

1. Introduction:

Motorized vehicles are dominating both the public and private transportation system. Vehicles like bus, mini bus, taxi etc. are most commonly seen in Bangladesh but non-motorized vehicles are playing a vital role in meeting demand for door to door transport service. Among this non-motorized vehicles rickshaw contributes the highest volume in the context of Bangladesh. Easy bike is a newly introduced motorized vehicle in Bangladesh. The technology came from China. It's intensity of use is increasing day by day. In Khulna it is increasing very rapidly. It was first introduced at the end of 2009 and now approximately 25000 easy bikes are running in Khulna. Here about 40 town service Buses, CNG 200, and Mahindra 350 running through around the Khulna area.

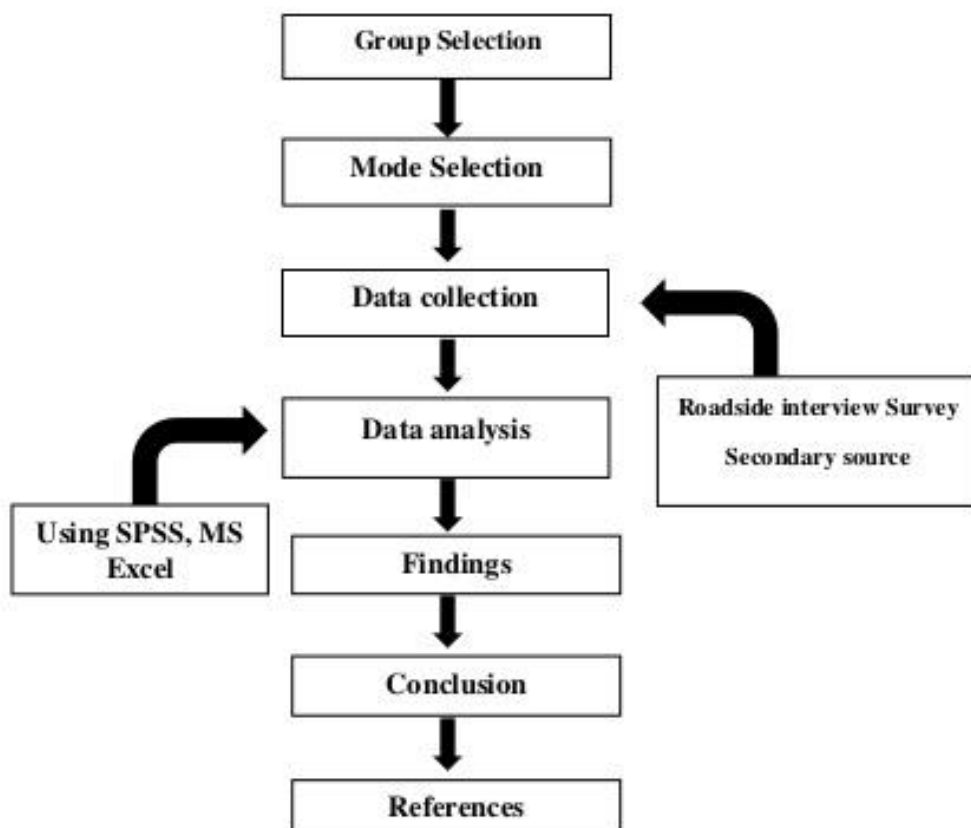
1.1 Objectives:

For any research, it is must to select the objectives before starting full fledge work. Objectives should be relevant to the topic. In this study the objectives have been driven from the main aspects of the topic.

- To know about the existing routes, fare and stoppages
- To identify problems related to easybike
- To show the prospects of easybike as an effective para-transit

2. Methodology

Data from both primary and secondary sources is used for this study. For primary data collection, household interview survey and ridership survey by structured questionnaire is designed to collect information regarding the socioeconomic characteristics of an individual trip maker, trip information and service attributes of Easy bike. For the purpose of this study, the whole Khulna city corporation area was divided into 18 Traffic Analysis zones. The major determinant factor for the identification of TAZ boundary in this study is land use homogeneity. The second important factor is considered as the road network followed by the location of major activity center. Gross Land use map of Khulna city is overlaid to the road network map of Khulna city. In this process, eighteen traffic analysis zones are created in the Khulna City Corporation area.



