MOTIVATIONAL DIMENSIONS OF TRAVEL BEHAVIOR OF TNVS COMMUTERS: BASIS OF A CIRCULAR FLOW OF SUSTAINABLE (TNVS) OPERATION

Agnes Jocelyn P. Bandojo [1,2]
[1]Doctor of Business Administration, Graduate School, Colegio de San Juan de Letran, Intramuros, Manila
[2]Faculty Member, College of Commerce, University of Santo Tomas, España, Manila
agnesbandojo@yahoo.com

ABSTRACT

The study examined the influence of motivational dimensions of travel behavior on the satisfaction and patronage on TNVS use. Specifically, it evaluates the significant difference in the level of agreement of the non-student and student riders of TNVS on their motivational dimensions of travel behavior as well as their level of satisfaction on the TNVS quality. Data from 428 non-student and 449 student users of TNC were collected and processed using SPSS version 20 and WARP PLS version 5.0. The structural equation analysis reveals the following: (i) economic benefits positively affect satisfaction of the TNVS riders, (ii) perceived usefulness has a positive effect on the satisfaction of TNVS riders, (iii) trusts positively affect satisfaction of the riders, (iv) TNVS quality positively affects satisfaction of the TNVS rider, (v) satisfaction positively affects the patronage of the TNVS riders, and (vi) environmental impact has a negative effect on the satisfaction of the TNVS riders. The study has proven the influence of the four motivational dimensions on the satisfaction of the TNVS users, which would lead to patronage (increased utilization) of TNCs services.

Keywords: motivational dimension, travel behavior, transport network vehicle service (TNVS), transport network companies (TNCs), structural equation model (SEM)

INTRODUCTION

An efficient transportation network system is a prerequisite for an emerging economy. Developing metropolitan regions face challenges of meeting daily transportation demands of travelers within the region. For a metropolitan region to be considered developed, it needs to prioritize transportation because of the mobility of people going to work, schools, entertainment, medical needs, as well as for products and services for the supply chain (Kumari and Geethanjali, 2010).

Metro Manila, having 22.7 million occupants (PSA, 2018), is considered highly urbanized and the most populous region in the Philippines. This vast number of people living in this area needs better transportation system to meet the daily demand of commuters. At present, there are several modes of transportation, such as bus, jeepneys, FX, tricycle, and taxi, in the metropolitan areas. Though there are continuous efforts to work on innovations in mobility and transportation to ease commuters' problems, the riding public,due to their bad experiences,has a negative perception on using the conventional taxis because of poor management leading to poorly maintained units and often impolite drivers (Philstar,2018).

The advent of mobile-commerce created distinct effect on commuters' travel behavior (Bayen and Work, 2008; Shao, 2000). Presently, smartphones access online data to better navigate destinations, such as going to work or school, finding the bank branch or the closest bus stop, or going to mall, while using various applications. They can also monitor traffic flow to obtain traffic situation, or an approximation of destination arrival time. Transportation Network Companies (TNCs) such as Grab and Uber define a new mode or rideshare by using smartphone applications to link commuters with drivers. These TNCs promised to provide premium services to the commuters (Cu, 2018). However, on March 26, 2018, Uber was sold to Grab that made it possible for Grab to monopolize the TNVS operations in the Philippines. Hence, TNVS commuters started to complain about the quality of service of Grab (Business Mirror, 2018). The commuters complained about the cases of price-gouging drivers, unavailability of vehicles often during rush hour, and safety issues (both for the riding public and drivers), which have steadily been increasing despite attempts to control them by the agencies tasked to regulate transportation (manilastandard.net, 2018).

The question on how the TNVS can have sustainable operation in the transportation sector is a big challenge. Hence, this study was conducted to shed light on how this new transport mode would likely influence Metro Manila commuters to increase the utilization (patronage) and eventually become sustainable.The purpose of this study was to explicate the motivational dimensions of travel behavior of commuters usingTNVS, and to determine the influence of these motivationalfactors on the satisfaction of TNVS users that would lead to patronage (increasein the utilization) of TNVS/ridesharing services.

