8 A Decade Following the Malta Bus Reform: Attitudes Towards Service Quality

T. Bajada and M. Attard

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Malta, an island state in the Mediterranean and an EU member since 2004, has an area of 316 km² (National Statistics Office 2017). The archipelago made up of three main islands, two of which are inhabited, has a population of around half a million and with 1,867 persons per km² is one of the densest countries in the EU (National Statistics Office 2019a). Malta is composed of six districts, these being the Northern Harbour, Southern Harbour, North, South Eastern, Western and Gozo and Comino, the latter being two separate islands. Most of the population is concentrated on the main island, Malta, with the urban area stretching from the eastern side of the island covering primarily the Northern Harbour, Southern Harbour, Western and South-Eastern districts. A car-oriented culture predominates in this small island state. Car ownership and associated car use has been increasing steadily with economic growth since the early 1990s (80 % of trips are done by car). In 2018, there were 608 cars per 1,000 inhabitants in Malta, placing it sixth in rank within the EU. Luxembourg was first with 676 cars per 1,000 inhabitants (European Commission 2021). One of the main reasons for this dependence is the priority given to cars in the design of the urban environment. Priority to other modes of transport, such as the bus, is negligible. Bus priority lanes, which were included and shared with other modes of transport such as EVs and motorcycles are often used illegally also by other vehicles and cars. Enforcement is lacking, leading the bus to struggle with car traffic at the detriment of its passengers. The recent road infrastructure projects that took place all over Malta led to the majority of the bus lanes - eight in all - being reduced or removed to cater for the car.

In the Maltese transport system, the modal share for bus is 10 %, while walking is only 2 % and cycling is negligible (Attard 2020). In this past decade, other modes of transport were introduced, in particular shared cars, bicycles, scooters and other micro-mobility options. Figure 8.1 shows the sharp rise of car ownership since the late

1980s, the subsequent decline in public transport patronage until 2010, and the increase in overall mobility following the bus reform. The increase in bus use was also triggered by an increase in the temporary foreign population which migrated to Malta following a rapid increase in GDP and economic activity.

Until 2011, Malta's bus service was operated by around 400 bus owners and operators who formed the Public Transport Association. The bus service was in dire need of change; service quality was low, the fleet was old contributing to air pollution, the fare structure needed a revision, as well as the drivers' conditions to align with EU law on employment. The routes needed to reflect a more integrated service network that removed the burden on Valletta as the primary hub and included several interchanges around Malta (Childs and Sutton 2008). These issues and the relevant proposed changes were all put forward in a Government White Paper in 2008 (Ministry of Infrastructure Transport and Communications 2008). Following nearly three years of discussions with stakeholders, the 2011 bus service reform was set to change the service overnight and with it instil a modal shift from car to bus use. The changes essentially reflected the issues that needed to be addressed, including: a new, air-conditioned bus fleet, new routes, improved working hours for bus drivers, a service delivery bound by a contract and maximum waiting times, amongst others. Further details about the bus reform are available in the works by Attard (2012), Bajada (2015), Bajada and Titheridge (2016), Bajada and Titheridge (2017), and Bajada (2017).

The reformed bus service started operating on the 3rd July 2011 following a competitive tender issued by the Government. The new operator was bound by a ten-year contract that included a detailed service level agreement for the provision of the bus service network in Malta and Gozo. A consortium led by international operator Arriva won the bid, however, this was short-lived because of a series of events and failures in the system delivery, leading the operator to default in many aspects of the contract (Bajada & Titheridge, 2016). Punctuality and service unreliability were reported to be the major issues (Bajada & Titheridge, 2016).

Following the buy-out at a nominal fee of €1 in 2014, the Government nationalised the service and took over both the operations and regulation of public transport. This gave the opportunity to Government to issue once again an expression of interest for operators to run the national service. Only two submissions were received, one being a local consortium of public transport operators and a second one from Spanish Bus Operator ALSA (Autobuses de León). Negotiations were conducted behind closed doors between Government and ALSA who subsequently took over the service in July 2015. The company running the bus service locally is called Malta Public Transport (Malta Public Transport 2021).

