



Exploring carsharing usage motives: A hierarchical means-end chain analysis



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ABSTRACT

Recently, carsharing has entered a phase of commercial mainstreaming as carsharing providers and urban transportation planners aim at broadening the customer base. In this context, knowledge about the motives of carsharing usage is essential for further growth. Based on a qualitative means-end chain analysis this paper therefore explores usage motives, thus expanding the existing insights from analyses of usage behavior. In a series of laddering interviews with users of a US carsharing service, the underlying hierarchical motive structure is uncovered and four motivational patterns are identified: value-seeking, convenience, lifestyle, and environmental motives. Implications are drawn for applying these insights.

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1. Introduction

Carsharing services have recently gained increasing attention in metropolitan areas in Western Europe and North America (e.g., [Costain et al., 2012](#)). As a relatively new mode of urban transportation, carsharing provides customers with short-term access to a fleet of shared vehicles, thereby offering the benefits of private vehicle use while avoiding the burdens of vehicle ownership ([Shaheen, 1999](#)). While carsharing services have been around for over two decades ([Shaheen et al., 2009](#)), the industry has recently gained momentum, as several large car manufacturers entered the market (e.g., [Crossland, 2011](#)), indicating that carsharing has moved into a period of commercial mainstreaming ([Shaheen et al., 2009](#)). This has been accompanied by the intention to attract new consumer segments who have previously not considered carsharing as an option in their mobility mix, but rather relied on private vehicle usage ([Firmkorn and Müller, 2011](#)).

Carsharing is considered to increase individual mobility while reducing personal vehicle travel and even ownership, thereby leading to a more sustainable mobility behavior (e.g., [Burkhardt and Millard-Ball, 2006](#); [Martin et al., 2010](#); [Nobis, 2006](#)). One of the key challenges for carsharing providers as well as for public institutions planning for carsharing services will be to successfully expand consumer acceptance of carsharing services. Especially younger consumers appear to be less automobile oriented and to hold positive attitudes towards alternatives to vehicle ownership ([Kuhnimhof et al., 2011](#)), therefore representing a largely untapped potential ([Beene, 2007](#)). In order to attract new consumers as one step in moving towards a more sustainable mobility behavior, insights are thus required into the factors that influence the use of carsharing.

Predominantly, existing research has focused on quantitatively analyzing carsharing usage data and related aspects such as car ownership (e.g., [Celsor and Millard-Ball, 2007](#); [Costain et al., 2012](#); [Habib et al., 2012](#); [Martin et al., 2010](#); [Morency et al., 2010](#)). While such econometric studies lead to valuable insights for carsharing operations, the focus on observable data

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neglects the influence of non-observable variables on consumer behavior. Consumer research has shown that investigating aspects not directly observable—such as personality traits, attitudes, or motives—can support in successfully configuring product and service offerings. In this context, one exception is the study conducted by Burkhardt and Millard-Ball (2006), who, besides considering usage patterns, investigate consumers' reasons for using carsharing and what they like and dislike by combining focus group interviews and a survey. Their study results, although purely descriptive, give insights into the characteristics of carsharing users. Focusing on the attitudes (i.e., non-observable variables) of non-users towards carsharing, Nobis (2006) investigates different factors influencing mobility behavior. For university affiliates, Zheng et al. (2009) show that, besides socioeconomic and environmental factors, attitudes strongly influence respondents' acceptance of carsharing. Overall, investigating non-observable variables of carsharing users can provide additional insights into the factors affecting observable behavior, thus complementing existing econometric models. One of the highly relevant aspects in this context that has not been sufficiently taken into account is consumers' motivation. While consumers' motives of car use (Gardner and Abraham, 2007; Lois and López-Sáez, 2009; Steg, 2005), multimodality (Diana and Mokhtarian, 2009), or public transport (De Witte et al., 2006) have previously been investigated, the motives for carsharing usage require further investigation. This is also evident in the call of Costain et al. (2012) for further investigation into carsharing members' preferences. A comprehensive and methodologically rigorous investigation of carsharing usage motives can thus provide valuable answers to why consumers or specific subgroups use carsharing.