This study will be significant to the TNVS operators and drivers as this will provide insight on how commuters' motivational dimensions affect their level of satisfaction so that they will continue patronizing TNVS. It will also benefit the Transport Network Companies (TNCs) in general as they can also refer to the result so that proper marketing strategies may be applied to capture bigger market share. It will benefit the commuterssince the result will be used to craft policy that would provide better TNVS quality. LandTransportation Franchising andRegulatory Board (LTFRB) can also gain from the result of the study,which may provide guidelinesincrafting policies, rules and regulations for those who would like to be accredited as Transport Network Companies (TNCs), operators and drivers of the TNVS.Other transport providers would also gain insight on how the level of satisfaction of commuters would lead to patronage of their service.As a researcher and operator of Grab, her gained insights would be used to create a tactic for the daily operation of her business that would guarantee satisfaction ofcommuters and driver.For future researchers, the result of the study can be a baseline to engage in similar researchers either as a continuum or a way by which the other sectors of the public transportation system can be explored with an aim of providing good service to the riding public.

Literature Review

Theoretical Framework

The study is anchored on three theories. The Utility Maximizing Theory (McFadden, 1974; Van Acker and Witlox, 2016) focuses on individual's choice-behavior and states that individuals will choose the alternative that offers the largest utility. Usually, utility is defined as a linear function of the choice alternative's attributes and this function generally includes individual socio-economic characteristics as well. Hence, individual preferences are expressed by this utility function. Although individual perceptions and attitudes are recognized, utility-maximizing studies generally do not incorporate these individual perceptions and attitude. In practice, the theory is used for forecasting rather than understanding the mechanism of travel behavior, and it is argued that perceptions and attitude are difficult to forecast. The utility-maximizing theory recognizes relationships between short-term and long-term decisions. Daily travel behavior (e.g., modal choice, destination choice) can depend on long-term decisions such as car ownership, residential and job location. Thus, the theory offers a conceptual model in which relationships exist between several choices.

The activity-based approach (Goodwin and Hensher, 1978) can be considered as an extension of the utility-maximizing theory. Travel behavior is considered as derived from the activities in which the individual wants to participate. Because living, working, shopping and recreating are spatially separated, people haveto travel. Consequently, analyzing individual activity patterns leads to a better understanding of travel behavior, and that

assumes that activity patterns are determined by (1) the propensity to engage in an activity, and (2) the opportunity to engage (Chapin, 1974, as cited in Ewing and Cervero, 2001).

The propensity to engage is a function of individual characteristics such as motivations and way of thinking, and roles and socio-economic characteristics. The opportunity to engage refers to the individual's perception of the availability of opportunities, and the quality of these opportunities. In other words, it refers to the perceived environment in which activities are performed.

The Concept of Sharing Economy

The landscape of consumer behavior is changed by collaborative consumption, which is also known as sharing economy. Sharing economy transforms the way in which consumers purchase and use products (Kathan, Matzler, and Veider, 2016; Zhang, Gu, and Jahromi, 2018). A lot of definitions for the sharing economy have been given (Böcker and Meelen, 2017). Frenken and Schor (2017) mentioned that those definitions of the sharing economy are not opposing in nature but improvement and are taking shape with the level of inclusivity and variety in scope. According to Parente, Geleilate, and Rong (2018), the term "sharing economy" is used to "describe different organizations that connect users/renters and owner/providers through consumer-to-consumer (C2C) or business-to-consumer (B2C) platforms, allowing rentals in more flexible, social interactive terms." A lot of researches conversed the idea of the sharing economy as the right to use the underutilized commodities over ownership known to be as peer-to-peer sharing. The researcher adopted the definition of Böcker and Meelen (2017) on the sharing economy that is as "the consumers granting each other temporary access to their underutilized physical assets ('idle capacity') for a fee."

In the context of this study, sharing economy in the transportation sector is known as ridesharing or TNVS. TNCs with the use of software application allow drivers and passengers with similar origins and destinations to share a ride (Jin, Kong, Wu, and Sui, 2018). Recent literature on the ridesharing focuses on identifying users' satisfaction (Zhang, Gu, and Jahromi, 2018). Lutz and Newlands (2018) studied how consumer segmentation within a single-sharing economy platform would be applied while Bocker and Meelen (2017) studied how to motivate people to participate willingly in different forms of the sharing economy. Other studies investigate sharing services in the service industries (Kim, Woo, and Nam, 2018), identify the leading reputational attributes that boost popularity in sharing economy platforms (Mauri, Minazzi, Nieto-García, and Viglia, 2018), and develop a framework to guide future research drawing from a business ecosystems perspective (Parente, Geleilate, and Rong, 2018).

