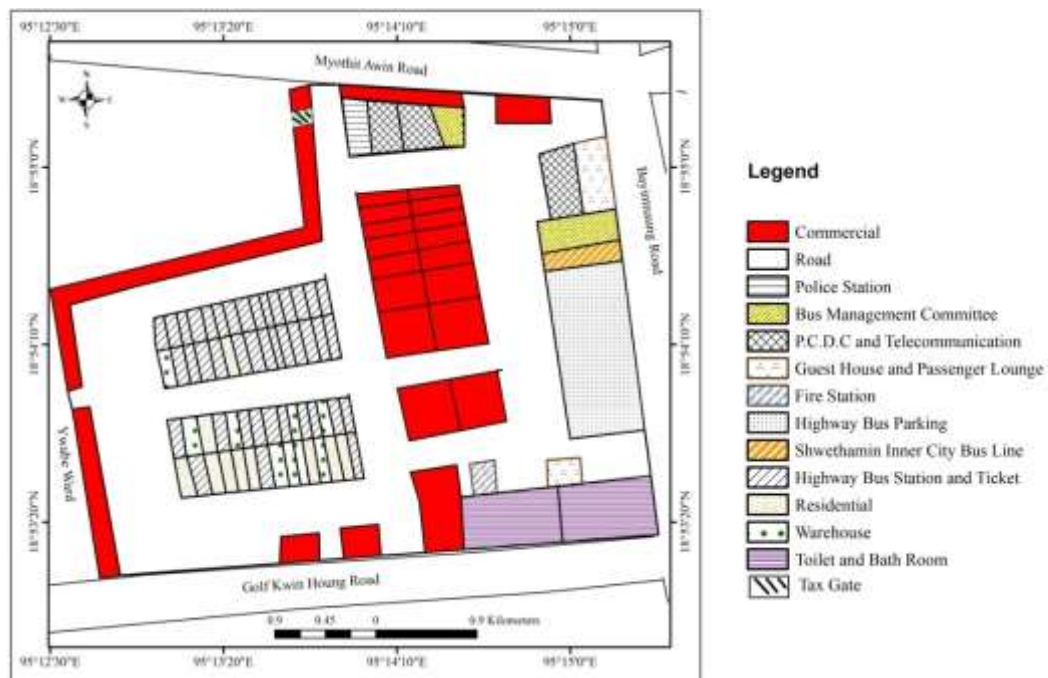
#### Background History

There are various modes of public transportation in Pyay City but the most important mode is road transport.

Before 1991, buses of highway bus line stopped at different points, particularly in the downtown area of Pyay City including Sitke Road, Babetan Road and Yone Road etc. The unsystematic scattering of highway bus terminals caused the block of road, deteriorating of road, increasing the number of road side sellers, and accidents. Moreover, it is one of the problems for the passengers where they started their journey. There were all together 61 bus lines including 39 bus lines for long-trip, 12 bus lines for short-trip and 10 bus lines for freight transportation. To reduce the problems encountered by passengers, Khittayar Myothit Highway terminal was constructed in 1991 and all high way gates were moved to there (Kyi, 1995). In 2020, there are 65 bus lines running between Pyay and other States and Regions.

The Khittayar Myothit Highway Passenger Bus Terminal is located in the corner of Myothit Awin Road and Bayintnaung Road. It is located in Khittayar Myothit Ward of Pyay City. Latitudinally it lies between 18° 49' 10" N and 18° 48' 50" N and longitudinally between 95° 14' 25" E and 95° 15' 30" E. It is bounded by Myothit Awin Road on the north, Bayintnaung Road on the east, Golfkwinn Houng Road on the south and Ywabe on the west. The area of Khittayar Myothit highway terminal is 4.738 acres (0.019 sq.km). It is generally square in shape.

Generally, it is located on flat plain with an elevation of below 100 feet (below 25 meter) above sea level.



Source: Field Survey, 2020.

**Figure 2** Structure of Khittayar Myothit Highway Bus Terminal in Pyay City

Terminal has 125 rooms, including 4 buildings having 15 partitions for selling tickets, 5 buildings having 4 partitions for restaurants, 1 building having 32 partitions for seedling items, 2 buildings having 2 partitions for businesses, 3 partitions for Terminal Controlling Committee, 1 Guesthouse, 1 rest house, 1 fire brigade, an entrance, an exit, 1 bathroom and 2 partitions for toilets (Figure 2).

