REMODELING AND MODERNIZATION OF KAMALAPUR RAILWAY STATION

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ABSTRACT
Railway station is one of the most important components in transportation network system which may serve various purposes like passengers and goods transport as well as container depot. Kamalapur Railway Station is the major railway station of the capital city Dhaka which served over 7 million passengers and 1 million kg of goods in 2015-16. Nearly 67,000 Twenty feet Equivalent Unit (TEU)s were also handled at Kamalapur Inland Container Depot (ICD) in 2014-15. From some recent field visits and reports degradation in safety, operation, maintenance along with low speed, increased delay time, frequent accidents etc have been observed. Moreover, government decides to take some development projects which will eventually increase more demand of this station. This paper aims at to find out some sustainable development options in comparison to other developed countries like increase of man power, modernization of train coaches, tracks, platform, parking facilities, digitalization of ticketing, signalling etc for remodeling and modernization of Kamalapur Railway Station.

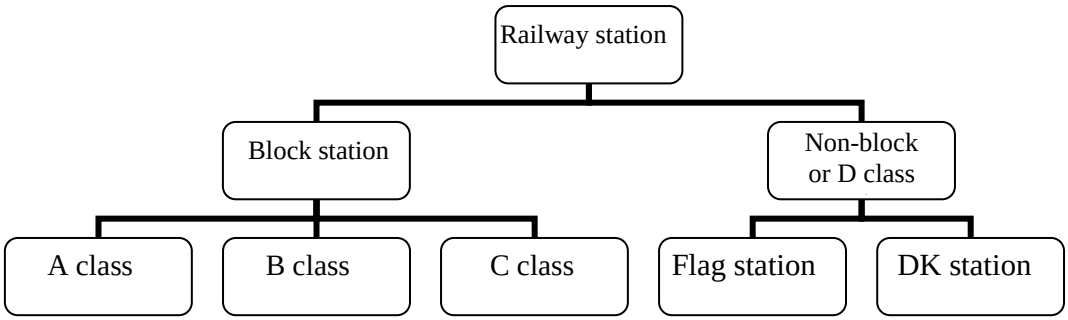
Keywords: Modernization; transportation network; projects; demand; sustainable

INTRODUCTION
Railway transportation system is the most environment friendly and cost effective transportation system in the world and stations are the most important components in this system. During British empire, there was only one railway station at Fulbaria in Dhaka. After the partition of Bengal, Dhaka became an important city and Kamalapur was selected for extension. At the beginning of the 1960s the station was built and it was designed by Robert Boughey, who was a professor of architecture at BUET (See Figure 1 and Figure 2) (Wikipedia, 2016).

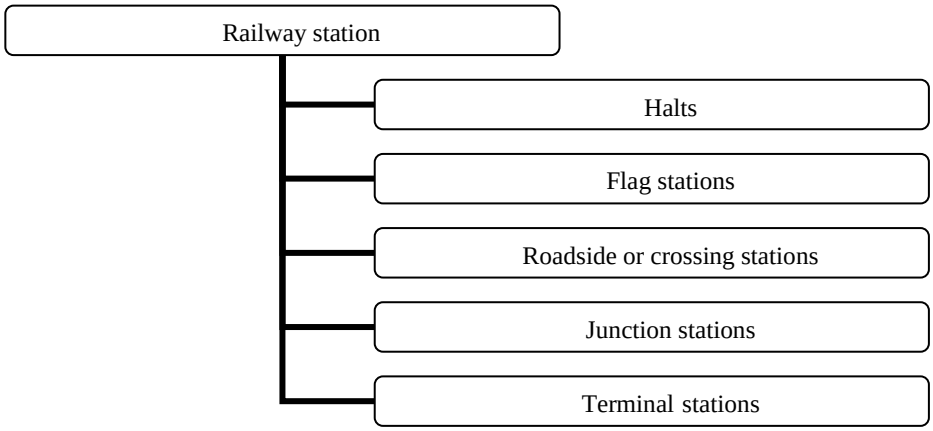
Fig. 1: Old Fulbaria Railway Station

Fig. 2: Kamalapur Railway Station

Bangladesh Railway (BR) is divided into two zones such as East zone and West zone. Kamalapur Railway Station falls under East zone. Different kinds of stations have different operational and functional characteristics. Under operational considerations, railway stations can be divided as follows (Agarwal, 2007).