The Expectation-Confirmation

The Expectation-Confirmation Theory (Oliver, 1980) considers satisfaction of an individual as the outcome of evaluation between perceived reality and their expectations. In the expectation–confirmation model (ECM) of information system continuance, the feasibility of an information system depends on its continued patronage; frequency of utilization, which is associated by continuance intention, is determined by user satisfaction and perceived usefulness whereas user satisfaction by confirmation of expectations and perceived usefulness.

Review of Related Literature

The patronage of the ridesharing on TNVS of Grab commuters is anchored on the motivational factors, namely: economic benefit, perceived usefulness, trust, environmental impact, and TNVS quality. These factors positively determine satisfaction; satisfaction, additionally, also influences the patronage of TNVS.

Economic Benefits

Many researchers mentioned that spending money and resources is the primary concern of the consumers (Chudzian, 2015; Gansky, 2010; Tussyadiah,2015). The main drivers of ridesharing or TNVS are economic ones, reinforced by economic problems and the need to save (Mattsson, 2016). A new means of consumption emerges as a result of these changes (Botsman and Rogers, 2011). Society, economy, and technology are three drivers of sharing economy (Tussyadiah, 2015) of which the most widely identified motivational factors of sharing is the economic aspect (Hamari, Sjöklint, andUkkonen, 2016; Mohlmann, 2015; Schiel, 2015).
Thus, it is hypothesized:

H_1: Economic benefits have a positive effect on the satisfaction of TNVS commuters.

Perceived Usefulness

Perceived usefulness is defined as "the extent to which a person believes that using a particular system would enhance his or her job performance" (Davis, 1989). Previous study points to the association of perceived usefulness to the repeat utilization of the service (Chiu and Wang, 2008), while the perceived usefulness positively affects the repeat utilizationof the service. Perceived usefulness is an important determinant of satisfaction in the web-based learning and social networking sites(Yin, Liu, and Lin, 2015)and mobile instant messaging (Oghuma, Libaque-Saenz, Wong, and Chang, 2016). In this context, perceived usefulness refers to the degree to which TNVS users think that by using its services, a trip could be stress-free and more efficient.
Thus, it is hypothesized:

H_2: Perceived usefulness has a positive effect on satisfaction of TNVS commuters.

Trust

Trust is considered as a subjective feeling that the trustee will behave in a certain way basedon an implicit or explicit assurance he or she makes (Ert, Fleischer, and Magen, 2016). Trust has been regarded as a significant driver in the context of information system practice (Pavlou, 2003). According to Barnes and Mattsson (2016),"establishing trust is one of the main inhibitors to collaborative consumption."It is among the most important factors to elucidate satisfaction in a sharing economy and the chance of selecting it again (Mohlmann, 2015). Putting this in the context of TNVS,the researcher believed that if users find TNCs trustworthy, the commuters of Metro Manila may engage with TNVS. Furthermore, the relationship may continue if they trust the TNCs.
Thus:

H_3: Trust has a positive effect on the satisfaction of TNVS commuters.

Environmental Impact

Sharing economy decreases the production of final products and the utilization of the raw materials; hence, it is expected to decrease the damaging impact on the environment (Botsman and Rogers, 2011; Chudzian, 2015; Tussyadiah, 2015). Ridesharing minimizes vehicle ownership, allowing commuters to save assets (Antoniou, Efthymiou, and Waddell,2013). Environmental impact could influence the level of satisfaction and motivation ofTNC usersto continue patronizing the service. Accordingly, successful rideshare schemes could reduce congestion and related fuel consumption and emissions during peak travel periods, reduce parking costs for travelers and employers, and provide a reliable alternative mode to private car (Alexander and Gonzalez, 2015; Amey, 2004; Yin, Liu, and Lin, 2016).
Thus:

H_4: Environmental impact has a positive effect on the satisfaction of TNVS commuters.

