

## A Study on the City Bus Lines Transportation in Yangon

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### Abstract

This research paper studies the City Bus Lines Transportation System in Yangon City. The research paper covers the largest service of public transport in Yangon, Ma Hta Tha during 2001-2011 and other bus companies. The public's increasing awareness of transportation problems reflects common concerns such as actual fuel shortage, air and noise pollution, and inadequate safety precautions and other causes receive frequent attention from the new media. The bus network in Yangon is characterized as a "point-to-point" network, bringing about excessive competition between bus drivers on the same roads. The drivers have inferior skills and are poorly educated about safety. The buses are in poor condition. The bus stops and terminals are not controlled well enough to improve safety. Road signs and markings are not present clearly. The most bus drivers and conductors do not know definitely the meaning of the road signs and markings. A modernized vehicle should have a unique and distinctly aesthetic body, environmentally friendly design with wide space, low floor and large windows. The bus stop locations and facilities should be reevaluated. In the medium to long term, bus priority measures should be taken particularly under the introduction of a Bus Rapid Transit (BRT) system.

**Key words:** Public Transport, Point-to-point network, Road Signs and Markings Bus Rapid Transit (BRT) System

### 1. Introduction

Every country has the transportation service. Transportation development is influence on the economic development. The economic significance of transportation can be appreciated by considering transportation in five separate but interconnected roles –

- (i) *in economic development*, as it is kind of measuring the quality of life
- (ii) *in production*, as it facilitates the process of production
- (iii) *in distribution*, as it smoothes the sharing economy output and the results of regional specialization or division of labor are unavailable without transportation
- (iv) *in pricing*, as it is an important component of pricing behavior of commodities
- (v) *in the economy*, as it related to as a whole.<sup>2</sup>

*Transport service is in the public eye all the time.* Not only does it meet the everyday, regular customer, it is seen and measured by the non-member who may be so impressed by the "service image" as to join the society. A society is mainly concerned with road transport, either in the conveyance and delivery of goods or in the provision of special services such as funeral undertaking. Transportation is an important part of our culture and heritage. It played a pivotal role in the discovery, settlement and development of our nation. Good transportation is also vital to national defense. So, the role of transport department is very important.

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<sup>2</sup> Sampson/ Farris, 3<sup>rd</sup> edition, 1975.

Transportation is one of the essential components that influence economic and social activities and even the scale of a city. The goal of transportation is to move goods and passengers efficiently, while limiting negative impacts on the environment and society. But the goal The image of a society is always reflected in the character of its transport service. is difficult to achieve.

People are daily routing to and from work, shopping centers, or university classrooms involve transportation. There are many transport service in every country such as roads, railways, air and water. Among them, city-bus transport service is the daily usage for all. Yangon City, the former capital of Myanmar, is the country's largest city and the most important commercial center. Nowadays, city-bus transport service has become modernized, more comfortable and faster than earlier period as those seem to be necessary things for better urban life. In our country, the drivers and conductors have become an integral part of the retail distributive system. Direct sales relationship has become valuable. The drivers and spares have a direct connection with the customers. A good driver means altitude, having full attention to the road, patience, confidence and good health. A good spare has service, public relation, active, readiness and efficiency.

Therefore the transport department is so importantly connected them all and the necessary organization. As Yangon City's population increased and living standard rose, transportation gradually increased. Town building and traffic cannot be separated. One without the other is unthinkable. There is no such thing as a town without traffic and human settlements grow up at every transportation node.<sup>1</sup>

Therefore, the topic is chosen to highlight the current institutional system of city buses in Yangon and to know the network transport in Yangon.

The study is mainly aimed to:

- (i) To identify the current status and problems of the city bus lines transportation in Yangon.
- (ii) To recommend better city bus line system in accordance with future volume of traffic.

The method used in this study is essentially descriptive method based on the secondary data collected from the Head Office of Yangon Region Buses Control Committee and the corresponding bus lines. In addition, the study is also carried out by interviewing with the major actors such as the bus regulators and related local committees, regarding the coverage of institutional system of the bus regulations prescribed in law/acts and its implementation.