Building on the theoretical foundation of means-end chain analysis, this paper therefore aims at exploring the motives and motivational patterns underlying the use of carsharing. It contributes to existing research by specifically considering non-observable aspects that influence users' behavior, thereby enhancing the understanding of cognitive consumer processes related to carsharing. Using a qualitative approach, this study thus represents a first step towards an extended knowledge of carsharing motives. The results of this study allow for implications regarding the promotion of carsharing as an alternative form of mobility and are thus relevant for urban transportation planners devising carsharing programs for metropolitan areas as well as for carsharing providers intending to expand their customer base.

The remainder of this paper is organized as follows. After a short introduction of the methodological background of means-end chains theory, the employed methods of data collection and analysis are described. Subsequently, the results are presented in detail and discussed. Following this, implications for both, transportation planners and carsharing service providers, are derived. The paper closes by giving an outlook for future research related to consumer behavior in carsharing.

2. Means-end chain analysis for investigating motivation: methodological background

Motivation represents a theoretical construct regarded as the basis for all consumer activities, influencing the direction, the persistency, as well as the strength of such activities (Heckhausen, 1977). Consumers' motivation is influenced by both affective (emotional) and cognitive elements (Coyne, 1982). Theories of motivation thus provide a psychological explanation of an individual's goal-directed behavior (Schreier, 1966). As consumers often do not consciously think about the motivation underlying their behavior, researchers are faced with the challenge to uncover motivation. A method that has found widespread acceptance for investigating motives is means-end chain analysis (e.g., Pieters et al., 1995; Wagner, 2007).

Means-end chain (MEC) analysis is a qualitative method for investigating individuals' general cognitive structures in decision making (Aurifeille and Valette-Florence, 1995). The rationale behind MECs is an assumed relationship between consumers' motivation to purchase a product or use a service, and their values and desires. Specifically, purchase/usage motivation is regarded as the result of consumers' perception of an offer to be adequately satisfying their desires (Olson and Reynolds, 2001). In the cognitive processes of consumer decision making, each offer is thus judged regarding its suitability to act as a *means* to the desired *end*. Conceptually, the MEC approach is based on Expectancy Value Theory (Fishbein and Ajzen, 1975; Rosenberg, 1956), which proposes that consumers' attitude towards and evaluation of an offer depend on the expected performance of that offer regarding the underlying motives, and on the value attached to each motive. For instance, consumers' attitudes towards public transport depend on the expected performance (e.g., timeliness) as well as the value of, for instance, being on time.

When conducting an MEC analysis, an offer is decomposed into product/service attributes, which are then analyzed. In a service context, MEC analysis can thus be employed to investigate the cognitive linkages between service attributes, different consequences evoked through service use, and customers' personal values. The underlying assumption is that such a hierarchical outline is a representation of the different goals and motives underlying consumer decision making (Pieters et al., 1995; Rifkin, 1985). This takes into account that consumer behavior is influenced by the pursuit of different goals. An advantage of the MEC method is therefore that it considers motives at different hierarchical levels, thereby distinguishing between lower-order functional and psychosocial motives, and higher-order motives encompassing several of the former (Mooradian and Olver, 1996). These motives are assumed to be related in that "lower elements lead to or imply higher level elements" (Gutman, 1991, p. 144). In that sense, each MEC represents "a sequence of causal implications—an attribute implies a consequence which implies a value" (Mulvey et al., 1994, p. 53).

In an MEC framework, four different types of elements are commonly distinguished: attributes, functional consequences, psychosocial consequences, and values (Olson and Reynolds, 2001). In the present study, attributes are the distinct characteristics of a carsharing service, such as the fleet size, vehicle and service attributes, or prices. Functional consequences represent qualitative outcomes that are directly related to the service use (e.g., availability), while psychosocial consequences

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