### Connection between Khittayar Myothit Terminals of Pyay City and Other Areas

With the increasing population, the social and economic development increased. In addition, human's needs have become more varied owing to the innovation of new products. To satisfy the increasing demand, effective transport services for passengers and commodities are needed. Therefore, many highway bus terminals have been established. In order to keep separately from the dense residential areas, Khittayar Myothit highway passenger bus terminal, Nawaday Warehouse and cargo truck compound (freight terminal) have been established.

**Table 1 Number of Highway Bus Terminals Serves to State and Region (2020)**

State/ Region	Number of serves bus gates
Kayin	3
Kayah	1
Mon	3
Rakhine	4
Shan	5
Within Bago Region	6
Yangon	10
Mandalay	9
Magway	13
Sagaing	1
Ayeyarwady	15
Naypyitaw	6
Total	76

**Source:** Field Survey 2020.

The movement of people and commodities from one place to another is largely influenced by the accessibility between places. Khittayar Myothit Bus Terminal has been established for the effective control of the passenger bus line services. Locating on the corner of Myothit Awin Road and Bayintnaung Road, it supports bus lines services connecting between Pyay and 5 States and 5 Regions such as Kayin, Kayah, Mon, Rakkhin and Shan states and Yangon, Mandalay (including Naypyitaw), Magway, Sagaing, Ayeyarwady and other townships within Bago regions and with other townships within Bago Region of the country (Transportation of Pyay, 201)

Although the total number of bus gates is 65, total number of bus lines running States and Regions are 76. It is due to combination of transit points and some bus lines have 2 destinations.

According to table 1, connection with Ayeyarwady Region takes the leading role with 15 gates, which is the highest in number, followed by Magway Region. Among the states, connection with Shan State is the highest and Kayah the least.

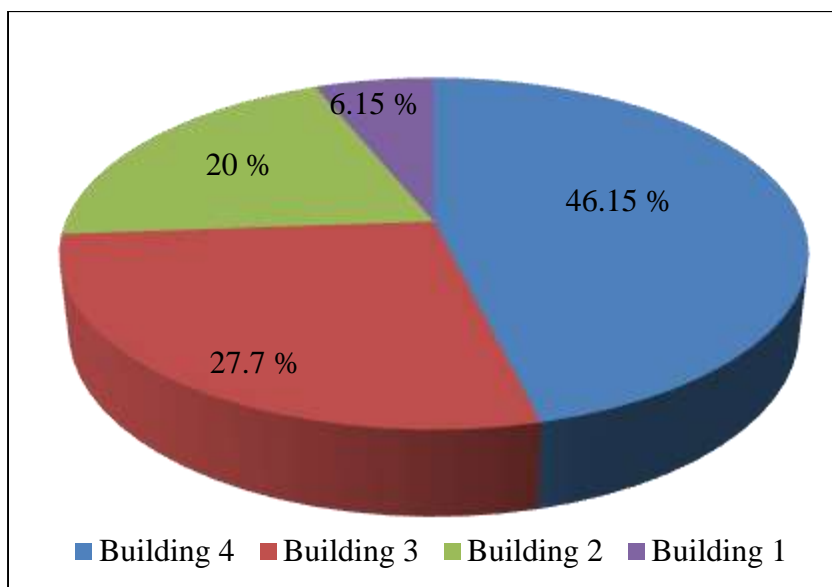
### Highway Passenger Bus Transportation Services

In Khittayar Myothit Highway Passenger Bus terminal compound there are 5 streets of which only 3 are used in highway passenger transport service. Highway passenger bus gate is situated in the western part of the terminal. There are 4 buildings having 15 partitions. According to Table 2, there are altogether 65 highway passenger bus gates generally each using each room for conducting related services. With 30 bus gates, building 4 has the largest number which accounts for 46.15 percent of the total bus gates, followed by building 3 with 18 (27.7 percent) bus gates. Building 1 possess the smallest number of gates. The terminal has 60 rooms for highway bus gates. At present only 40 rooms are used for highway passenger transport and remaining 20 rooms for residential and warehouses.

**Table 2** Number of Highway Bus Gate Rooms in Khittayar Myothit Highway Passenger Bus Terminal

No.	Building	Highway Bus Gates	Percentage
1.	1	4	6.15
2.	2	13	20
3.	3	18	27.7
4.	4	30	46.15
Total		65	100

Source: Field Survey 2020.



Source: Table 2.