This study is only considered the bus transport. Although other transportation modes including railways, cars, taxis and riverboats are used in Yangon City, their modal share is much smaller than bus transportation. The study targets the urban bus service and does not cover inter-urban bus services. This study generally covers the largest transport service in Yangon City, Ma Hta Tha, for the period before 2010-2011. The detailed study on transportation of Yangon City is practicing on the very recent period. The traffic flow along major roads in Yangon is also measured.

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<sup>1</sup> Transportation and town planning, Nigel Seymer.

## 2. City Bus Transport System

Transport is the movement of people from one place to another for a purpose; it is also the movement of things from where they are grown, made or processed to the places where they are wanted and when they are wanted for consumption or use. The purpose of people travelling may be necessity, business or pleasure.<sup>1</sup> Transport is a vital feature of a nation's wealth. Transport is absolutely necessary in every contribution to commerce and industry, in production by exaction (e.g. - coal or natural gas from the earth), in processing (e.g. kerosene from petroleum), in agricultural effort and in manufacture.

The bus transport occurred before 1948. The ancient mode of transport of Yangon from King Alungpaya Era to King Bagan Era was seemed to be bullock carts. After the British occupied lower Myanmar in 1852, Yangon was rebuilt as a new capital of British governed-Myanmar. In new capital, horse-drawn vehicles were more used in transport. And then, the Lan Cha had been used in Yangon since 1889. However, Lan Cha is used for downtown but travelling to suburbs, it was quite inconvenient and Horse-drawn carts were still used. The first stream tramway line had been run along the Shwe Dagon Pagoda Road from the date of 4<sup>th</sup> March 1884.

After the Second World War till 1962, private-owned buses provided transport service in Yangon such as "Rabbit", "Horse", "Prawn", "Elephant", "Rhino", "Dragon", "Zebra", "Train", "Fish", and "Yacht" etc. type of vehicle, size, shape and colour of buses were not uniformed but varied and complex. The buses with black door used in Yangon City before independence<sup>2</sup>

In 1950, the Central Bus Council was formed by bus owners aiming to administer systematically all bus lines. The State-owned Bus Transport service was launched in 1963 with 15 bus lines. Those lines were under control of Road Transport Corporation (RTC). In 1972, RTC transferred seven to private owners.

The Yangon Division Bus Control Committee (YDBCC) was formed to organize all individual bus operators under regulatory control to facilitate commuter services safely, speedily, and as cheaply as possible.

In 1975, the numbers of buses under control of YDBCC were 1148 when RTC buses were 326. It gradually increased in numbers and in 1985, buses under control of YDBCC were 1640 and RTC buses were 337 respectively improving 503 buses in numbers.

After that, in 1988, bus lines provided by RTC were 18 lines including 13 ordinary lines and 6 special lines with 329 buses. Total bus lines run under control of YDBCC were 16 ordinary lines and 13 special lines, totally 29 lines. Total numbers of bus lines operated by various organizations including YDBCC are about 334 buses as at the end of 2011.

## 3. The Functions of a Transport System

A satisfactory transport system is said to be the one fulfilled the seven functions as follows:

- (a) System of transport must be "adequate"
- (b) Passenger fares must be "cheap" enough for the lower income groups.

- (c) Passenger “safety” must be the responsibility.
- (d) Speed in transport should be compatible with safety.
- (e) Transport must be dependable for the users.
- (f) Transport must be extensive one that extends to every part where there is need for it.
- (g) Transport must be comfortable for passenger in the form of suitable seating, good ventilation and protection from the weather.

The relative importance of these functions can be observed in the different demand for transport services under different financial and other considerations.

