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Why do people rideshare? An experimental study

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ABSTRACT

Enabled by mobile technologies and fueled by the economic downturn, ridesharing has emerged in recent years as a private transportation facet of the shared economy. Our study investigates the motives for participation in situated ridesharing. We propose a theoretical model that includes economic benefits, time benefits, transportation anxiety, trust, and reciprocity either as direct antecedents of ridesharing participation intention, or mediated through attitude towards ridesharing. We conduct a scenario-based survey, with 300 participants. Our findings indicate that, in situations where transportation anxiety is high (e.g. construction on the road), if people can trust the ridesharing service providers and participants, in the presence of economic and time benefits, they will have a strong intention to participate in ridesharing.

1. Introduction

"A city that embraces shared modes of transportation will be a city where people spend less time stuck in traffic or looking for a parking space, a city where people will spend less of their income on cars and commutes, a city that lives and breathes more easily."

[Kalanick, co-founder and former CEO of Uber, 2016.]

As urban populations around the world grew in an environment of limited resources, and amid sustainability concerns, ridesharing emerged as an alternative mode of transportation that would provide a partial solution to those issues. While it was encouraged by policy makers and employers for decades, it was not until the advent of recent mobile technologies (Chan & Shaheen, 2012; Smith, 2017) and the economic downturn (Chan & Shaheen, 2012; CTAA, 2012) that ridesharing exploded to an everyday reality that touches the lives of millions of consumers and disrupts the transportation industry (Waheed, Herrera, Ritoper, Mehta, Romero, & Narro, 2015). Even though sharing a ride is not a new subject (Brownstone & Golob, 1992; Dueker & Levin, 1976; Novaco & Collier, 1994), the version of ridesharing that is enabled by peer-to-peer software technologies is a recent phenomenon (Brereton & Ghelawat, 2010; Chan & Shaheen, 2012; Rayle, Shaheen, Chan, Dai, & Cervero, 2014).

Carpooling or ridesharing has various definitions in the literature and in daily conversation. Whenever one or more passengers enter a vehicle in a manner that is not fully commercial or fully formal, regardless of whether they are family members, friends, peers, or strangers, they enter into the ridesharing mode. A formal agreement, for example for splitting travel costs, may or may not exist between ridesharing participants, and this mode of commuting may be used on a regular

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or occasional basis (Furuhata, Dessouky, Ordóñez, Brunet, Wang, & Koenig, 2013; Lee, Aultman-Hall, Coogan, & Adler, 2015). At a minimum, the only necessary condition seems to be a similar itinerary and time schedule among the ridesharing participants (Furuhata et al., 2013).

A published fact book from American Public Transportation Association (APTA) mentions that "public transportation ridership grew 34 percent from 1995 through 2009, more than twice the growth rate of the U.S. population (15 percent) and substantially more than the growth for vehicle miles of travel (VMT) on nation's streets and highways (23 percent) over the same period". A recent online survey revealed that consumers are prepared to accept a culture shift away from car ownership toward ridesharing (PricewaterhouseCoopers, 2015). Despite referring to carpooling as the "invisible Mode", Chan and Shaheen (2012) estimated that there were 638 ridematching services in North America (United States and Canada), a count that includes both online and offline carpooling and vanpooling programs. With more than eight million users and 160,000 drivers in the US alone, the DMR Stats report lists Uber as the biggest online transportation network company (Hall & Krueger, 2015). Even though the nature of Uber platform allows drivers to share their private vehicles with a passenger, some transportation experts argue that "ridesourcing" is a clearer term to address this kind of platform, as drivers do not share a destination with their passengers (Rayle et al., 2014). On the other hand, Uberpool, a new service that was recently added to Uber's mobile app in some US cities, matches riders who are travelling in the same direction with each other. Uber claims that it can reduce the travel fare for the riders up to 50% (Uber Blog, 2014). In the "organization-based" rideshares, policy makers and employers can provide options such as the Qualified Transportation Fringe Benefit, a voluntary cost-effective program that helped workers during the period of economic downturn 2008–2012, (CTAA, 2012). Such programs can include tax benefits for employees that support and use shared ride travel (CTAA, 2012). Generally, the mode of ridesharing has been reported to help employees and other commuters save almost $8500 annually (APTA, 2011), and also reduce carbon gas emissions and traffic congestion (Chan & Shaheen, 2012; Cohen & Kietzmann, 2014; Noland, Cowart, & Fulton, 2006).

With all these benefits at the individual, organizational, and societal level, it is worthwhile to investigate psychological and contextual factors that may influence an individual's decision to participate in ridesharing. A good understanding of such factors can help policy makers and business developers find ways to attract individuals to ridesharing participation. Therefore, this study seeks some answers to the following question:

RQ: What are the antecedents of intention to participate in ridesharing, either as a driver or as a passenger?

The paper uses a survey-based experimental approach. In order to answer our research question, we develop a conceptual model and then test it via structural equation modeling (SEM). The paper is structured in five sections. Literature review, hypothesis development, and the proposed model are presented in the next section. Instrument development, data collection, and data analysis and results are presented in the research methodology section. The paper concludes with implications for researchers, industry practitioners, and policy makers, as well as limitations and suggestions for future research.

2. Literature review and hypotheses development

Belk (2007) suggested that sharing involves "the act and process of distributing what is ours to others for their use and/or the act and process of receiving or taking something from others for our use". He also defined *collaborative consumption* as "people coordinating the acquisition and distribution of a resource for a fee or other compensation" which can be non-monetary (Belk, 2014). More precise definition, adapted to our modern lifestyle in the internet age can be "the peer-to-peer-based activity of obtaining, giving, or sharing the access to goods and services, coordinated through community-based online services" which is more commonly referred to as [online] collaborative consumption, or the *sharing economy* (Hamari, Sjöklint, & Ukkonen, 2016; PricewaterhouseCoopers, 2015). However, as the present study does not particularly focus on online or mobile technology aspects of ridesharing, but rather on the psychology of ridesharing participants, we will consider a broad definition of ridesharing that includes traditional and online ridesharing. We will use the terms *rideshare mode* and *ridesharing* as *any use of an automobile that includes, in addition to the driver, non-dependent passengers, without a fully commercial/formal relationship, with an agreement to share the ride, and with or without sharing the travel costs*. Our definition corresponds to the intersection between collaborative consumption/sharing economy and informal or semi-formal transport that might include private vehicles, ridesharing clubs, or ridesharing companies, but not formal public transport or taxi services. However, if passengers of a formal transport service such as taxi start negotiating how to share the fare, whenever that is allowed, they break away from the fully formal setting, thus entering the ridesharing mode. Our definition of ridesharing includes the shaded area shown in Fig. 1. Following Chan and Shaheen (2012), we include carpooling, flexible carpooling, and peer-to-peer (P2P) carsharing, but not commercial vanpooling, to our definition of ridesharing. Examples and counterexamples of ridesharing are shown in Table 1.

Our research model considers *attitude towards ridesharing* and *ridesharing participation intention* as the response variables. The model includes 11 hypotheses that involve the assumed antecedents of attitude towards ridesharing and the intention to participate in ridesharing. A diagram of the complete model is shown in Fig. 2 and an overview of the hypotheses is shown on Table 2. In the next section we elaborate on the definitions and the relationships between dependent and independent variables.