**Figure 3** Number of Highway Bus Gate Rooms in Khittayar Myothit Highway Bus Terminal

Most bus gates used only one room for its services, where as some use 2 or 3 rooms for the convenience of the travelers. In some cases two bus gates with limited number of buses use only one room. Moreover a bus terminal or gate with substantial investment has links with several states and regions (Moe Thet Naing, 2007).

### The Development of Passenger Transportation

The development of passenger transportation of road transport falls under two categories as into/from and through by passenger bus: (1) the development of passenger flow into/from Pyay City (into/from means flowing into Pyay City from other areas, as well as passenger flow from Pyay City to other areas), and (2) the development of passenger transportation through Pyay City (through means passenger flow passing through Pyay City) (Nwe Yin Min, 2007).

To get reliable facts and data on passenger transportation in 1991 and in 2020 (10 year-period), interviews and field surveys were made at Khittayar Myothit Highway Terminal with authorities of bus gates, passengers and owners.

Passenger buses are categorized depending on their load capacity. There are categorized as (1) buses that can carry below 20 passengers, (2) those between 20 and 40 passengers, and (3) those above 40 passengers. Buses are also classified as normal and special based on quality of the buses.

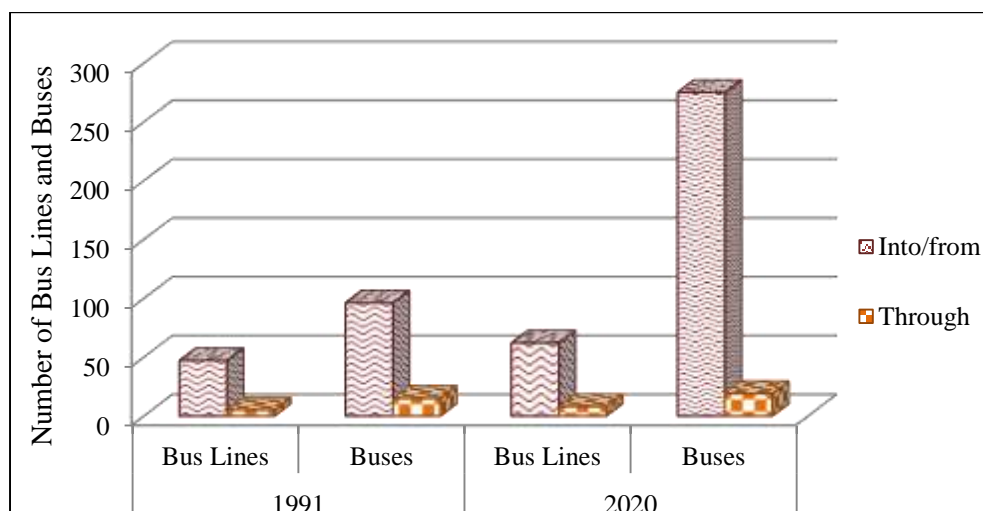
### Number of Bus Lines and Buses

Modes of transport include the bus lines, buses supporting the mobility of passengers and road network supporting their movement. The development of passenger transportation, the number of bus line and buses were observed for the study period between 1991 and 2020 and is shown in Table 3 and Figure 4.

**Table 3 Average Daily Passenger Bus Lines and Buses Running in the Khittayar Mothit Highway Bus Terminal**

Location	1991		2020	
	Bus Lines	Buses	Bus Lines	Buses
Into/from	47	96	62	275
Through	5	15	8	19
Total	52	111	70	294

Source: Field Survey 2020.



Source: Table 3.

**Figure 4** Average Daily Passenger Bus Line and Buses Running in the Khittayar Mothit Highway Bus Terminal

According to data obtained from the field survey and interviews, there were 47 bus lines with 96 buses for passenger transportation run into/from of bus terminal, and 5 bus lines with 15 buses ran cross passenger transportation bus terminal. Therefore the total of 52 bus lines with 111 buses runs cross in the highway bus terminal in 1991. In this period many buses were BM and Mini Bus, many roads were metaled and gravel roads and roads was poor in condition.

The average number of passenger bus lines and their number of buses had remarkably increased in 2020. According to interviews, there were 62 bus lines with 275 buses that run into/from, and 8 bus lines and 19 buses that run cross Khittayar Myothit Highway Bus Terminal. In 2020, the number increased to 18 bus lines with 183 buses and daily passenger buses over those of 1991. The passenger bus lines and buses increased due to upgrading of existing Yangon-Pyay Road in 1992, and the newly constructed and opened Nawaday Bridge in 1997.