Service Quality

Quality is an essential aspect of a service not only in public transportation.The difference between customers' expectations and perceptions of the service is called service quality (Parasuraman, Zeithaml, and Berry, 1988).It can also be defined as "the consumers' overall impression of the relative inferiority/superiority of the organization and its services" (Bitner and Hubbert, 1994).Previous study has proven that customer satisfaction is related directly to service quality. There is a growing support related to the positive impact of service quality in many research studies on the sharing economy (Mohlmann, 2015) and other contexts such as

patronage among mobile data services users (Boakye, 2015), information exchange virtual communities (Zheng, Zhao, and Stylianou, 2013), and service industries (Erjavec, Dmitrovic, andBrzan, 2016). According to Awasthi et al. (2011), managing service quality is vital to retain customer satisfaction and augment revenues for any business organization.

In a study by Sanjuq (2014), it was found that there is a positive relationship among assurance, empathy and responsiveness on customer satisfaction. In the context of TNVS, users of TNCs will be more likely to use the service again after having positive experience with the service. The TNVS qualities are important for the commuters to have positive experience. According to Hensher (2003), driver's competence and behavior areessential for any transportation service especially for public transport. Convenience of service is one of the important attributes of a quality service (Hu and Jen 2006), while comfort is a vital aspect of transportation service (Nathanail, 2008). Additionally, the reliability of the service affects positively the satisfaction of customer (Salameh and Hassan, 2015). Providing good services and fulfilling promises help develop an effective rapport that will eventually affect customers' satisfaction.
Thus, it is hypothesized:

H_5: TNVS Quality has a positive effect on the satisfaction of TNVS commuters.

Satisfaction

Consumer satisfaction, which is the overall evaluation of a consumer's total purchasing and consumption experience with products or services over a period of time, is indispensable to have longevity in the business (Erjavec et al., 2016; Karatepe, 2011; Moriuchi and Takahashi, 2016; Oliver, 1980). It is important to produce and sustain a loyal base of long-term consumers (Gracia, Ariño, and Blasco, 2015; Kumar, Dalla, and Ganesh, 2013).

Customer satisfaction has increasingly become a key indicator to measure performance and an essential component for organizational success. Customer satisfaction is the feeling of contentment or discontentment of customers that comes about as a result of a comparison between the performance of a product or service and their expectations prior to the experience (Chaiyasoonthorn andSuksa-ngiam, 2011). Customer satisfaction is proven to be related directly to service quality. Companies should welcome feedback regarding the problems that customer experienced and value the suggestions given by them to enhance the quality of their service or product to affect customer satisfaction (Ojo, 2010).

The explanation showed that customer satisfaction is driven by the expectations of customers and it is a determinant of customer purchase intents and their loyalty to the brand. Recently, companies are channeling their efforts to have a high level of customer satisfaction to retain their existing clientele instead of spending additional funds to attract new ones. Companieshave placed customers at the center of their operations to keep them satisfied to gain their loyalty in order to maximize their market share (Sabir et al., 2014).

Patronage of Service

Patronage of the service is defined according to customer's likelihood to continue using the service in the future and to recommend it to others (Anderson and Sullivan, 1993; Van Lierop and El-Geneidy, 2016). In the context of this study, patronage captures the degree to which Metro Manila commuters will increase the frequency of utilizationof TNVS. The positive association between satisfaction and patronage is well-established by previous studies (Bhattacherjee, 2001; Hsiao, Chang, and Tang, 2016; Kaewkitipong, Chen, and Ractham, 2016; Karatepe, 2011; Mohlmann, 2015).
Thus, it is hypothesized:

H_6: Satisfaction has a positive effect on the patronage of TNVS commuters.