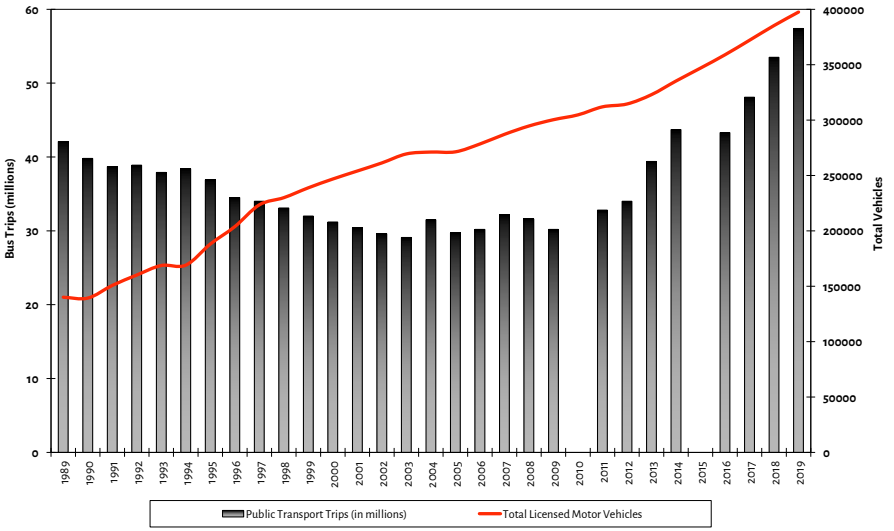

Figure 8.1 Car Ownership and Bus Usage Trends in Malta 1989–2019
Note. Compiled from the National Statistics Office. Public transport data for 2010 and 2015 are missing or incomplete

This chapter aims to evaluate the attitudes of the population toward bus service quality characteristics over the past 10 years and compare them over time. To do this, we use data obtained from Bajada (2017) in which attitude data from both Maltese resident bus users and non-bus users was collected before and after the bus service reform. Another dataset was collected in 2021, which provides the data on attitudes towards the bus service before the reform and today for both bus and non-bus users. The chapter proceeds with a literature review regarding attitudes, bus service quality characteristics, factors that influence bus use, and the evolution of the bus industry over the past decade. The research methodology follows next, after which one finds the results, discussion, and conclusion. We conclude with a reflection on the bus service quality in Malta and associated recommendations for the coming decade.

Literature Review

A sustainable public transport system has a working bus service that serves as its backbone (May, 2004), as in the cases of Singapore (Menon & Kuang, 2015) and Curitiba, Brazil (Goodman, Laube, and Schwenk 2006). Indeed, buses are the most basic form

of public transport and have been described as a representation of democracy through which every segment of society is mobile and can reach goods, services and activities (Peñalosa, 2013; Litman, 2012). When a good bus service is in operation it also contributes to a healthy, sustainable land transport system (Ibrahim 2003).

A good bus service is measured by the quality of service that it delivers. Service quality is defined as a measure of the level of service that is performed, and the extent to which it meets customer expectations (Parasuraman, Zelthami, and Berry 1985). In the bus industry, service quality is an important component that influences bus use and encompasses a number of characteristics (Wall & McDonald, 2007, dell'Olio et al., 2011, Rohani et al., 2013). Bajada (2017) summarises the common bus service quality characteristics explored in research, amongst which accessibility, information, time, customer experience, comfort, security, fare structure and environmental impact (Andreassen, 1995, Balcombe et al., 2004, Paulley et al., 2006, and Joewono & Kubota, 2007). More recent research has focused on accessibility (Lionjanga and Venter 2018), customer experience (Currie and Fournier 2020), and satisfaction (Mokonyama and Venter 2018).