**Types of Passenger Bus**

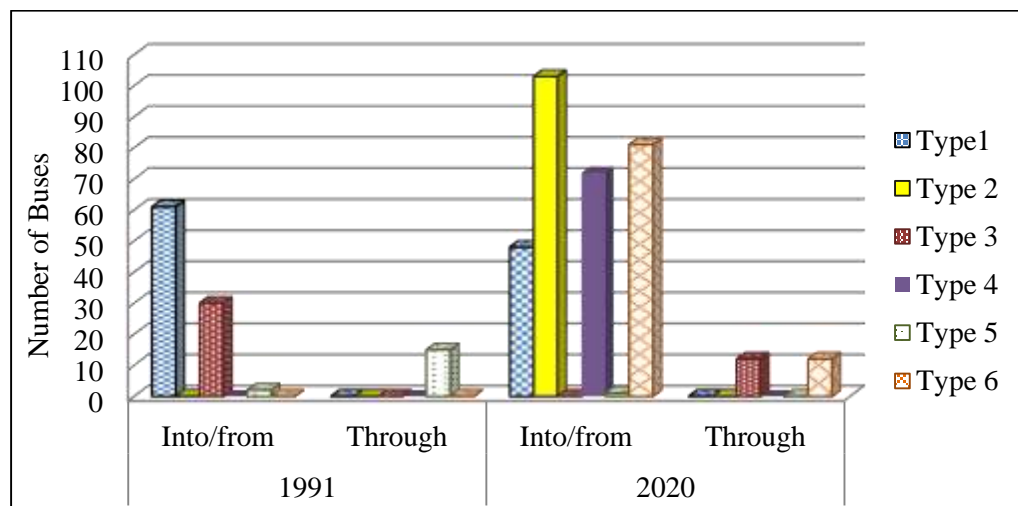
The passenger transport buses are classified into (6) types.

Type (1) includes buses carrying capacity below 20 persons bus (especially in Hilux, Dyna, etc.), type (2) special bus below 20 persons (especially in Bongo, that is comfortable), type (3) capacity between 20 and 40 parsons (passenger bus especially BM types), type (4) capacity between 20 and 40 persons (passengers bus especially Mini bus, that take short time, etc.), type (5) normal bus above 40 persons (passenger bus that takes longer time, low cost, and is uncomfortable etc..) and type (6) special buses above 40 persons capacity (passenger bus that saves time, cost more, and is comfortable, etc..) (Table 4 and Figure 5).

**Table 4 Average Daily Passenger Bus Types Running in the Khittayar Myothit Highway Bus Terminal**

Location	Type 1		Type 2		Type 3		Type 4		Type 5		Type 6	
	1991	2020	1991	2020	1991	2020	1991	2020	1991	2020	1991	2020
Into/from	61	48	-	103	30	-	-	72	2	1	-	81
Through	-	-	-	-	-	12	-	-	15	-	-	12
<b>Total</b>	<b>61</b>	<b>48</b>	<b>-</b>	<b>103</b>	<b>30</b>	<b>12</b>	<b>-</b>	<b>72</b>	<b>17</b>	<b>1</b>	<b>-</b>	<b>93</b>

Source: Interview and field Survey.



Source: Table 4

**Figure 5 Average Daily Passenger Bus types Running in the Khittayar Myothit Highway Bus Terminal**

According to the interviews, the passenger buses running into/from in Khittayar Myothit Highway bus terminal were 2 buses of types (5), 30 buses in type (3) and 61 buses of type (1) in 1991. Type (6) and type (2) were still absent during that period. In this period, passenger buses were only type (1), especially Hilux.

However due to the use of newly invented and upgraded parts of vehicles in highway bus terminal, the number of passenger bus types had distinctively increased in 2020. According to the results of interview, there were 48 buses in type (1), 103 buses in type (2), 12 buses in type (3), 72 buses in type (4), one bus in type (5) and 93 buses in type (6) in 2020. In Type (1), number decreased to 48 buses due to growth of transportation sector and as a consequence, Type (2) increased to 103 numbers. Similarly, Type (4) increased to 72 numbers owing to increase in number of mini bus, but the number of Type (5)'s buses due to increase uses of Type (6)'s buses due to more comfortable.