3. Analysis:

3.1 Bus Route:

Khulna city has been served by different public transport mode. The town service bus is a mode for every people. It is preferable for students. It starts from phultala and end in rupsha. It covers 1h 3min for its journey. Within 25 stoppage it serve about 250 people in every journey. In the Khulna city has 40 town service bus serve over the Khulna area. This map show the present bus stoppage of Khulna area.

FIG 1- Bus stoppage in Khulna Zone:

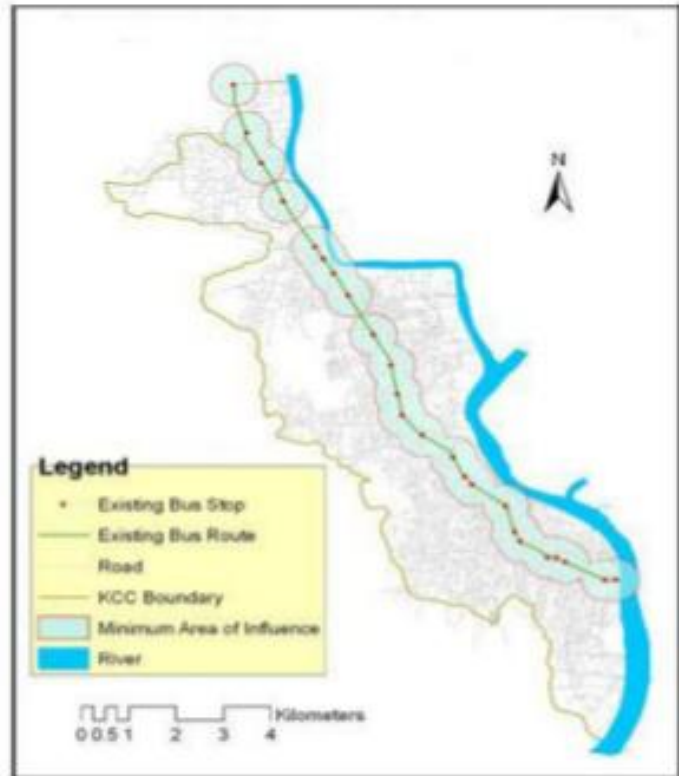


FIG 2- Town Service Bus



3.2 Pattern of Easy Bike:

Easybike is now very common in Khulna city. It has similarity in terms of look and size with auto rickshaw, but it does not create noise and emit smoke like them. Structural details of easy bike:

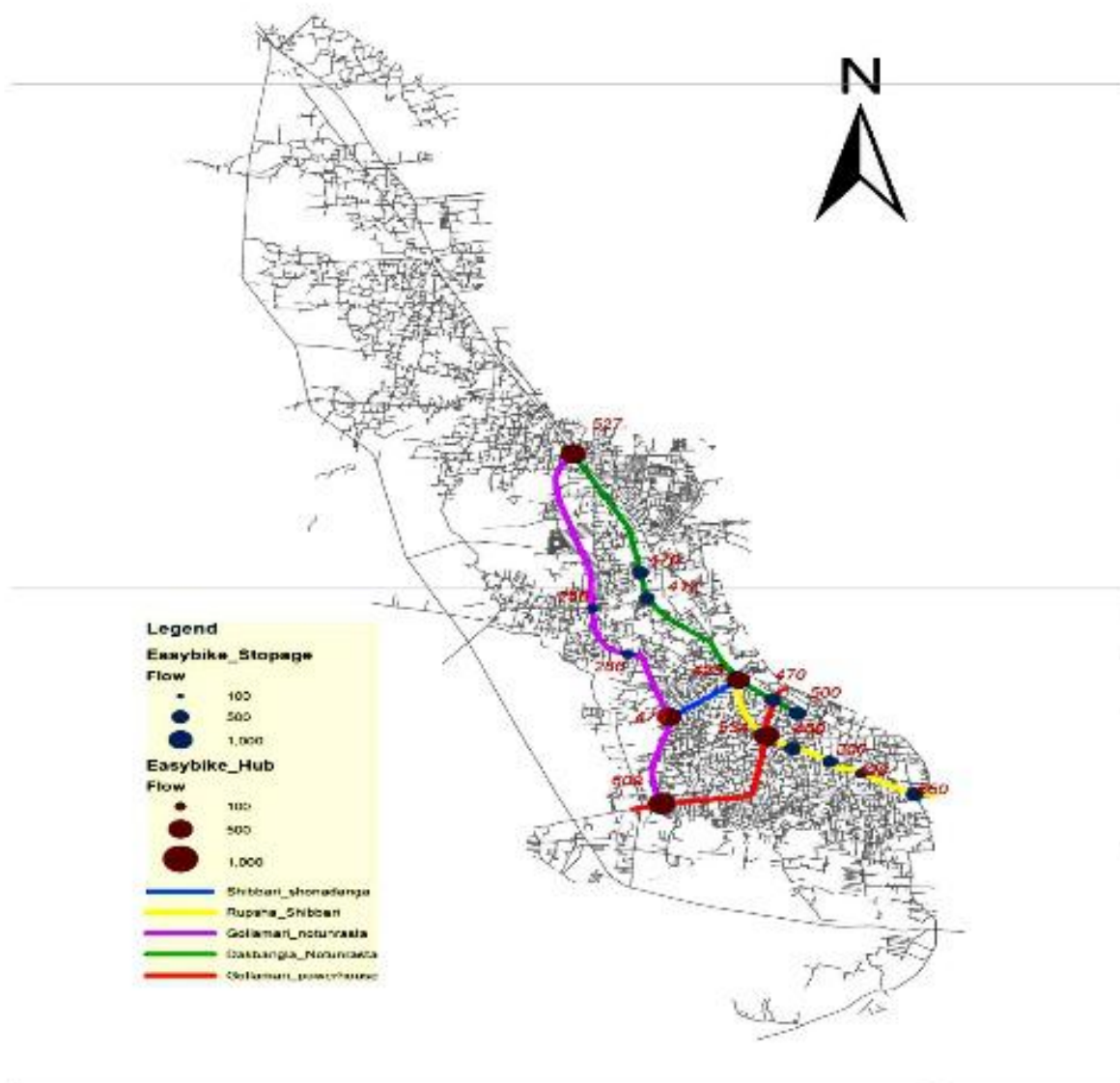
Body type	Closed
Power	500w-800w
Voltage	60v (five batteries, 12v each)
Motor type	60v-1000w
Average speed	35-40 km/h
Load bearing capacity	300-350 kg
Break distance	Less than 4m
Continued trip mileage	125-140 km
Charging time	8-11 h/d
Power consumption	7.2 kw/h

Though easy bike is a motorized vehicle but its speed is much less than usual motorized vehicles. On the other hand it is faster than non-motorized vehicles. It does not have an identical name which doesn't describe its characteristics. But if it can be called as motorized or electrical tri-cycle, the meaning would be more precise.

3.3 About the stoppages: (Easy Bike, Mahindra, CNG)

The stoppages are not declared by any authorities. Most of the times it is fixed by the drivers and the demand of the passengers. There are seven main stoppages in between 5 routes. They are: *Rupsha-Shibbari*, *Shibbari-Shonadanga*, *Gollamari-Powerhouse*, *Gollamari-Notunrasta*, *Dakbangla-Notunrasta*.

FIG 4- Easy-Bike stoppage in Khulna Zone:



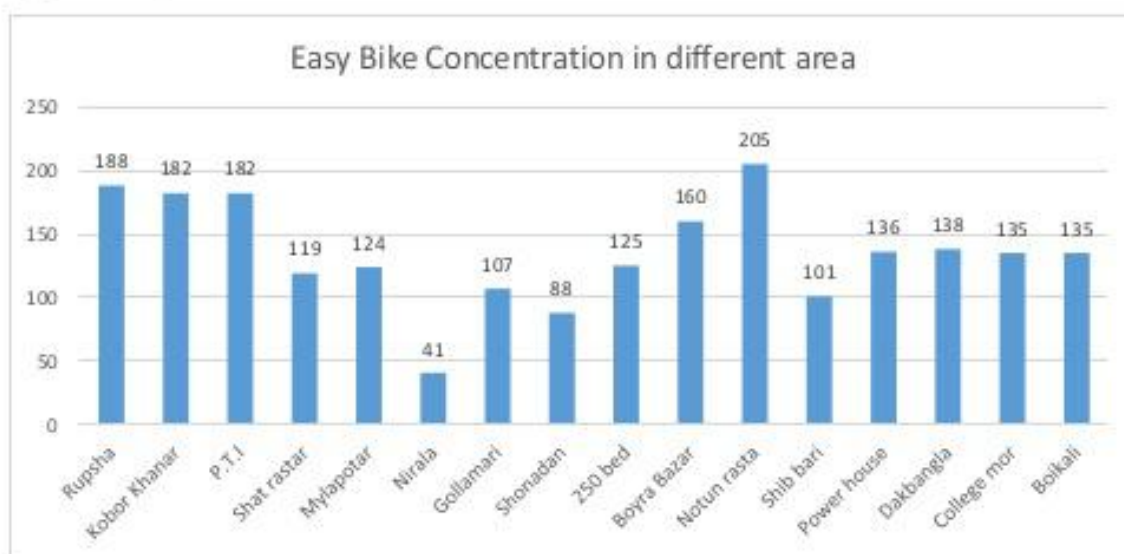
3.4 Cross tab for Survey Data:

	Rupsha	Kobor	P.T.I	Shat	Moylapot	Nirala	Gollamari	Shonadan	250 bad	Boyra	Notun rasta	Shib bari	Power	Dakhangl	College	Boikali	total
<i>Rupsha</i>	0	5	5	7	7	1	10	10	15	17	20	20	12	10	20	20	188
<i>Kobor Khanar Mor</i>	5	0	5	5	5	8	10	10	15	17	20	20	12	10	20	20	182
<i>P.T.I</i>	5	5	0	5	5	8	10	10	15	17	20	20	12	10	20	20	182
<i>Shat ratar mor</i>	7	5	5	0	5	5	8	7	12	5	20	5	-	5	15	15	119
<i>Mylapotar mor</i>	7	5	5	5	0	5	8	7	12	5	20	5	5	5	15	15	124
<i>Nirala</i>	10	8	8	5	5	0	5	-	-	-	-	-	-	-	-	-	41
<i>Gollamari</i>	10	10	10	8	5	5	0	5	10	12	15	-	7	10	-	-	107
<i>Shonadan</i>	10	8	8	7	5	-	5	0	5	10	15	5	5	5	-	-	88
<i>250 bad</i>	15	15	15	12	10	-	10	5	0	5	10	8	10	10	-	-	125
<i>Boyra Bazar</i>	17	17	17	15	12	-	12	10	5	0	5	10	15	15	5	5	160
<i>Notun rasta</i>	20	20	20	20	20	-	15	15	10	5	0	10	20	20	5	5	205
<i>Shib bari</i>	10	10	10	5	5	-	-	5	8	10	10	0	5	5	8	10	101
<i>Power house mor</i>	12	12	12	-	5	8	7	5	10	15	20	5	0	5	10	10	136
<i>Dakhangla</i>	10	10	10	5	5	8	10	5	10	15	20	5	5	0	10	10	138
<i>College mor</i>	20	20	20	15	15	-	-	-	-	5	5	10	10	10	0	5	135
<i>Boikali</i>	20	20	20	15	15	-	-	-	-	5	5	10	10	10	5	0	135
<i>Total</i>	178	170	170	129	124	57	110	94	127	143	205	133	128	130	133	135	2166

Source: Field Survey 2015

From the above table it can be easy to say that easy bike flow from different area highly concentrate in the Notun rasta area because there are the meeting point of khulna and starting point of khulna. In this place the traffice from different place divided into different road network such as notun rasta to sonadanga, shibbari, daulatpur, khalispur etc. from the figur 5 this chart show that the concentration of easy bike is much lower in the nirala resi dential area.

Figur 5 : Easy Bike Concentration in different area



Source: Field survey 2015

Now a days every stoppage of easy bike are used by Mahindra and CNG also but some stoppage there are different stoppage for Easy Bike, Mahindra And CNG for an Example in Dak Bangla More there are different place for these mode.