When evaluating bus service quality, research generally focuses on attitudes (e.g.,Beirão & Sarsfield Cabral, 2007). Attitudes are an important measure because they have often been linked with the intention or the actual use of a bus service (de Oña 2020), although positive attitudes do not always mean that people would shift modes to use the bus (Pronello and Camusso 2011). The attitudes towards a service can be influenced by psychological (Choo and Mokhtarian 2004), demographic (Lyons et al., 2008), socio-economic factors (Shiftan, Outwater, and Zhou 2008) and mode use (Anable 2005). Bajada and Titheridge (2017) add hearsay to the list of factors that influence attitudes; it can have an indirect role in influencing attitudes because it does not come from experience. Consequently, similar attitudes can still result in different behaviour. Furthermore, Murray et al. (2010) found that an improved bus service quality is not directly related to improved attitudes towards the service.

Bus use is influenced by factors such as age, gender, and income (Balcombe et al., 2004). Teenagers below the driving age and senior citizens are more likely to use the bus (Enoch et al., 2003 and Goodwin & Lyons, 2010), whilst females are dependent on buses more than males (Simma & Axhausen, 2001 and Enoch et al., 2003). The fact that females use buses more than males is associated with three aspects. The first is psychological, females are able to process and obtain more information than men (Beale and Bonsall, 2007); the second is geographic, they travel shorter distances than men; the third is socio-cultural, they are the main carers in a household with children and, consequently, they travel less (Axisa et al., 2012 and McQuaid & Chen, 2012). Other factors that influence bus use include income, car ownership and availability, parking

availability and policy integration. People with low incomes are more likely to use the bus, which is cheaper (Balcombe et al., 2004 and Beirão & Sarsfield Cabral, 2007). Conversely, the higher a person's income is, the more likely it is that they own a car (Dargay, Gately, and Sommer 2007). Car availability is, however, different from car ownership. In a household, there could be one car but more than one adult with a driver's license. Consequently, if one adult uses the car, the other is left without it and would still need to resort to another means of transport, such as the bus to travel.

Over the years, the bus industry has continued to evolve. We are now seeing technologies applied to efficient payment systems for seamless interchanging (Osemwegie et al., 2017) and the further integration of multi-modal systems including the use of buses through mobility as a service (MaaS), and service automation (Hensher, 2017). Furthermore, Demand Responsive Transport using mobile applications is growing in many cities (Oh et al., 2020). All these developments aim to increase patronage and concurrently, trying to maintain and improving service quality. These are, however, difficult times for the bus industry because the various lockdowns and mobility restrictions brought about by the COVID-19 pandemic has meant less patronage and less revenues for operators worldwide (Orro et al., 2020 and Jenelius & Cebecauer, 2020). Hence, the bus industry has had to reinvent itself in response to the pandemic, and at the same time, prepare for the post-pandemic future.

Method

The research takes an empirical approach and uses three datasets. Consequently, this work is a cross-sectional study of attitudes towards the bus service, and although the participants are different, attitudes of users and non-users are measured and analysed across time.

The first dataset originates from a questionnaire survey collected in May 2011, just two months before the bus reform in Malta. The second dataset is collected in July 2012, one year after the reform. For these two datasets, the sampling population was obtained from the 2007 Electoral Register (Department of Information 2007). A stratified random sampling strategy was used and participants were randomly selected from the six districts of Malta and Gozo. In this manner, the sample population was representative of the enumerated population distribution by district (Bajada, 2015). The questionnaires were conducted via telephone to a target population of 385. In the end, four hundred questionnaires were collected in each year. In 2011, 390 of these questionnaires were valid and in 2012, 398 were suitable for analysis.

Table 8.1 Data Collected from the Three Datasets

VARIABLE DESCRIPTION	VARIABLE	MEASURE	AVAILABLE IN THE QUESTIONNAIRES OF 2011 AND 2012	AVAILABLE IN THE QUESTIONNAIRE OF 2021
Socio-Demographic	Gender	Nominal	x	X
	Age	Nominal	x	X
	Occupation	Nominal	x	X
	Nationality	Nominal	x	X
Geographic	Locality of residence	Nominal	x	X
	Locality travelled to mostly	Nominal	x	X
	Ownership of driving license	Nominal	-	X
Mobility	Vehicle ownership	Nominal	-	X
	Mode of transport used mostly	Nominal	x	X
	Usage of the bus service before the reform (2011)	Nominal	-	X
Bus service related	Rating of the service quality characteristics before the reform	Ordinal	x	X
	Usage of the current bus service	Nominal	-	X
	Rating of the service quality of the current bus service	Ordinal	-	X