Conceptual Framework

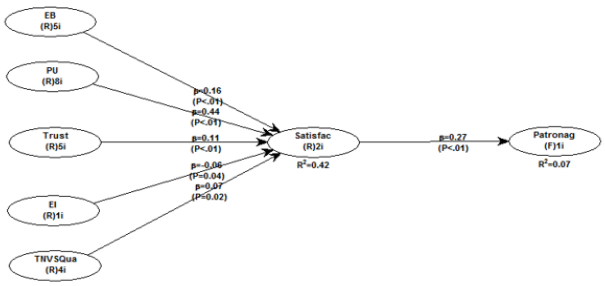

Figure 1.
Framework showing the effect of the motivational dimensions to the satisfaction and patronage on TNVS

The conceptualized model shows the effect of the motivational dimensions of travel behavior on the level of satisfaction that would eventually lead to patronage/increased utilization of TNVS. These motivational dimensions are economic benefit, perceived usefulness, trust, environmental impact, and TNVS quality, which can be used to develop the model for the circular flow of sustainable transport network vehicle services operation.

METHODS

Subject and Study Site

The study is focused in Metro Manila, which is considered highly urbanized and the most populous region in the Philippines, having 22.7 million occupants (PSA, 2018). This vast number of people living in this area needs better transportation system to meet the daily demand of commuters. It hasa high demand for TNVS (Cu, 2018).Students and non-students were purposively chosen as respondents of the study.

Respondents were chosen based on the criteria that they are regular Grab riders and they use TNVS at least four times a week. **Snowball sampling** was employed to ensure that every city will be represented. Exclusion method was also used since the focus is on the regular TNVS users only.

Data Collection

The questionnaire was distributed to the surveyed respondents with the help of student assistants and TNVS drivers. Snowball sampling method was used to ensure that every city in Metro Manila was represented well. It was done in separate days within the two-month period from May to June of 2018.It was administered in different time modes: the peak hours, the low period and the late night, to ensure that different demands for the transport service were met.

Instrumentation

The survey questionnaire was researcher-prepared, crafted based from the different literatures and supported by different theories. It was divided into 6 parts: (1) the profile of the respondents; (2) the purpose of their travel; (3) the motivational dimensions; (4) the TNVS attributes, which measures the quality service of TNCs; (5) the open statements regarding the problem they encountered; and (6) their suggestions for the improvement of service.

Part 2 had 11 multiple response items to determine the respondents' purpose of their trip. Part 3 was where participants were asked about their level of agreement on the given factors of motivations on availing TNVS. These factors were economic benefits, perceived usefulness, trust, satisfaction (Sa), and environmental impact (EI). These items were evaluated on a 6-point Likert-type scale, from (1) stronglydisagree to (6) strongly agree.Part 4included the attributes of TNVS, namely: driver's competence and behavior; commuter's comfort and convenience; assurance of the TNC; and reliability of the system. On a 6-point Likert-type scale, from (1) extremelydissatisfied to (6) extremely satisfied, respondents were asked to rate their level of satisfaction given those attributes.

In addition, there were open-ended statements regarding the problems encountered by commuters and their suggestions for the improvement of the TNVS.

Pilot testing of the instruments was done before actual administration. With the use of SPSS version 20, each construct's Cronbach Alpha was calculated to determine the internal consistency of items to gauge its reliability (Santos, 1999). All motivational dimensions, namely: Economic Benefit construct has a Cronbach Alpha of 0.760, Perceived Usefulness'Cronbach Alpha is 0.764, Trust'sCronbach Alpha is .723, and Satisfaction's Cronbach Alpha is 0.781. The TNVS quality, such as driver's competence, has 0.857; commuter's comfort and convenience has 0.890; assurance of TNC has 0.767; and reliability of the system has 0.891 Cronbach Alpha. Hence, the result of pilot testing showed that the survey questionnaire is reliable to use.

Data Analysis

Both descriptive and inferential statistical analyses were used. Descriptive statistics such as mean, standard deviation, frequency, and percentage were used in describing profile of the respondents and the travel characteristics of the respondents of the sample population. To compare if there were differences in the perception of the respondents regarding their satisfaction on motivational dimensions of TNVS when grouped according to their profile, t-test and ANOVA were used. The hypotheses of this study were tested using Structural Equation Modeling (SEM). The open-ended responses were analyzed by culling method and were classified under a specific dimension. The processing of data was made possible using SPSS version 20 and WARP PLS version 5.0.