3.5 Prospects of easy bikes:

1. Drivers earn 650 taka per day. So it is a very profitable way to earn money.
2. It is a source of employment including easy bike selling and repairing shops.
3. A handsome amount of tax is collected from easy bike every year.

3.6 Illegal easy Bike License:

According to Daily Sun Newspaper reported on Easy Bike license at

(11 September, 2015 12:00 AM)

The number of unauthorized battery-run three-wheelers, commonly known as easy-bikes, is increasing day by day on the streets of southwestern districts with the authorities turning a blind eye to the situation.

As a result, accidents and traffic congestion have become a common phenomenon on those streets as most of its drivers have no license, route permit or fitness certificate. Harun-or-Rashid, license officer of Khulna City Corporation (KCC), said they have provided licenses to only 2,500 such modes of transports but the actual number is around 10,000. The engine vehicles drivers are usually under-age and they resort to reckless driving with no mercy to themselves or the people they carry. Police officials, however, are also opined these modes of transport are very prone to accidents. Officials at Bangladesh Road Transport Authority (BRTA) Khulna said, “It is a matter of surprise how unregistered vehicles can ply roads under the nose of law enforcers”. Anwar Ali, a driver of an easy bike, said, he is operating the vehicle “by paying regular bribes”. Sheikh Ashrafuzzaman, convener of Khulna Development Action Committee, claimed that the police cannot monitor the traffic closely due to huge pressure of vehicles on the streets besides allegations of bribes.

3.8 Accident Rate:

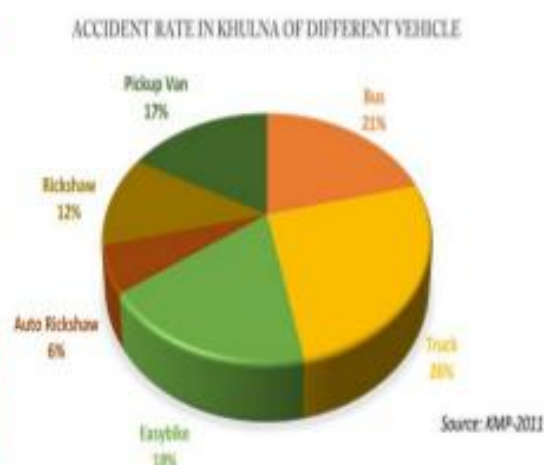
Though Easy Bike is the highest volume of transport mode in the Khulna city. But the accident rate is very few in recent year the rate of accident from kmp-2011 is showed below-

FIG 5- Accident Rate of vehicle mode



Source: The Daily Observer

(Publish Date: 2014-10-10, Publish Time: 15:41)



Source: KMP 2011

4. Services:

4.1 Positive sides:

- It is now the cheapest public transport around the city.
- It is found available in any time of the day.
- It is also used as a para transit, so people can use it as a private transport for any kind of trip.
- People from any class feels comfortable using this easy bike.
- It does not emit any gas which is harmful to the environment as well as to the passengers.
- There's highly any possibility to lose money by the pick pockets.

4.2 Negative sides:

- Drivers are not trained or even most of the easy bikes are not licensed.
- Most of the times drivers do not use head lights at night as the battery lose its charge and it increases the possibilities of accidents.
- They do not follow the traffic rules, parks the bike here and there and it causes the traffic congestion.
- Generally the door is not covered so in the rainy season the passengers get wet.
- Sometimes the drivers don't move from a stoppage if all the sits are not fulfilled and it often kills our valuable time.

4.3 Findings:

- As it is introduced newly, there is no transportation planning policy has been taken yet.
- For the increasing number of easybike sufficient parking arrangement is needed.
- As easybike is imported from China. It requires greater cost but the technology used here is not so difficult. So if it can be improvised locally it can be manufactured at a much less cost.

5. Conclusion:

Transportation is linked to all aspects of life. Our economic and social well-being depends on transportation systems that are safe, clean, and able to efficiently move our people and goods.

Besides having some problem issues it has some very influencing prospect issues also. Easybike has ambiguously beneficial environment impact. Easybike can be helpful in reducing unemployment. From the study it can be concluded that easybike should be promoted in a better way. Through its promotion a new positive dynamics will be added to the transportation system of Khulna city and a lot of people will be benefited.

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