Throughout the 20<sup>th</sup> century, an expanding and migrating population, economic growth, technological advances, and changes in the regulatory environment had significant impacts upon intercity and intra-city mobility. These same factors will continue to be important as we enter the new millennium. The transportation issues for the millennium are:

- (i) *Safety*
- (ii) *Mobility*
- (iii) *Economic growth and trade*
- (iv) *The human and natural environment.*<sup>1</sup>

#### **4. Road Network in Yangon City**

Road network is undertaken by the Yangon City Development Committee (YCDC). The road network in Yangon City is a combination of both radial and grid road systems. The radial system involves the roads radiating from the Yangon CBD towards the greater Yangon Townships and its external conurbation<sup>2</sup> in northward directions such as Mingalardon, Shwe Pyi Thar and eastward directions. Total length of roads in Yangon is about 2,943 kilometers in 2004. The seven main roads are defined by the YCDC. Four of these main roads connect the central business district with the northern part of the city, while one main road crosses the city in a west to south-easterly direction. The central business district has a grid-based road layout.

A one-way system regulates the traffic in the CBD; only Kan-na road, the major north-south routes, maintains two-ways flow. The intersections on the major road-grid are controlled by traffic signals. In the center of the CBD, there is the City Hall, at which there is a large bus terminal in a wide open space.

There are Hlaing River Bridge (Shwe Phi Thar), Aung Zay Ya Bridge, Bayint Naung Bridge, Yangon - Thanlyin Bridge, Mahabandoola (Pazundaung) Yangon River (Hlaing River).

There are 33 townships, Hlaing Thar Yar, situated in the Western part of the city, Mingalardon, Shwe Pyi Thar, Insein, Mayangone, situated in the Northern part of the city, North Dagon, North Okkalapa, East Dagon, South Dagon, Dagon Seikkan, situated in the Eastern part of the city and Pazundaung, Dawbon, Thaketa, Thanlyin, Kungyan Gon, Thingangyan, Yankin, South Okkalapa, Hlaing, Dagon, Kyee Myin Daing, Kamaryut, Sanchaung, Bahan, Tamwe, Ahlone, Lanmadaw, Pabedan, Botanhtaung, Kyauktada, Latha, Mingalar Taung Nyunt, Seikkan, situated in the Southern part of the city.

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<sup>1</sup> Essentials of satisfactory transport, C.D.E. Stephenson

<sup>2</sup> (Noun), large urban formed by several towns which have spread towards each other.

From the CBD a number of major routes continue northward; Pyay road and Kabar Aye Pagoda road used to be the main arterial lines to the northern and north - east township of Insein, Mingalardon, North and South Okkalapa.

However, after the expansion of Kanner road, Kyee Myin Daing road, Baho road, Bayintnaung road, Mindama road, Mingyi road, No.(4) and No.(5) Highway road, there are more routes to way out from CBD to the above mentioned townships and new satellite towns, Shwe Pyi Thar, Hlaing Thar Yar and Ayeyarwady Division. No.(2), No.(3), No.(6), Highways, City Circular Roads and Wayzayandar road, Pazundaung roads, Thanthumar road, Shukhinthar road, more roads became as a main arterial roads for transporting the commuters from old townships and new satellite townships of north - east of Yangon City, Dawbon, Thaketa, Thingangyun.

In addition, the east - west route were less direct and have different standards in the last decade, with width extension, Bargayar road, Damazaydi road, Shwegondaing road and Themeinbayan road became main roads traveling from west to east.

Furthermore, Parami road and Khayaepin road are facilitated the traveling between the west and east areas. In Yangon Region, 907 km (529 miles) of the road network are under the arrangement of Public Works, which is under the Ministry of Construction and 299 km (1864 lane miles) of roads within the metropolitan areas are under YCDC control in 2007.

The YCDC has upgraded most metropolitan roads like Kanna, Thanthumar, Pazundaung and Banyardala road. These roads became arterial roads linking CBD and the city's suburban areas. The following major traffic generators were removed and relocated from the major congested city area such as Thrimingalarzay in Ahlone Township removed to Padaukchaung bus stop in Hlaing Township near Bayint Naung Market.