Note. Compiled by authors

The third dataset was collected between May and June 2021, a decade after the reform. The questionnaire survey was held online, using snowball sampling. In this case, key persons were identified and asked to forward the questionnaire to people they knew. The target population sample was 385, which was rounded up to 400; in all 424 valid responses were recorded. In total, this study will analyse data from 1,212 participants.

The 2021 questionnaire applied similar questions to the survey of 2011 and 2012. The consistency between questionnaires would allow for an easier analysis. Table 8.1 provides the list of questions. The variables are grouped by the general description of the variables e.g., gender is under demographic. The measures indicate that only two variables were ordinal because they were the ratings assigned to the attitudes towards the bus service; the other variables were nominal.

In the datasets for 2011 and 2012 the assigned Likert Scale was from one to five, where one was the worst and five the best, an additional number, six was assigned to the option 'Don't know'. The middle number on the scale, three, meant that the participant was unsure of the service quality characteristic.

Table 8.2 An Explanation of the Key Used in the Scatter Graphs

DATASET	YEAR COLLECTED	LABEL	EXPLANATION
First dataset	(May) 2011	2010	Participants would refer to the old bus service, referring to the previous year, including 2010
Second dataset	(June/July) 2012	2012	This is the dataset that was collected exactly one year after the bus service reform
Third dataset	(May/June) 2021	2020	The year 2021 was not complete at the time of the data collection, so 2020 is used as a reference year here. Moreover, one question had asked the participants to state how many times did they use the bus in the previous year, which was 2020.

Note. Compiled by authors

In the case of the dataset for 2021, the Likert Scale was the same from one to five, the numbers meaning the same as those in the older datasets. In this new dataset, the participants also had the option 'Don't know' (six) and another option 'I don't remember the old bus service', which was coded with a number seven. The reason for including 'Don't know' is that the participants included both bus and non-bus users, and the attitudes of both were collected. The option 'I don't remember the old bus service' was particularly targeted to foreigners who moved to Malta after 2011.

Due to the fact that the first two datasets were collected as part of a PhD study, the ethics procedure followed that of the UCL Research Ethics Committee. The research was exempt from acquiring explicit approval. The third dataset was carried out by the Institute for Climate Change and Sustainable Development at the University of Malta (UM); hence, the UM Research Ethics Committee procedure was applied. Following a self-assessment, it transpired that no specific approval was required. In both cases, it was sufficient to keep the participants anonymous by assigning a unique identifier.

The analytical methodology involved descriptive statistics of the socio-demographic, geographic, mobility and bus service related variables. The focus of the analysis was mainly on the attitude ratings of the combined bus and non-bus users. Scatter graphs were used to show the attitude ratings on the eight service quality characteristics as identified in the literature review (accessibility, information, time, fare, customer experience, comfort, security, and impact on the environment). Each scatter graph is dedicated to the service quality characteristic and shows the attitudes of the datasets labeled as indicated in Table 8.2. The Table explains the keys used in the scatter graphs.

Results

Table 8.3 illustrates the demographic characteristics of the survey participants in comparison to the national statistics. It is worth noting that at a national level, the Maltese population has an equal balance of genders. Generally, the questionnaire participants included a higher percentage of females with a striking difference in the post-reform dataset (2012). The age groups collected for 2020 were slightly different from those collected in the first two datasets. This is possibly due to the different method of data collection. With regard to age, the national data did not change with regard to percentages per cohort (Table 8.3).

In the datasets, the groups for the years 2010 and 2020 were very similar for the 30–49 years age groups, which included the major percentage of participants (Table 8.3). The year 2012 shows a difference in the age group that participated the most, which was 36 % of the 60+ age group in this case (Table 8.3).

