



Exploring the psychosocial factors associated with public transportation usage and examining the “gendered” difference



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ABSTRACT

Understanding the psychosocial factors that influence public transportation usage behavior can provide important implications for transport policies aimed at managing travelers' mobility behavior. In the current study, a four-step analysis approach is developed to investigate the psychosocial determinants of public transportation usage behavior within the background of a small-sized Chinese city. The results suggest that public transportation specific factors including attitude, subjective norm, satisfaction, habit, and behavioral intention, as well as perceived car control, all contribute to explaining the target choice behavior. Behavioral intention is confirmed to be the most critical factor that influences public transportation usage behavior, while habit and satisfaction are important mediators in the process defined by the theory of planned behavior. Moreover, an examination upon “gendered” difference reflects that effects of both perceived car control and satisfaction vary distinctively across men and women groups, which demonstrates the necessity of demand management differentiation.

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1. Introduction

Due to the rapid economic development, the number of private vehicles in a majority of cities in China is increasing at an unprecedented speed. This issue results in serious and negative situations, including the worsening traffic congestion and environment pollution (Li et al., 2010), increasing waste of time and money on road. As an alternative mode to private vehicle, public transportation is generally recognized as a “green” transport mode due to its larger capacity. It is expected that increasing public transportation ridership could prevent the current situations from becoming worse, and further contribute to the sustainable development of urban areas. Thus, a great number of cities in China (e.g., Quanzhou, Shaoxing, and Liaoyang) have begun to pay attention to the improvement of the public transportation system. In order to promote the ridership of public transportation, it is essential to identify the psychosocial factors that influence the usage behavior. From the perspective of policy establishment, having a full knowledge of factors underlying the behavioral “black-box” of decision-making process associated with public transportation usage can help policy makers design market-oriented management strategies (Skaburskis, 1999) to effectively lead individuals' mobility behavior to become more sustainable.

The theory of planned behavior (TPB, Ajzen, 1988, 1991) has been extensively applied to examine the factors influencing behavior. It confirms that an individual's future behavior is directly triggered by his/her behavioral intention, which is a function of attitude, perceived behavioral control, and subjective norm (Ajzen and Fishbein, 1980). According to the TPB, transport mode usage behavior is a deliberate process, which is reasoned, deliberately controlled, and planned (Chen and

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Chao, 2011). In recent decades, habit, as an automatic link between the goal and a specific behavior, has been argued to play an important role in explaining behavior e.g., Donald et al. (2014) and Domarchi et al. (2008). In other words, for transport mode usage behavior that is repetitively and frequently performed, the decision to use specific mode is determined, to a larger extent, by habit (Verplanken et al., 2008). Apart from habit, satisfaction, an overall affective evaluation that is perceived as the discrepancy between prior expectations and perceived performance after consumption (Oliver, 1980, 1999), has also been extensively identified as a critical determinant of favorable behavioral intention. Consequently, travelers who have a higher level of satisfaction with public transportation service are more likely to continue to use this service.

On the other hand, almost all of existing studies toward the psychosocial factors associated with public transportation usage behavior are conducted toward large-size metropolitan areas in developed countries (e.g., Currie and Wallis, 2008). Few have considered small-medium sized cities in developing countries, within which the behavior and the underlying motivations might be different. Moreover, substantial studies have suggested that public transportation usage behavior of different gender groups is impacted differently by the psychosocial factors due to their specific desire and activity-pattern. It is important to fully recognize and understand how this difference works, based on which targeted policies can be developed to maximize their effects.

Taking the above arguments into consideration, the main objective is to provide an integrated framework utilizing a group of psychosocial factors to explain the public transportation usage behavior, with a particular focus on the “gendered” difference, which is to be achieved within the background of one small-sized Chinese city. Built upon the TPB, a group of factors including public transportation attitude, subjective norm, perceived car control, satisfaction, habit, and intention, are jointly considered to model the complex interactions between them, as well as their influence on the target usage behavior. As an additional contribution, this integrated model is empirically compared between men and women. Specifically speaking, a four-step approach is utilized, in which the exploratory factor analysis (EFA) is first conducted to assess the internal consistency regarding indicators designed for specific factor. Second, a confirmatory factor analysis (CFA) is established to evaluate the reliability and validity of the measurement model. Then, the structural equation model (SEM) is developed to identify the causal effects of concerned psychosocial factors on public transportation usage behavior. Finally, a multi-group SEM analysis is used to examine the difference across gender.

The remainder of this paper is organized as follows. In Section 2, a review about the related theory and psychosocial factors is presented, based on which the theoretical model framework is developed. Section 3 describes the questionnaire, the differences of mobility behavior between men and women, as well as the psychosocial factors. Then, the four-step analyzing approach and results of each step are introduced and empirically explained in great detail in Section 4. The final section summarizes the findings, implications, and provides directions for future research.

2. Theoretical background

In what follows, existing studies related to the concerned factors and their potential effects will be reviewed to provide a conceptual basis for later analysis.

2.1. Related theory and psychosocial factors

Previous studies have evidenced that individuals' mobility decisions largely depend on the psychosocial dimensions associated with their attitudes, perceptions, and preferences (e.g., Gehlert et al., 2013; Fujii and Gärling, 2003; Bohte et al., 2009).

The theory of planned behavior (TPB) is a well-known and established theory focusing on the behavior-specific cognitive determinants across various application contexts (Ajzen, 1988, 1991). The central idea is that actual behavior is directly determined by behavioral intention, which is generally viewed as signals showing whether a customer will continue to use particular service or switch to a different provider (Zeithaml et al., 1996). Further, intention is theorized to be a function of three cognitive components, namely attitude, subjective norm, and perceived behavioral control. Specifically, attitude reflects an individual's evaluation toward the target behavior, service or product. Subjective norm refers to personal perception of expectations that people who are important for them (e.g., friends or families) want them to display or avoid specific behavior, e.g., approval or disapproval. Perceived behavioral control pertains to the extent to which people perceives personal capabilities and constraints regarding the target behavior (Ajzen and Fishbein, 1980; Fishbein and Ajzen, 1975). Beyond its influence on intention, perceived behavior control is posited to impact behavior directly (Ajzen, 1991). Substantial applications of the TPB in the transportation arena demonstrate that attitudes toward public transportation, subjective norm, perceived control over travel behavior, and intention, all significantly contribute to explaining the public transportation usage decision (see, for example, Anable, 2005; Spears et al., 2013; Thøgersen, 2006). From the perspective of policy and management, it is extensively argued that the public transportation usage could be encouraged by “soft” measures, such as educational campaigns to increase knowledge about the environment benefits of the public transport modes (Möser and Bamberg, 2008; Spears et al., 2013).

As being identified by TPB, public transportation usage behavior is the outcome of a reasoned, controlled, and planned process. However, travel mode usage decision could actually become habitual since it is almost executed repeatedly on a regular basis. In this situation, the habitual travel mode usage behavior requires only a small amount of cognitive attention, and individual's control over behavioral intention and the behavior itself becomes minor (Eriksson et al., 2008). Existing lit-

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