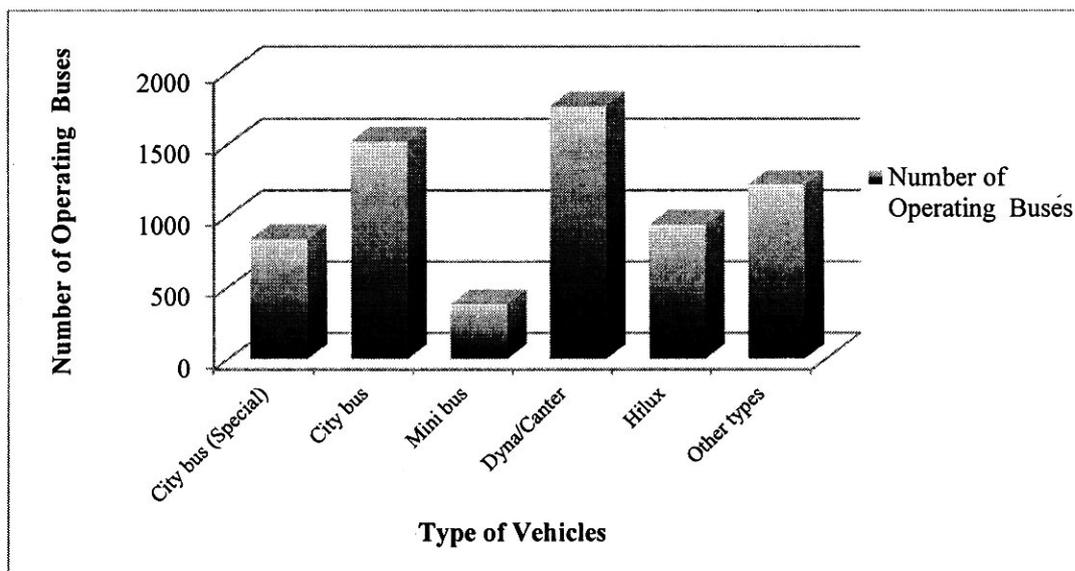
## **5. Main Actors in the Bus Service Market in Yangon**

There are two broad types of local bus services in Yangon: bus services provided by bus companies and those managed by bus control committees (BCCs). The bus companies are large-scale private bus operators who own the buses, hire the drivers/conductors and operate urban bus services in Yangon. Two bus companies currently provide bus services in Yangon: the Golden City Link Company (GCL), controls the Shwe Eh The bus line and the Union of Myanmar Economic Holdings Limited (UMEHL) as shown in Table 2.3. The BCCs are non-profit organizations that control small-scale individual bus owners. The individual bus owners have their own buses, which are leased to the drivers and conductors. The individual bus owners must belong to one of the BCCs. There are a number of individual bus owners in Yangon. Bus operations and fares are approved by the Yangon Region Administrative Department (YRAD). No subsidy program for bus operation is provided by the Government. No official strategic urban transportation plan has been made so far. There are 17 bus committees and 373 bus lines in Yangon. Among them, BCC, WDBCC, EDBCC, SDBCC, NDBCC, Than Myan Thu, Bandoola, Shwe Yangon and GCL are most share of bus lines. The GCL has few bus lines but it has more the number of buses in these lines.

## 6. Local Bus Transport

Bus services in Yangon City are currently provided by both the public and private sectors, which operator a fleet of buses, pick-ups, converted light trucks, and mini buses. There are six types of buses in Yangon: City buses (Special), City buses, Mini buses, Dyna/Canter, Hilux and others. The Dyna/Canter and Hilux vehicles are basically trucks which have been slightly redesigned for passenger use by adding roofs and seats to the body. They are commonly known as “truck buses” in Yangon.

