



Research article

Modelling loyalty and behavioural change intentions of busway passengers: A case study of Brisbane, Australia

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ABSTRACT

Understanding public transport passengers' loyalty has received growing research attention, given its potential to inform the long-term market management of a public transport service. However, the nature of public transport passengers' loyalty is arguably yet to be fully understood concerning its relationship to passengers' captivity and attitudes towards private car use, and their intentions to change their modal use. Hence questions remain largely unexplored that: Is public transport passengers' loyalty a result of a preferred or constrained choice? And does their loyalty have the potential to encourage more sustainable transport modal use patterns? Drawing on the busway network in Brisbane, Australia, as the case study, this paper aims to broaden the research on public transport passengers' loyalty by addressing these questions. Through developing a series of linear regression models, our findings highlight: (1) busway passengers were influenced by preferential (the experience of riding the busway service), moral (pro-environmental concerns) and constraint (cost of busway and car use) considerations; and (2) the potential of loyalty to alleviate busway passengers' intentions to shift to private car use for their trip-making. Through these findings, a series of implications are developed with the potential for the improvement of busway service and travel demand management to encourage more sustainable transport especially within a highly motorised context. Future research is encouraged to provide more evidence concerning passenger loyalty and their public transport use.

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1. Introduction

With the global rapid rise in private motorised transport over the past six decades, sustainable transport alternatives such as public transport has been struggling to compete with private cars to fulfil individual travel needs [1]. This has resulted in a number of serious urban problems, including congestion, environmental pollution and social inequity, and threatens the survival of public transport [1,2]. It has been highlighted that transport policies that seek to manage people's travel demand and behaviour, particularly those encouraging public transport use while reducing car dependency, have the greatest potential to encourage sustainable transport [3,4].

Understanding public transport passengers' loyalty (or the intention or willingness to use a public transport service) as a means to inform the

long-term marketing of public transport services has received growing research attention [5,6]. It has been argued that loyal passengers will continue using a public transport service without seeking or shifting to alternative options [7,8]. Hence attaining and sustaining passenger loyalty becomes an effective strategy in gaining long-term financial advantage especially within the context of a highly competitive public transport service market [8]. Recent studies which investigated public transport passengers' loyalty and the underpinning attitudinal mechanisms revealed that a variety of attitudinal factors including passengers' previous service experience, satisfaction, and pro-environment responsibilities may have significant influence on passenger loyalty to a public transport service, providing evidence basis for maintaining and enhancing patronage [9–11].

Despite insights obtained from previous research, the nature of public transport passengers' loyalty is arguably yet to be fully understood, particularly concerning its relationship to passengers' captivity and attitudes towards private car use (e.g., utility, comfort, cost), and their intentions to change their modal use, in particular, increase or decrease their public transport or private car use. These relationships bear critical importance to the improvement of public transport management and promoting sustainable transport, as private cars has continually served as a key barrier towards promoting public transport use in an

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increasingly car-dependent society [12–14]. Despite their apparent significance, scholarly evidence on these issues has been sporadic. To bridge these gaps, this paper addresses two questions: Is public transport passengers' loyalty a result of a preferred or constrained choice? And does their loyalty have the potential to encourage more sustainable transport modal use patterns? We assume that by doing so, this paper will contribute to a new evidence base that can be obtained to better guide future transport policy targeted at public transport passengers' loyalty within a highly motorised context.

The remainder of the paper is structured as follows: Section 2 provides a brief overview of the related literature and highlights the key knowledge gaps, before proposing research hypotheses. Section 3 introduces the study context and data used. Section 4 presents the results from a modelling exercise of busway passengers' loyalty and related attitudinal factors. Section 5 discusses the key findings and implications for transport policy-making, limitations and possible future research, before drawing some tentative conclusions in Section 6.

2. Research background

Loyalty (or a re-patronising behavioural intention) is defined as '*a deeply held commitment to rebuy or repatronize a preferred product/service consistently in the future*' (Oliver [16], Page 34). The concept has been widely applied in service marketing studies as an important indicator of customers' re-purchasing behaviour within various service contexts [15]. The 'loyalty' concept emphasises on the preferential component of customer behaviour, which has the potential to distinguish regular customers who are attitudinally loyal towards a service from those who are spuriously loyal, i.e., re-patronising a service due to conditional constraints, such as lack of alternative options, socio-economic status, instead of attitudinal preference [16–18]. Hence, effectively measuring and managing customer loyalty would allow service providers to employ a more targeted approach to marketing management, thereby better securing and sustaining customers against their competitors.

