Formulation of a National Framework for the Digital Transformation of Sri Lanka's Public Bus Transport System

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Abstract

Public transport is considered to be a country's primary transportation network that plays an increasingly important role in human navigation. Thus, many countries have digitally transformed their public transport services to ensure the delivery of a quality transportation experience to passengers whereas the use of digital practices in Sri Lanka's bus transportation industry is minimal. As a matter of fact, majority of the vehicles entering Colombo are private vehicles that carry an immaterial number of passengers compared to public transport. The availability of more private vehicles with less number of people gives rise to the problem of traffic congestion thus creating a requirement for an efficient public transport system. Hence, the authors aim to present how modern-day IT advancements could be used to deliver a quality bus transportation experience to Sri Lankan passengers.

First, the challenges experienced by passengers were investigated where, heavy traffic, long travel time, overcrowded buses, not receiving the correct amount of balance money and the inability to track the location of the bus beforehand were found to be the most common challenges experienced by passengers. Once, the issues and the corresponding needs were identified, the authors explored the different roles of IT in public bus transport and proposed four feasible solutions to overcome the prevalent issues.

The recommended solutions consisted of a bus tracking cum arrival time prediction system that uses GPS and GSM, a bus crowd monitoring system that uses IR sensors, a cashless ticketing mechanism that uses the Touch travel card introduced by Dialog and an inquiry cum complaint management system that would facilitate real time complaint handling and management. Furthermore, the research also introduced a digital transformation framework that could be used to digitalize the operations of public bus transport. The digital transformation of Sri Lanka's public bus transport system would result in the delivery of a quality transportation experience to passengers while minimizing traffic congestion in Colombo as the availability of a high-quality bus transport service would encourage citizens to use public transport more often instead of their own private vehicles.

The proposed research contrasts with other researches as it facilitates the development of a Digitized National framework that would be applicable to the entire bus transport system of the country. Furthermore, it would be beneficial if the passengers are provided with an integrated up-to-date solution where information such as the location of the bus, arrival time, bus fare, duration and journey distance is available in real-time. Besides, the study is also significant as this area has not been much focused academically in the Sri Lankan context. The Ministry of Transport and Civil Aviation, National Transport Commission (NTC), Sri Lanka Transport Board (SLTB) and Sri Lanka Private Bus Owners Association will be the main organizations benefitted by this research in addition to passengers travelling in and out of Colombo.

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