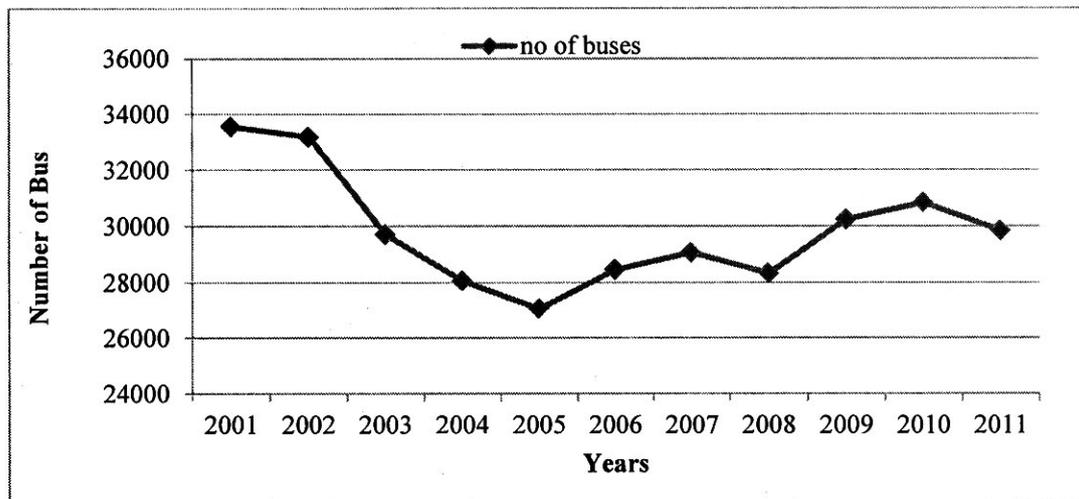
**Figure-1: Distribution of Buses by Type in Yangon as of December 2011**



Source: Yangon Region Bus Control Committees

The types of vehicles in Myanmar (in Figure 1) are city bus (special), city bus, mini bus, dyna, canter, hilux and other types. In these years, the number of dyna and canter are the most. The second is the city bus. The number of mini bus is less than others. The number of city bus (special) is introduced in these years. The city bus (special) is no standing passengers and they do not stop for a long time at the bus stop for waiting the passengers. The bus fare is 200 kyats for each route.

**Figure -2: Trend of the Number of Bus in the BCC**



Source: Yangon Region Bus Control Committees

In the figure 2, the trend of the number of bus is slightly decreased from 2001 to 2008 because the buses that are very old cannot be used. It is observed that number of buses falling trend from 2002 to 2005 and slightly rise in 2006 and 2007. In particular, if the recent peculiar point of time such as 2008, the picture shows that the decreasing the number of buses in that year, as a result of withdraw of old model buses, that are not designed for passed such as Dyna/Canter, BM and Hilux for downtown area. And against the number of buses trend get soar shape in 2010. This is due to the new arrival of high model buses for the transportation of down town area. Since the replacement of new high model buses for old buses has not yet met, it still has some buses has to be moved out of the city bus transportation of Yangon, explaining the decreasing trend in 2011.

## 7. The Global Vision of the Road Safety Policy

The global vision of the road safety policy can be formulated in the following way: “The effective transportation system for goods and passengers and sustainable safety policy in the whole road transport sector”

### 7.1 Vision of Asian Development Bank (ADB)

The main goals for the road safety sectoral program period are:

- To decrease the number of accidents by 30%
- To decrease the number of fatalities by 30%
- To increase the number of finances to road safety sector by 20%
- To improve road safety organization
- To minimize traffic costs.

To reach the main goals stated in the program the following **strategies** should be followed:

- To review the authorities, duties and responsibilities of the stakeholders;
- To rise professional level of the stuff and improve technical equipment;
- To provide public educational programmes and informational campaigns;
- To run educational programmes for children in schools;
- To enforce traffic fines system;
- To protect vulnerable road users;

- To improve road infrastructure;
- To provide black spots analysis and re-construction;
- To develop long-term planning system;
- To review main standards concerning road transport;
- To develop system of public transport, increase the number of passenger transport of high capacity;
- To find additional sources of financing.