The category 'other' groups together elementary occupations, craft and related, and unemployed. The reason for this was that the percentages were relatively small when compared to the other categories (Table 8.3). For the unemployed, it is worth noting that the unemployment decreased by 1 % from 6 % to 5 % over the decade. The percentages from the questionnaires tally with the national data 6 % (2011), 4 % (2012); only the 2020 data shows a drastic difference from the national data – 0.5 % (Table 8.3).

Unsurprisingly, given that in 2012, most of the participants were 60+, most of them were retired (25 %) and housekeepers (33 %) (Table 8.3). Professionals always formed part of a large percentage of the occupation category (even in the case of the national data), particularly for the 2020 dataset (71 %) (Table 8.3).

The majority of the Maltese population live in the Northern Harbour and Southern Harbour districts, and most employment and educational facilities are located there. It is unsurprising therefore, that most of the origin and destination trips of the participants occur within these two districts. This was the case in all the datasets, the district of origin was mostly the Northern Harbour (30 % in 2010 and 2020, and 31 % in 2012). The Northern Harbour district was the most travelled destination in 2010 and 2020, 33 % and 44 %, respectively; in 2012, the destination changed to the Southern Harbour district 38 %.

Table 8.3 Demographic Characteristics of the Questionnaire Participants in Comparison to the National Statistics

		NATIONAL DATA CENSUS (2011) (POPULATION = 416,055) %	PRE-BUS SERVICE REFORM (2010) (N=390) %	POST-BUS SERVICE REFORM (2012) (N=398) %		NATIONAL DATA (POPULATION = 460,297*) %	BUS SERVICE IN OPERATION (2020) (N=424) %
Gender	Male	50	45	33	Male	50*	44
	Female	50	55	67	Female	50*	56
	Non-binary	n/a	n/a	n/a	Non-binary	n/a	1
Age Groups	11–20	13	9	7			
	21–30	15	16	8	18–29	17*	18
	31–40	13	22	14	30–39	15*	29
	41–50	13	21	17	40–49	13*	33
	51–60	14	9	17	50–59	13*	12
	60+	21	23	36	60+	25*	8
Occupation	Housekeeper	n/a	28	33	Housekeeper	n/a	2
	Retired	9	12	25	Retired	14**	4
	Professional	10	12	12	Professional	46a****	71
	Service worker	2	12	8	Service worker	20***	2
	Student	11	11	6	Student	6****	8
	Clerk	2	6	6	Clerk	11	9
	Other	13	21	10	Other	22	3

*NSO (2019a), **NSO (2019b), ***NSO (2020), ****NSO (2021)
[a]includes Professionals (21 %) + Managers (11 %) + Technicians & Associate Professionals (14 %)

Note. Percentages have been rounded to the nearest whole number. Professional includes: Professionals, Legislators & Senior Officials, Technicians & Associate Professionals. Other includes: Elementary occupation, craft and related and unemployed. Compiled by authors

The mode choice of the 2010 and 2012 datasets was divided namely by bus, car and other. The 2020 dataset was divided between bus, car, motorbike, personal bicycle/e-bike, walk and other. In all cases, the car is the dominant mode of transport (2010:49 %, 2012:65 %, 2020:68 %), which is expected in a car-oriented society. The bus is the second mostly used mode of transport (2011:31 %, 2012:33 %, 2021:10 %). For 2020, this was equivalent to walking (10 %). In the datasets representing the years 2010 and 2012, the category 'other' modes of transport included motorbike, walking, cycling and ferry. The shared percentage in mobility for the category 'other' was 20 % in 2010 and 3 % in 2012. In 2020, 2 % used the motorbike and 7 % the personal bike/e-bike. The other modes of transport in the 2020 dataset referred to the ferry service and micro-mobility; 3 % of the participants

used other modes of transport. Furthermore, in 2020, 92 % of the participants had a driving license, 88 % owned a vehicle, and 86 % used the bus service before the reform. Interestingly, 47 % of the participants did not use the bus service in 2020/2021.