Furthermore, based on functional characteristics, stations can also be divided into following five categories (Agarwal, 2007):



Considering above classifications, Kamalapur Railway Station is a Block station of Class A and also a Terminal station. Bangladesh Railway has 456 stations among which 337 stations are Block Station and 119 are Non-Block Station (Information Book, 2014).

In 2015-16 almost 70 million passengers were carried by Bangladesh Railway, among which almost 7 million were traveled by this station and also almost 1 million kg of TEUs were carried by this station in the same year (Information Book, 2014). About 138 trains arrive and depart Kamalapur Railway Station every day. Government decides to remodel and modernize this station in order to increase its capacity to meet future demand. Some of the major objectives of remodeling and modernization of this station are to safe movement of passengers and goods train with reduced travelling time, increase capacity of loading and unloading of passengers and goods, reduce delay time, increase accessibility and better container handling in Kamalapur ICD. In this regard integration with planned Mass Rapid Transit (MRT) is also very important.

PRESENT CONDITIONS

Kamalapur Railway Station serves not only as a staion but also a container depot with fuelling, repairing and maintenance facilities at station yard (See Figure 3). To serve the 20-25 thousands incoming and outgoing passengers every day making it an important busy place (Mahmud and Haque, 2014). There are only 12 approach track lines which are not sufficient enough to facilitate uninterrupted train movement in Kamalapur Railway Station. Poor accessibility at platform to platform, platform to exit point and poor inter-modal transfer facilities at parking area are some of the major problems in this station. Amenities like food courts, ATMs, book stores etc are non-uniformly distributed and scattered at station premises that causes obstruction of movement of passengers and goods. There are 12 passenger platforms, waiting rooms for VIP's, 1st class's, 2nd class's and 3rd class's passengers, 21 ticket counters along with only 2 restaurant in front of ticket counters which are not sufficient against the demand (Dhaka Urban Transport Network Development Study, 2010).