## **7.2 Eight Economic and Social Commissions for Asia and the Pacific (ESCAP) Goals**

The goals of the Economic and Social Commission for Asia and the Pacific (ESCAP) are to stabilize and then reduce the forecast level of road traffic fatalities around the world by increasing activities conducted at the national, regional and global levels. The overall goal is to halt or reverse the increasing trend in road traffic fatalities around the world by increasing at the national level. The global level is the international coordination, strengthening global architecture for road safety. At the national level, there are five pillars. They are-

1. Pillar 1: Road Safety Management
2. Pillar 2: Infrastructure
3. Pillar 3: Safer Vehicles
4. Pillar 4: Road User Behavior
5. Pillar 5: Post-crash Care.

The eight ESCAP goals are

1. Making road safety a policy priority:
2. Making roads safer for vulnerable road users, including children, senior citizens, pedestrians, non-motorized vehicle users, motorcyclists, and persons with disabilities:
3. Making roads safer and reducing the severity of road crashes:
4. Making vehicles safer and encourage responsible vehicle advertising:
5. Improving national and regional road safety systems, management and enforcement:
6. Improving cooperation and fostering partnership:
7. Developing the Asian Highway as a model of road safety:
8. Providing effective education on road safety awareness to the public, young people and drivers.

### 7.3 Integrated National Road Safety Program

Today, the most popular strategy all over the world follows the 5 Es system. 5 Es system represent as follows-

1. **Education:** for the leaders, road users, road agencies, police, school children, and the general public.
2. **Engineering:** introduce safety conscious planning and design for roads and traffic schemes, and for remedial measures at accident blacks pot locations.
3. **Environment:** sustain the environmental pollution by using vehicles.
4. **Emergency Medical Care:** get the immediate medical care.
5. **Enforcement:** introduce policies for targeted enforcement aimed at changing unsafe road user behavior.

The slogan of the international road safety from 2010 to 2020 is "*Road Safety is no Accident<sup>1</sup>*"

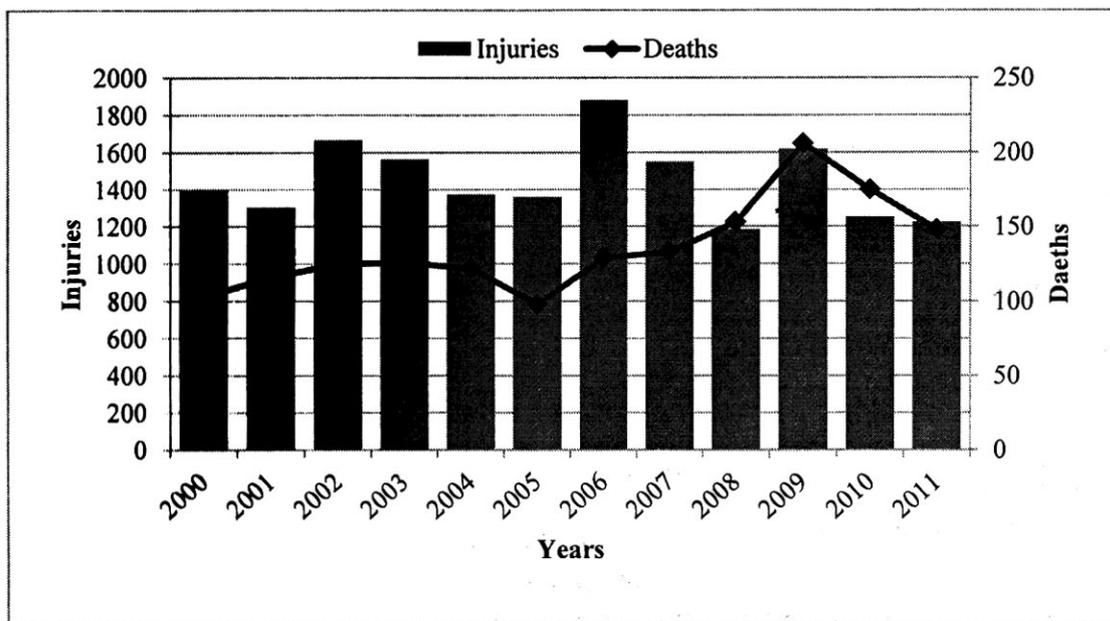
### 7.4 Road Signs and Markings

Road signs are classified as follows:

- (a) Danger Warning Signs;
- (b) Prohibitory and Restrictive Signs;
- (c) Mandatory Signs;
- (d) Direction Signs.