### Flow of Passenger Bus

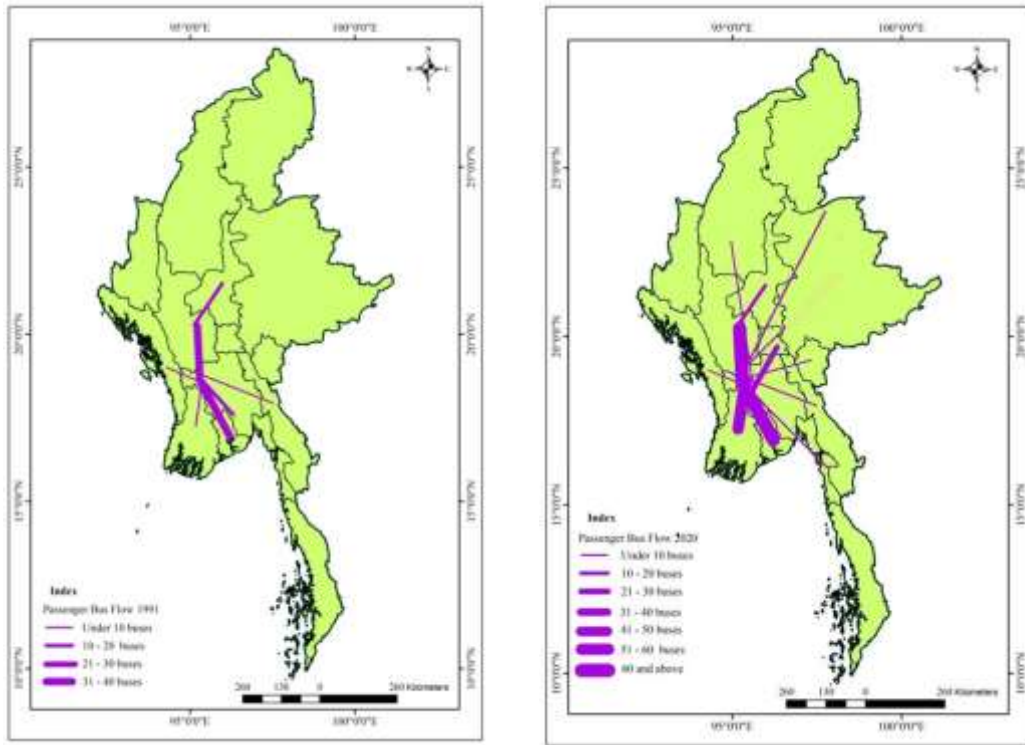
The number of daily passenger bus flow mainly depends on the increasing number of population and job opportunities. The terminals of passenger bus for the study period are shown in Table 5 and Figure 6.

**Table 5 Flow Places of Passenger Bus of Khittayar Myothit Highway Bus Terminal**

No.	State & Region	Number of Flow Places	
		1991	2020
1.	Yangon	Sawbargyikone	Aungmingalar
2.	Magway	Magway, Mindone, Aunglan	Magway, Aunglan, Pakkoku, Thayet, Taungtwingyi, Monywa
3.	Mandalay	Mandalay	Mandalay, PyinOolwin, Meiktila
4.	Ayeyarwady	Myanaung, Hinthada	Myanaung, Hinthada, Pathein
5.	Rakhine	Taunggup	Taunggup, Sittwe, Thandwe
6.	Kayin	Hpa-An	Hpa-An, Myawaddy
7.	Sagaing	-	Monywa
8.	Naypyitaw	-	Naypyitaw
9.	Shan	-	Taunggyi, Muse
10.	Mon	-	Mawlamyine
11.	Kayah	-	Loikaw
12.	Other Township of Bago Region	Bago, Paukkhaung	Bago, Paukkhaung, Shwedaung

Source: Field Survey 2020.





Source: Based on Table 5.

Figure 6 Average Daily Passenger Bus Flows in Khittayar Myothit Highway Bus Terminal

According to the data obtained from the interviews, in 1991, the buses ran in Kayin and Rakhine states, and Yangon, Mandalay, Magwe and Ayeyarwady regions and other townships of Bago Region, but in 2020, new areas such as Naypyitaw, Sagaing Regions, Shan, Mon and Kayah states are included. In 1991, the number of passenger was small, and the number of bus lines and buses, low road network connection, and few job opportunities were also small. In 2020, the number of passenger and flow places significantly increased due to improved road network, the people from Myanaung Township in Ayeyarwady Region pass Nawaday Bridge to work in Muse in border area, government employees from Htonbo and Padaung Township go and work in Naypyitaw and improvement of the quality of passenger bus.

The passenger bus flow system including flow of people and commodities are supported by the transport system. Without movement road transport, network would be useless and without road transport network, movement of people and commodities could not occur.