The attitudes of the participants are shown in Figure 8.2. The dataset referring to the bus service before the reform (2010) had quite negative remarks about the service quality (Figure 8.2). Similarly, the attitudes towards the existing bus service (year 2020) are relatively negative. Even when the participants rated the best (5) e.g., for 'accessibility', the percentage was low (13 %). Information and comfort are the only two service quality characteristics that were rated 4 (nearly the best), with 39 % and 40 %, respectively. The dataset that showed the most positive attitudes was the one collected in 2012. This was also the case for 'time', which was known to be a major problem with the service, was rated the best (5) by 13 % of the participants.

Discussion

The pandemic has surely left a negative impact on bus services worldwide (Orro et al., 2020 and Jenelius & Cebecauer, 2020). This is evident also in Malta with the 2020 survey, conducted as part of this study, which showed 47 % of the participants not using the bus during that year. Literature shows that the higher the income among a population, the more cars they own and drive (Dargay et al., 2007), as was the case from the findings in this research – 71 % of the participants were professionals, therefore, having higher income than the other occupations such as students and clerks.

When compared over time, the attitudes measured in this research show that the bus service quality improved one year after the reform. This finding resonates with the literature, which states that attitudes are influenced by several factors that are not directly related to service quality characteristics, including demographic, socio-economic factors and mode use (Anable, 2005; Lyons et al., 2008; Shiftan et al., 2008). In fact, the 2012 dataset had more elderly and retired participants, as well as more females than any other category. These were also the groups that tended to use the bus most, which also conforms to the literature (Enoch et al., 2003, and Goodwin & Lyons, 2010). Consequently, these attitudes were based on actual experience and use of the bus, making them more realistic than the attitudes of car users that might be based on perception and hearsay (Bajada & Titheridge 2017). The 2020 survey participants were mostly professionals and car users, furthermore, 47 % of the participants did not use the bus. From this we have to conclude that the attitude ratings of the 2020 participants were primarily based on perception and hearsay, rather than experience.