## 8. Road Accidents

Figure -3: Road Accidents in CBD from 2000 to 2011



Source: YRBCC

<sup>1</sup>ပြည်ထောင်စုမြန်မာနိုင်ငံတော်၊ ရန်ကုန်တိုင်းဒေသကြီး၊ ယာဉ်စည်းကမ်းထိန်းသိမ်းရေး ကြီးကြပ်မှုကော်မတီ။

The figure (3) illustrates the slightly increasing trend of road accidents for the period through 2000 and 2011. The highest number of cases is in 2009, and the lowest number of cases is in 2005. It can be explained by the fact that the policy of upgrading the quality of buses in the city bus lines had caused temporary reduction in buses, that made the number of accidents. New cars were completely replaced in 2009, causing more road accidents than cases can be controlled in the following years, leading to decreasing trend of accidents.

BBC involves the most case of accidents in the lines controlling BCC because it has more bus lines and more number of buses than other BCCs and companies. It has 33% of bus among them. The most second percentage is WDBCC and the road accidents is more than others. So, the increasing number of road accidents depends on the number of buses and the number of bus lines. The number of road accidents is directly proportional to the number buses and the bus lines. This means that more buses cause the high probability of the road accident. Another fact depends on the infrastructure of the road. Like many big cities of the world, Yangon faces the challenges of an increasing population and the corresponding growth in demand for mobility. There are four main factors behind transportation problems in Yangon such as increasing population, urbanization, and increasing automobile usage. Some problems related to the public transport in CBD area are due to traffic congestion during peak hours.

**Table 1: The Comparison the Road Accidents by Type of the Vehicles**

No.	Kind of Bus	No of Buses	2010	2011
			Accidents	Accidents
1	City bus	3516	120	124
2	Mini bus	305	20	25
3	Dyna/Canter	2338	98	101
4	Hilux	1055	50	63
5	BM/KM	834	30	33
6	Chevrolet	384	5	7
7	Jeep	276	2	2
8	The Three Wheel Cycle	85	-	3
	<b>Total</b>	<b>8703</b>	<b>325</b>	<b>358</b>

Source: YRBCC

Road accidents still slightly increased year after year. Table 1 shows that the road accidents by type of vehicles. It is observed that city buses, commits the road accidents most because of its large modal share in total volume of transport.

## 9. Conclusion

Most of the bus routes run directly between suburban areas and the CBD along the main roads. Thus, the bus network in Yangon is characterized as a "point-to-point" network. The point-to-point bus network in Yangon leads to overlapping of many bus routes along the major roads connecting suburban areas with the CBD.

Since a number of buses on various routes run along the same main roads, they increase the traffic particularly during the peak periods. This results in serious traffic congestion on the main roads at peak times. Furthermore, the point-to-point network also brings about excessive competition between bus drivers on the same roads. Although bus services are monitored by the BCC, the bus-service-monitoring of one route is quite independent from that of another route. Therefore, the bus drivers running on one route often race with other bus drivers running on other routes in a rush to get to the next bus stop earlier than the competitors. Such driving results in reduced safety.

The financial support system to lend funds to individual bus owners or bus companies is insufficient. Although individual bus owners or bus companies want to improve their fleet, it is difficult to them to invest due to the lack of funds. Individual bus owners can only prepare funds by borrowing money from their relatives.

This hampers investment of bus operators and owners to upgrade their vehicles and/or facilities. Additionally, it should also be pointed out that the Government has no subsidy scheme to support bus operations. Even if the Government had policy to guarantee mobility or accessibility in the city, it would be difficult to realize because the operators have no incentive to supply the bus service in areas where the bus demand is not high enough to earn the profit.

