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Examining values and influences affecting public expectations of future urban mobility: A Singapore case study

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ABSTRACT

This paper presents a qualitative study of two focus group discussions on Singapore's state of current and future urban mobility. The findings of this study, which applied a grounded theory approach of analysis, led to the development of a theoretical framework that displays the dynamic interrelationships between individuals' external and internal influences, and their roles in shaping individuals' travel mode behaviors and future mobility expectations. This framework also shows the complex process by which individuals evoke value negotiations and adjustments before arriving at their desirable choice of travel mode. Coping mechanisms or strategies are also innovated by commuters when the available mobility services are not perceived to meet their value expectations and needs for different commuting purposes. The variables constituting the external and internal influences of our theoretical model remind us that a "typical" transport user should be ideally considered and defined in light of some fundamental parameters. The findings of this study are expected to benefit policymakers in identifying and navigating potential barriers and drivers of change that could support the formulation of future transport policies and the adoption of transport technologies.

1. Introduction

There has been a growing interest in the social aspects of travel behavior in transportation research (Carrasco and Farber, 2014; Dugundji et al., 2008). Evidence from research now shows that social and cultural factors, such as interpersonal interactions, individuals' values and perceptions of traveling for work, recreation, and school, and their past and present commuting encounters, could influence travel behavior and choices (Beirão and Sarsfield Cabral, 2007; Jensen, 1999; Mote and Whitestone, 2011; Raveau et al., 2014). Location-specific studies have correspondingly emerged to highlight how unique social and cultural factors influence travel behavior (see e.g. Kole and MacDonald, 2014; Raveau et al., 2014; Wilton et al., 2011). Despite the increased availability of studies examining how socio-cultural factors induce or predict travel behaviors, few have sought to examine how these factors influence future travel demands, especially those across longer time horizons (e.g., 25 or 50 years) that may serve policy planning purposes. Van Acker et al. (2016) also suggest that individuals' experiences and lifestyle have long-term effects on travel demand, which could impede the transition toward environmentally sustainable transport in the future. The

transition to sustainable mobility requires the involvement of multiple actors including the public (Banister, 2008). A shift to a multi-stakeholders participatory approach to develop visions of the future is increasingly evident in foresight research (see e.g. Glenn, 2015; Spickermann et al., 2014). Foresight and public participation are amongst two of the core characteristics of anticipatory governance—a critical approach for informing forward-looking policy decisions (Bezold, 2006; Guston, 2014), including those directed toward the future of urban mobility. Both public participation and foresight thus form the methodological principles of this study.

Given the above gaps in the current scholarship and the growing recognition of the impact of social influences on travel behavior, this study seeks to explore different social influences and their sources for eliciting key drivers of change, which could, in turn, impact the future of urban mobility in Singapore. More specifically, the objective of the study is to understand user's behavior, concerns, and ideals, related to mobility service now and as it applies to the future. This study engaged the participation of a sample of public commuters in two focus group discussions to elicit their experiences and views of the state of current mobility in Singapore and their future mobility aspirations. The outcome

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of the study provides the input to the development of scenario drivers (or drivers of change) for “Future of Urban Mobility” participatory scenario planning workshop held in March 2016. However, we expect our findings to bear relevance to urban contexts that are comparable to Singapore’s urban makeup (e.g. population density, public transport provision). Our study and its findings are also likely to appeal to researchers whose cities of interest are advancing toward providing or improving greater public transport accessibility/availability and the state of active mobility.

The remainder of the paper is organized as follows. First, we introduce various theories and empirical studies of social influences on urban transport that have been conducted thus far. Next, we explain our study’s method and analytical strategy and subsequently, present our theoretical framework derived from grounded theory analysis. We conclude by discussing the significance and the potential impact of this study.

2. Background

2.1. Social influences on the future of urban transport

Studies on the future of transport to inform policy decisions often depend on demand forecasting and choice modeling (Cass and Faulconbridge, 2016). However, modeling strategies tend to reduce events in the real world to variables that are perceived to affect behavior (Guiver, 2007). Furthermore, such techniques, which rely on past data, assume that these same forces will continue to prevail or exert similar effects in the future. To mitigate this methodological limitation, qualitative research can be used for *understanding* individuals’ real-world experiences over merely explaining individuals’ (travel) behaviors from certain assumed variables of influencing factors such as social influences. At present, no known qualitative or quantitative study has been conducted (or at least published) in our subject of investigation, which is to explore and understand the various conditions that influence commuter’s motivations, choice of travel mode, and their travel aspirations. Our qualitative study is expected to be a useful antecedent to quantitative studies by allowing quantitative researchers to hone down to factors that they may find important to include in statistical models. In this paper, *social¹ influences* imply the norms, values, as well as interactions between people and their immediate environments (i.e. the built and cultural environments) that mold the way they “construct” or understand, think, and ultimately travel (i.e., their attitudes, perceptions, preferences, and travel behavior) (Beirão and Sarsfield Cabral, 2007; Guiver, 2007; Jensen, 1999; Lyons, 2004; Maness et al., 2015). For instance, people’s inclinations for a specific travel mode, such as private car, have its roots in the meanings, which individuals ascribe to this mode of traveling (e.g., sense of freedom, control, status, and power), that transcends instrumental rationalities (Guiver, 2007; Steg, 2005). This reflects the increasing recognition of social nuances that are inherent in travel behavior (Urry, 2003).