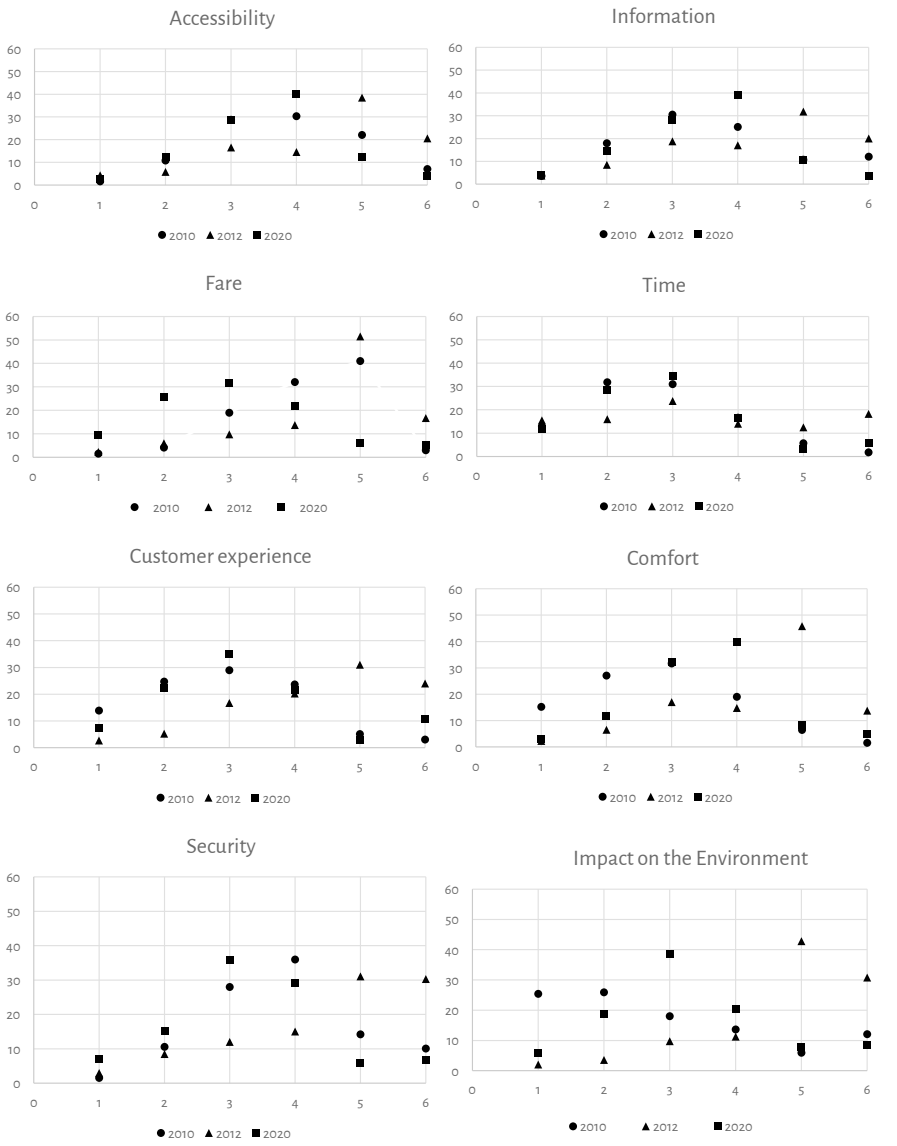

Figure 8.2 Scatter Graphs Showing the Attitudes of the Participants Towards the Bus Service Quality Characteristics Over Time
Note. Compiled by authors

Conclusion and Recommendation

This chapter focuses on the bus service in Malta, a service that has been in direct competition with the car for more than four decades. This research refers particularly to the past decade, a time during which several changes were implemented. These included a major reform in the sector, followed by a government buy-out from the operator who failed to abide by the service level agreement. This was followed by service nationalisation for a year, after which a new operator was awarded the contract of operation following a public expression of interest. Malta Public Transport, the new operator, has now been delivering the service since 2015 (six years).

The fact that the bus service reform was much needed is undeniable. The old bus service had several flaws that were improved following the reform. However, the much-enhanced service, even a decade later still needs further improvement. It is true that the attitude ratings are at times influenced by non-bus users, however, it is necessary to also identify these attitudes if the aim is to improve a bus service that might attract potential users. Shifting modes from single user vehicles that run on fossil fuels to sustainable modes of transport is now a must, given the 'code red' warning issued by the IPCC in August 2021. Consequently, focusing on providing a good quality and attractive bus service should be a priority even more so because it needs to be considered as the backbone of an integrated and sustainable public transport system.

This chapter has highlighted the challenges for the bus service in Malta, and a set of recommendations is being put forward to further improve it:

Shift the Maltese car-oriented culture: The car-oriented culture in Malta needs to change and this can only happen with the participation of all stakeholders (the general population, operators, regulators, government and politicians).

Keep consistent with service quality improvements and ensure proper enforcement: The reform of key bus service characteristics such as the quality of vehicles and the coverage and scheduling of routes are all indeed good, however, the operation needs to be further supported with proper enforcement of traffic rules and priority over private cars on the road. Reliability, efficiency, and a concern for the environment need to be reflected upon in a more sustainable service quality.

Ensure that monitoring and benchmarking are implemented and maintained: Monitoring and benchmarking are imperative to gauging the bus service quality. It is also evident that the issues with bus service delivery are not solely a responsibility of the operator, but have to also include a concerted effort by the authorities to prioritise the bus service and its quality.

These recommendations are critical for a successful bus service operation over the next five to ten years. Success for a bus service means having a reliable service that retains and attracts patrons, especially private car users. A successful bus service should score high in all its service quality characteristics. On the other hand, there should be deterrents to the use of less sustainable modes of transport.

Additionally, two key issues which might influence the bus use now and in future are the current and future pandemic events and climate change. The pandemic brought about a fear of contagion from public transport use and thus affected patronage worldwide. Proper aeration and cleanliness on board the vehicles and bus stops, together with social distancing measures have shown that contagion can be controlled. Furthermore, the fact that we are in a climate emergency means that buses should be promoted as sustainable, environmentally friendly mass transport modes that serve as alternatives to cars or any other single-user polluting vehicle.

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