According to figure 5, the daily passenger bus flows was highest in Yangon-Pyay-Magway Highway. After construction of Nawaday Bridge, connection between Pyay and Ayeyarwady Region become more smoothly and accessibility of Pyay become distinctly high.

**Travel Time**

Faster and more efficient transport system depend on development of road network connection. This process implies a space-time convergence where a greater amount of space can be exchanged with lesser amount of time (Rodrigue, 2006).

For calculate the travel time, trips was selected to Myanaung-Pyay-Mandalay road in 1991 and in 2020. Improvement of transport vehicles (quality of bus and truck), and better infrastructure especially road quality have reduced the travel time.

Bridge is one of the most important factors supporting the development of passenger bus flow. Before the construction of the Nawaday Bridge, Myaungaung-Pyay-Mandalay passenger bus had to rely on the Z-crafts for passing through the Pyay from Myanaung to Mandalay, a person from Myanaung started his trip at 6:00 am, he would arrive Pyay at 9:30 am. At that time, as Pyay-Mandalay buses run in the evening, a person from Pyay started 4:30 pm and he will arrive to Mandalay at 9:00 pm next day and the trip took 27 hours. At present, a person from Myanaung started his trip at 3:30 pm, he will arrive Mandalay at 4:30 am. Therefore, the trip takes only 13 hours and time is saved due to opening the Nawaday Bridge in 1997, improving the quality of the passenger bus types increase in number of trips.

### Conclusion

To meet the need for increasing population and for the development of socio-economic activities, effective transportation service is indispensable. For the smooth flow of passengers, Khittayar Myothit Highway Bus Terminal was established in 1991 in Pyay Township. Although the area was only 4.738 acres (0.019 sq.km), the passenger bus gates, restaurant and retail shops are included and the area become congested. Number of buses increased and their services are also larger. Moreover, travel time decreases distinctly because of better roads and vehicles' quality. As number of gates and number of buses increased, problems such as rare parking place are found. Some gates use small Micro Air-con buses for the purpose of reducing space used for buses. Therefore, it is needed to plan to be systematic high way terminal including systematic car parking and necessary to doing research works on bus lines, problems, parking places, etc for the purpose of supporting commodity and people movements that is one of the essentials for the area's development.

### Acknowledgement

We would like to express my deep gratitude to Dr Tun Win, Professor and Head, Department of Geography, Pyay University and Dr Myaing Myaing Aye, Professor, Department of Geography, Pyay University and for they kind permission to conduct this research paper and proper guidance. We are greatly indebted to Professor Dr Mi Mi Kyi (E.C member, Myanmar Academy Arts and Science) for her encouraging advice and guidance on this paper. Finally, we deeply thank to our colleagues for their eagerly and willingly help and supports in field observation and data collection.

### References

- Moe Thet Naing, Ma (2007): *Assessment on the Role of Aung Mingalar Highway Bus Terminal Transportation Service in Yangon City*, Unpublished MRes (Thesis), Department of Geography, Yangon University.
- Nwe Yin Min, (2007): *Road Transportation Infrastructure Development and Its Implication in Bago Division (West)*; Unpublished PhD Dissertation, Department of Geography, Yangon University.
- Rodrigue, J.P., C, Comtois, and Brian, S (2006): *The Geography of Transport System*, New York.
- Taaffe, E.J (et al) (1996): *Geography of Transportation*; Ohio State University, U.S.A.
- Zaw Latt Tun, Maung (2004): *Land Transportation Network Development and its Effects Upon Socio-Economic Conditions of Ayeyarwady Division*; Unpublished PhD Dissertation, Department of Geography, Yangon University.

ကြည်၊ ဦးနှင့်အဖွဲ့ (၁၉၉၅)။ “ပြည်မြို့နယ်၏ သယ်ယူပို့ဆောင်ရေး”၊ ရန်ကုန်တက္ကသိုလ် (၇၅)နှစ်မြောက် စိန်ရတုအကြို၊ သုတေသနစာတမ်း၊ ပထဝီဝင်ဌာန၊ ပြည်တက္ကသိုလ်။( in Myanmar)

ပဲခူးတိုင်ဒေသကြီး (ပြည်ခရိုင်) ပြည်မြို့နယ် (၂၀၁၆)။ “ခရီးသည်ပို့ဆောင်ရေး (အဝေးပြေးကွင်းသစ်) ဆောက်လုပ်ရေး လုပ်ငန်းစီမံချက်”၊ ပြည်မြို့ ( in Myanmar)