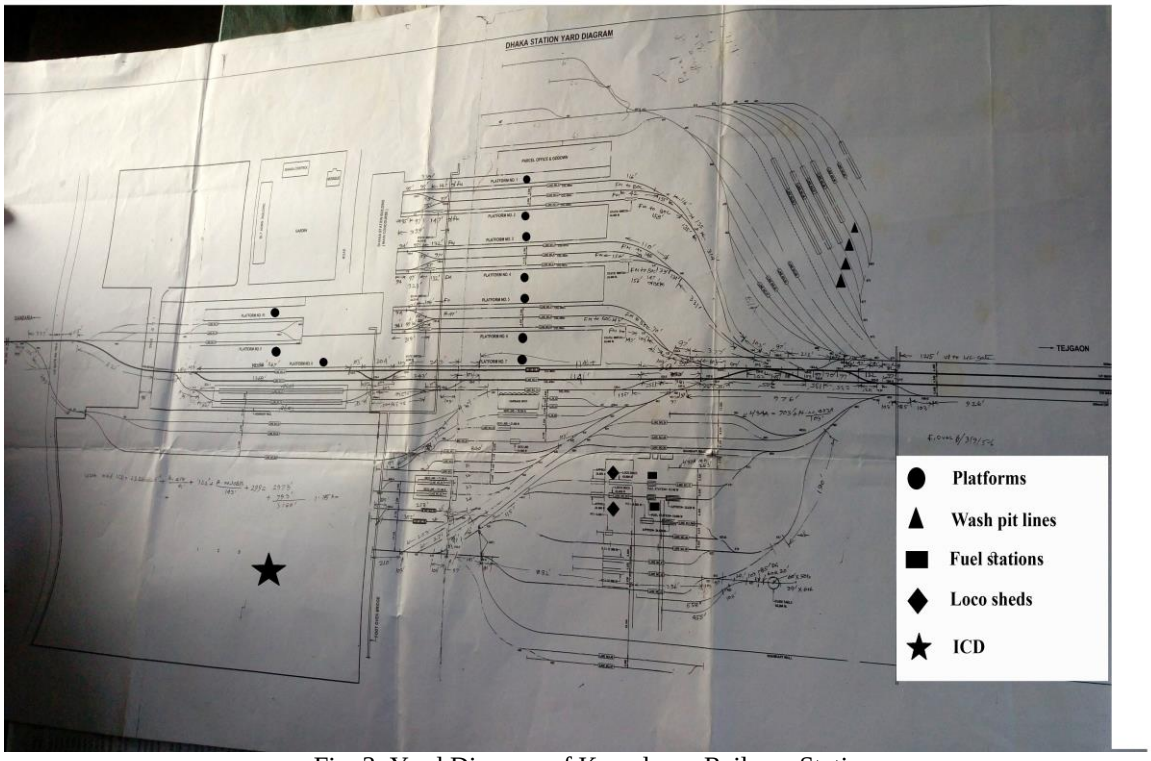


Fig. 3: Yard Diagram of Kamalapur Railway Station

Recently Kamalapur Railway Station authority started providing wifi facilities to the passengers at station premises. Though Kamalapur Railway Station has Computer Based Interlock (CBI) system but there is no Central Traffic Control (CTC) system for which efficient train operation is interrupted (Biswas, 2015). Poor fencing and unauthorized occupation of station properties poses threats to the safety and security of the passengers and railway properties. There is only 4 wash pit lines, 2 fuelling stations and 2 loco sheds in this stations which is not adequate to meet the demand. Moreover, time required at wash pit, dock pit for washing, maintenance work and refuelling at fuelling stations is increased because of their reduced capacity and inadequate and unskilled man power. Rest room and sanitation facilities are not satisfactory at the station. Kamalapur ICD was built on 33 acres of railway land with annual capacity of more than 72,000 TEUs (See Figure 4). This ICD has been practicing custom clearance under an automated system since 2008.

Fig. 4: Kamalapur Inland Container Terminal (ICD)

Some of the statistics regarding Kamalapur Railway Station and ICD are presented below in Table 1 and Figure 5 & 6:

Table 1: Number of passengers travelled by this station and TEUs handled by ICD

Fiscal year	Number of passengers travelled by the station (in Millions)	Number of TEUs handled at Kamalapur ICD
2014-15	5.48	66,847
2015-16	7.05	68,489

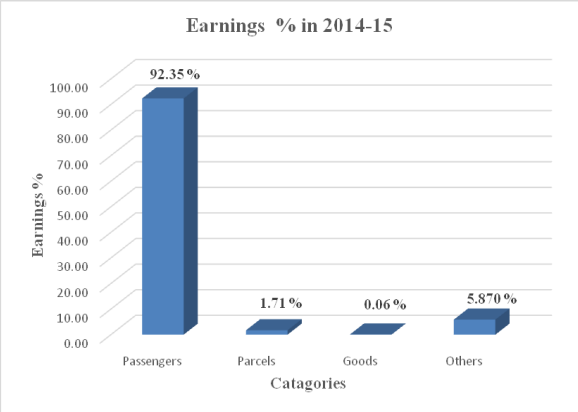


Fig. 5: Percentages of earnings in 2014-15

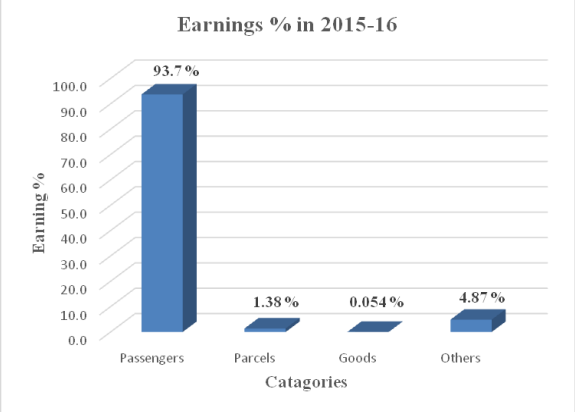


Fig. 6: Percentages of earnings in 2015-16

There are still some problems regarding safety and security measures. In 29 December 2014, 6 people died and 11 other injured in an accident at Kamalapur ICD which indicated poor freight handling capacity and security at container depot.

SCOPES FOR IMPROVEMENT

Recently, government has taken some development projects which include modernization of Kamalapur Railway Station (Rail Master Plan, 2014). Major three projects among them are as follows:

Padma Bridge Rail Link Project:

This new rail link will certainly increase usage of this station. Under this project 3 km long Dhaka-Gendaria double line will be constructed with modern signalling and interlocking system. As a result capacity of this station will be increased as well as delay time will be reduced.

