A Review on Demand Responsive Transportation System

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Abstract

Public transport services are generally of a reasonable standard on the main corridors of many countries, they tend to be inadequate; to meet users' needs in rural and other low population density areas, for servicing during off-peak times and to operate specialist community-based services for elderly population and differently-abled population. As the next level of transport services, the para-transits are not capable of managing high demands and not affordable for a considerable number of passengers because of the high cost. Providing regular transport services to all regions of sparse population is not economically feasible. These reasons have paved the way for the implementation of Demand Responsive Transport (DRT) all over the world.

DRT is a class of flexible transport services in which a fleet of vehicles dynamically changes routes and schedules, in order to fulfill the individual passengers' requests through door-to-door rides by specifying their desired start and end locations. Manifestations of Special Transport Services (STS) have provided dedicated solutions for special groups in parallel to the conventional public transport network. But to meet the growing demand more effectively and efficiently with low cost, DRT has evolved towards developing a niche for the general public. (Nelson, Wright, Masson, Ambrosino, & Naniopoulos, 2010). Further DRT evolved for feeding the conventional public transport network to provide wider access and opportunities. [e. g. Bus Rapid Transit (Lindau, Hidalgo, & Lobo, 2014)]. The Melbourne Telebus which has been operating in this concept for over 30 years is a hybrid falling somewhere between a full dial-a-ride service and fixed-route bus service. (Scott, 2010). With the support of advancements in vehicle tracking, communication and computing, automated demand responsive transport systems (Winter, Cats, Correia, & Arem, 2016) have been implemented recently.

Sri Lanka has a public transport system supported by para-transit services which are plenty in big cities and towns (e.g. Colombo, Galle, and Kandy). However, the sparsely populated areas (e.g. Kilinochchi, Moneragala) have insufficient, inaccessible public transport and a limited number of high-cost para-transit services. Approximately 80% of the population in Sri Lanka is in sparsely populated areas. (Lanka, 2012). And also with the rapid increase in elderly population, the portion of differently-abled population in Sri Lanka [87 per 1000 persons

(Disability in Sri Lanka - the United Nations, 2012)], as well as the increase in dispersed land-use patterns emphasize the necessity of door-to-door effective transport. A more effective and advanced DRT system is an immediate need for Sri Lanka covering a wide spectrum. By adopting the best practices of successful services DRT can have a role to play within the transport sector in sparsely populated areas in Sri Lanka.

Keywords: Demand Responsive Transportation, Public Transport, para-transit, sparse population

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