The concept of loyalty has also been introduced in transport research to better the market of public transport users [5,6,8]. Traditionally public transport providers focused on objective indicators such as regularity (i.e., use a transport mode on a regular or irregular basis) and captivity (i.e., with or without more than one travel option at their disposal) of passengers to identify 'loyal' passengers. It was assumed that passengers who use a public transport service repeatedly and have no other transport options (particularly cars) are loyal, e.g., [19,20,21]. However, such an approach to understand a public transport market might be oversimplified with the potential to generate misleading implications for public transport providers to maintain their market share [5,6]. For example, some passengers may use public transport for their daily trip-making due to certain situational constraints (e.g., not owning a car or lack of parking at the destination), and are likely to shift modal use due to accumulating unpleasant experiences of riding the public transport or experiencing change of personal circumstances (e.g., purchasing a car) [6,22,23]. Following these arguments, some researchers focused on examining the attitudinal aspect of passenger loyalty. For example, Foote [5] examined the loyalty of passengers within the public transport (rail and bus) system of Chicago in relation to their public transport use characteristics, highlighting that infrequent public transport passengers were more loyal than their frequent counterparts with higher willingness to continue using a public transport service. Similar findings were reported in a Canadian study by Jacques et al. [24] that found public transport passenger with similar trip patterns showed different levels of satisfaction. In another related study, Anable [23] identified frequent yet reluctant bus passengers who used bus services due to situational restraints such as financial or healthy issues instead of holding favourable attitudes towards the local bus service.

An increasing number of recent studies have also investigated the underpinning attitudinal mechanisms of public transport passengers' loyalty within various public transport contexts, including coach service [9,25], bus public transport [10,26], metro [8,10], and paratransit [27]. In accordance with the service marketing literature, these studies have shown that factors that captured passengers' service experience, including satisfaction, perceived service quality and value, importantly affect public transport passengers' loyalty. Significant influence was found for some other service-related factors including switching costs [25] and involvement [8] as well. Apart from focusing on service-related factors, quite a few studies also drew on socio- and environment psychological theories, particularly the theory of planned behaviour [28] and norm-activation model [29], to investigate the effects of other attitudinal factors such as environmental concerns, social norm, on public transport passengers' loyalty, e.g., [30,31,32]. Their findings indicated that these attitudinal variables were also able to increase public transport passengers' loyalty, given the relevance of individual's public transport use to a broader to social and ecological context (e.g., less air pollution compared to private motorised transport).

Despite the insights derived from previous studies, the current understanding of public transport passengers' loyalty has arguably been limited concerning its relationships to passengers' considerations of private car use and intentions to change modal use. As shown in previous research [33–36], individual's choice and use of a given transport mode are influenced by one's considerations regarding the availability and utility of a set of travel options. Such considerations of alternatives may in turn impose potential effects on one's decision and consequently, loyalty of using a public transport service. For example, a commuter might become more loyal towards a public transport service due to less attractive alternative services, e.g., [7]. Among other travel options, private cars should be paid with particular attention, as it has been persistently shown to be a key barrier for promoting public transport use globally [12–14]. Given this, investigating public transport passengers' loyalty in relation to their captivity and attitudes towards private car use has the potential to further clarify whether their loyalty is a preferred choice or a constrained one particularly in face of car dependency. Following this question, it appears reasonable to also ask whether attaining public transport passengers' loyalty has the potential to encourage more sustainable modal use patterns, or solely leveraging transportation service competition.

The issues discussed above clearly relate to the improvement of public transport management and promoting more sustainable urban transport especially within a highly motorised context. Few studies, e.g., [5], have examined the effects of captivity of private car use on public transport passengers' loyalty. And none to our knowledge have investigated the effects of loyalty on public transport passengers' behavioural change intentions concerning their modal use. Bridging these gaps, therefore, underpins the impetus of this study. Before moving onto the next section, one additional point and research hypotheses need to be clarified. While in the service marketing literature, loyalty has been argued to entail a variety of attitudinal aspects including positive recommendation via good word-of-mouth, identification with the service provider [15,37], in this paper, we employed a narrower definition. Loyalty was only referred to passengers' willingness to continue using a public transport service, given its apparent relevance to modal choice behaviour. Similarly, behavioural change intentions of public transport passenger were concerned with their willingness to shift to private car use and increase public transport use. Based on these propositions, two main hypotheses were proposed and tested in the empirical examination:

- Public transport passengers' captivity of and negative attitudes towards private car use will encourage their loyalty towards the public transport service;
- Public transport passengers' loyalty towards a public transport service

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