Dhaka-Narayanganj Dual Gauge Rail Link Project:

Signaling and interlocking system at Kamalapur Railway Station already equipped with computer based bi-directional signaling and interlocking system (CBI), but it has to be modified for double line construction at Dhaka-Narayanganj route (Inception Report, 2016)

Dhaka-Tongi 3rd and 4th Line Project:

Already Dhaka-Tongi route has double lines but after completion of this project 2 new approach track lines, platforms will be constructed. This project will cost almost 849 crores BDT (Programme Costs and Phasing, 2010).

There are also some other projects to be undertaken by BR like constructing overpass in important level crossing gates in Dhaka which will increase the average speed of the track near the station. Feasibility Study for construction of circular MG rail line around Dhaka city is another ongoing project which may also integrate Kamalapur Railway Station (Programme Costs and Phasing, 2010).

To increase the level of service and accessibility in Kamalapur Railway Station overpass and parking facilities should be improved. Amenities like rest rooms, wash rooms, book stores, food courts, ATMs etc should be distributed uniformly throughout the public space of the station, and not be concentrated particularly at the entry/exit points where they will interfere with passenger and goods movement (Raaj et al., 2016). Ticketing facilities should be more digitalized by introducing rechargeable smart card system to reduce the hassles of booking ticket (Station design principles, 2015) (See Figure 7). This

rechargeable smart card system will prove much efficient if it is introduced in commuter trains in various routes like Dhaka-Narayanganj, Dhaka-Tongi.

Many developed and developing countries like UK, Japan, China, India etc are using smart card technology for providing rail service. As a result station capacity along with quality of rail services are greatly increased and delay time is reduced as well. Parking facilities outside of stations are also very organized on those countries which have made passenger movement more easier and convenient. In India, major railway stations have taxi stand and taxi hiring booth outside of those stations. Passengers can book taxis by buying token from those booths and pay a fixed amount of money per kilometre basis. Recently close circuit cameras have set at the station premises including platforms, exit and entrance point at Kamalapur Railway Station. But other monitoring measures like provision of fire detection and alarm system including audible and visible alarm should also be introduced at platforms (See Figure 8).

Fig. 7: Restricted entrance with rechargeable smart card system

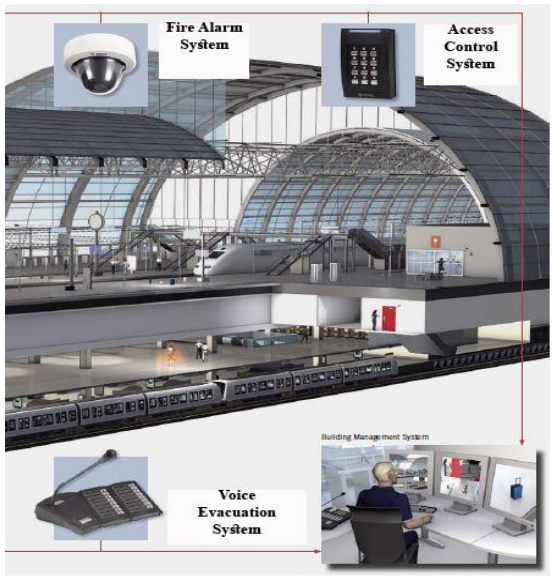


Fig. 8: Fire alarm and evacuation technologies

For easiness of boarding and alighting on train central platform system would be the most convenient system (Ministry of Railway, Government of India, 2009*)*. For anticipated increasing number of future traffic number of fuelling station, wash pit lines should be increased in order to minimize fuelling time and maintenance time respectively. But without sufficient man power and work force, all of these technologies and logistic supports cannot provide desired service efficiently. So it is necessary to arrange proper trainings and workshops for the officials and workers then appoint skilled and trained man power where it is needed.

CONCLUDING REMARKS

To achieve the goal to be the middle income country by 2021, it is much needed to develop our transportation network system and railway could be the key point in this regard. Without developing this central railway station it is not possible to achieve sustainable development in railway network system. So it is now crying need to look into the development options of Kamalapur Railway Station to be able to meet up the future traffic demand.

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