Recent developments in the study of social influences on transport incorporate connections with future-oriented expectations toward mobility systems. For example, Baslington’s (2008) study links children upbringing with their attitudes toward a specific travel mode in the future. She suggests that *social learning theory*, originally from Bandura (1977), would play a significant role in shaping one’s future expectations, values, and beliefs toward particular travel modes. Even for adults, social

factors can influence their future intentions of travel mode choices (Beirão and Sarsfield Cabral, 2007). Individuals rely on social cues to make decisions related to mobility, but the process of arriving at a decision is complex. Preferences, constraints, and beliefs of individuals, so-called factors of social interactions, serve as the foundation for individuals’ decisions (Maness et al., 2015). These factors are intrinsic and continuously being challenged and modified by social influences such as others’ actions, behavior, and attitudes (Maness et al., 2015; Wilton et al., 2011). The outcomes are the observable travel behavior, route choices, and travel mode choices.

The importance of intrinsic factors such as social and personal values embodied by individuals suggest that “manipulating” individual commuter’s decisions could be possible using psychological type of interventions (Fujii et al., 2001; Graham-Rowe et al., 2011), as opposed to structural interventions. Building on this convention, we would express these two characteristics, psychological and structural, more broadly. Psychological interventions are designed to address the perception, beliefs, values and attitudes of individuals, and in doing so, influence one’s preference to use certain travel modes over others. Psychological interventions necessitate little or no modification to the external environment in contrast to structural interventions. Structural interventions, on the other hand, involve changing the external environment, be it physical, social or legislative structures, to alter users’ travel behaviors, for example, by increasing or decreasing the attractiveness of one travel mode over another.

2.2. Study context: Singapore

This study is based on the Singapore context to discover individuals’ perceptions of current mobility services and their aspirations for the future of mobility in the country. Singapore is a densely populated city-state and is often regarded as an example of a world-class urban transportation system with efficient public bus and mass rapid rail transit systems (Haque et al., 2013; Zahraei et al., 2016). This efficient transport system is now threatened by various observed events. For instance, evidence shows signs of greater traffic congestion and private car usage in the small city-state, as an effect of the rising affluence of its people and increasing population (Haque et al., 2013). The increasing population alone would increase demand for mobility in the future. As the demand for mobility is expected to increase, Singapore’s transport agency, also known as the Land and Transport Authority (LTA), emphasizes the need to encourage public transport use among its people. Already, LTA has planned and acted to double the rail network (locally known as Mass Rapid Transit or MRT) by 2030 and improved existing public bus services, such as assigning more dedicated bus lanes to ease bus traveling in congested areas (LTA, 2013). In addition to improving public transport, Singapore has taken various steps to reduce road congestions for several decades. What started out as a manual road pricing, also known as Area Licensing Scheme in the past, has evolved into a state-of-the-art Electronic Road Pricing (ERP) in 1998 (Goh, 2002; Phang and Toh, 1997). The ERP system imposes fees on drivers traveling to the busy parts of the city to reduce traffic congestions. Besides imposing restrictions on the road usage, LTA has also implemented other strategies such as diverting road traffic away from congested areas through the use of the Expressway Monitoring Advisory System (EMAS), and guiding drivers the nearest available parking lots based on the information provided by Parking Guidance System (PGS), thereby reducing unnecessary cruising on the roads (LTA, 2013). Throughout the development of the Land Transport Master Plan 2013, LTA has sought public engagement through surveys, online consultation and participation in focus group discussions; more than 400 members of the public participated in the focus group discussions (LTA, 2013).

The idea of use of focus group discussions to inform long-range planning was dated back to the 50’s at RAND Corporation in the United States. Researchers at RAND understood that forecasting techniques could only provide modest predictions over the short-term but

¹ The concept “social” as used in this paper concerns anything that is a product of our culture or social environment, which may be materialized in the form of physical objects, actions, or certain ideas/beliefs. Socialization or the social learning process enabled by interactions and/or observations of how others in society behave, are key processes by which members of a society acquire certain values, attitudes, and preferences. On the other hand, individual actors in society are not passive recipients of societal values and norms. They also actively interpret these societally transmitted messages by making meaning out of their personal experiences, which demonstrates their agentic potential and sense of ownership toward certain values. This explains the differences in value priorities, travel mode choices, and meanings discussed by our study’s participants, and which qualitative research designs are well-designed to elicit.

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