Safety is not yet regarded as a critical service factor by some bus operators. This is firstly because the heavy competition among operators on the main roads reduces their perceptions of safety. In addition, having long route of bus line may cause unfamiliarity all the way of route. This can cause road accidents.

The drivers have inferior skills and are poorly educated about safety. The buses are in poor condition. The bus stops and terminals are not controlled well enough to improve safety. And then road signs and markings are not present clearly. The most bus drivers and conductors do not know definitely the definition of the road signs and markings. So, the road users such as drivers, conductors and passengers know the road signs and markings and definitely follow the disciplines of the road and vehicles. The majority of bus services are operated by a number of small scale individual bus owners.

This causes as small scale individual bus owners are unable to make major investments in buses or bus systems, the quality of bus services cannot be improved; as the small scale bus operators have only a few bus routes, it is difficult to introduce cross-subsidization between profitable and unprofitable routes; as the economies of scale do not work for small scale operators, the operating costs for small scale operators are higher than for larger competitors.

The permission to operate bus routes is not appropriately regulated. As the bus routes are not coordinate as part of a total bus network, many bus routes overlap on the same roads. This causes excessive competition between bus drivers.

Bus operations are not well controlled in Yangon. In practice, only the buses' cycle times are monitored by the BCCs at the control gates. This poor control of bus operations affects the driver's behavior.

The bus drivers rush to the next bus stop to prevail in the tough competition against bus drivers of different routes. The bus drivers are motivated to maximize their passenger numbers by waiting at the bus stops as long as possible. This is because their revenue depends on the number of passengers.

This leads high-speed driving to reach the next bus stop. Buses are driven at dangerous speed between bus stops.

### **10. Recommendations**

A fixed schedule is recommended to structure the bus transport system. It should be pointed out that the current traffic congestion may not allow the bus operators to provide the punctual service even though the fixed schedule is introduced.

The low capacity truck buses should be replaced with higher capacity city buses. A modernized vehicle should have a unique and distinctly aesthetic body, environmentally friendly design with wide space, low floor and large windows.

All bus owner including individual owners and companies have separate maintenance units within the organizations so that they are recommended to possess adequate maintenance and vehicle facilities or arrangements.

Overlapping routes along the same road should be eliminated. Buses should be redistributed to improve the balance between supply and demand. Long routes should be shortened in order to improve the on-time reliability. The bus regulator should introduce a mechanism to reward bus operators for replacing small-capacity truck buses with new and larger buses.

The bus stop locations and facilities are reevaluated. The private sector should be invited to finance the infrastructure including bus stops and/or terminals.

In the medium to long term, bus priority measures should be taken particularly under the introduction of a BRT system. Guidelines on designing bus stop facilities should be formulated such as the physical scale of a bus terminal is significantly large, customer information to facilitate connections should also be prepared in the terminal.

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၁. ပြည်ထောင်စု မြန်မာနိုင်ငံတော် ၊ ရန်ကုန်တိုင်းဒေသကြီး၊ ယာဉ်စည်းကမ်းထိန်းသိမ်းရေး ကြီးကြပ်မှု ကော်မတီ၊ ယာဉ်မတော်တဆမှု လျော့နည်းကျဆင်းရေး အလုပ်ရုံဆွေးနွေးပွဲနှင့် ကမ္ဘာလုံး ဆိုင်ရာ ယာဉ်မတော်တဆမှု ကြောင့် သေဆုံး၊ ဒဏ်ရာရသူများ အမှတ်တရနေ့ ထောက်ပံ့ ငွေပေးအပ်ပွဲ အခမ်းအနားမှ စာတမ်းများ (၂၀၁၀) (ဒုတိယအကြိမ်) ။
၂. လှသောင်းမြင့်- ရထားပို့ဆောင်ရေးဝန်ကြီးဌာန၊ သမိုင်း မှတ်တမ်း အတွဲ (၂)။