Confirmatory Factor Analysis (CFA) with WARP PLS 5.0 was used to check the reliability and validity of the latent variables in the model. PLS algorithm confirmed that all the items are good indicators except some items on perceived usefulness (PU1 and PU2). These items were dropped from the model. Composite Reliability (CR) showed values higher than .700, confirming the internal consistency of the measurement model (Peterson, 1994). Thus, the reliability of the measurement model was confirmed.

Ethical Consideration

Prior to the administration of the survey, the researcher observed ethical considerations such as proper communication and informed consent; observance of anonymity and confidentiality; no force, threat or intimidation was used and the participants have the option to withdraw from answering should they desire to do so.

RESULTS

Characteristics of the respondents

Of the 877 respondents, 449 or 51.2% were students and 428 or 48.8% were non-students who were regular Grab riders. For both types of respondents, majority of the Grab riders were female (student: 279 or 62.1%, non-student: 232 or 54.2%). More than half of the respondents were single (student: 436 or 97.1%, non-student:232 or 54.2%). 67.5% of the students were less than 20 years old while 65% of the non-students were less than 30 years old. 90.6% or 407 out of 449 were attending a private school with 73.2% of them have less than P10000 monthly allowance. For the non-students, 67.5% or 289 out of 428 were employed in a private sector and 63.5% of them have lower than P30000 monthly income. 80.6% of the student riders have 2 or less car ownership per household and 75% or 337 use dual intermodal public transport to reach their destination while 86.4% of the non-student riders have 2 or less car ownership per household and 78.5% or 336 use dual intermodal public transport to reach their destination. The average number of rides per week for the student riders was 5.89 with standard deviation of 2.14 while the average number of rides per week for the non-student riders was 6.18 with standard deviation of 2.28.

Purpose of using TNVS

Multiple Response

Table 1shows the purposes why commuters avail TNVS in their journey. The top three purposes for student commuters using TNVS are going to mall (97.1%), going to school (94.9%), and dining out (94.2%). While the non-student commuters' top three purposes for using TNVS were going to mall (95.8%), visiting friends and dining out (95.6%) and work commuting (94.9%). Notably, most of the commuters prefer TNVS for their leisure activities and as their mode of transportation going to their place of work.

Table 1
Respondents' Purposes for using TNVS

Purpose of Trip	Student N = 449		Non-student N = 428	
	n	%	n	%
a. Work Commute	304	67.7	406	**94.9**
b. School Commute	426	**94.9**	369	86.2
c. Business Trip	288	64.1	370	86.4
d. Social/Recreational (Lifestyle)				
1. visiting friends/relatives	420	93.5	409	**95.6**
2. going to mall	436	**97.1**	410	**95.8**
3. going to park	328	73.1	309	72.2
4. dine out	423	94.2	409	**95.6**
5. going to party	408	90.9	357	83.4
e. Others				
1. doctor visits	351	78.2	372	86.9
2. going to church	353	78.6	353	82.5
3. buy groceries	338	75.3	365	85.3

Satisfaction on the TNVS quality

Table 2
Comparison in the Level of Satisfaction of the Respondents on the TNVS Quality

TNVS Quality	(1) Non-Student N = 428		(2) Student N = 449		t-value	Interpretation of Mean
	Mean	SD	Mean	SD		
Competence of Driver	4.64	0.92	4.45	0.74	3.54**	Highly satisfied
Comfort and convenience of commuters	4.91	0.79	4.67	0.87	4.24**	Highly satisfied
Assurance of the TNC's	4.37	1.05	4.08	0.98	4.13**	Highly satisfied
Reliability of the System	4.52	0.94	4.54	0.91	0.91	Highly satisfied

** Significant at p <.01
* Significant at p <.05

Table 2 shows the comparison in the level of satisfaction of the two groups of commuters on the TNVS qualities. Results revealed that both group of commuters were highly satisfied on the TNVS attributes, namely: competence of the driver, commuter's comfort and convenience, assurance of the TNC, and reliability of the system. Notably, there is a significant difference in the level of satisfaction of the respondents on the following qualities of TNVS: competence of driver ($Mean_1$= 4.64, $Mean_2$= 4.45, t= 3.54**), comfort and convenience of commuters ($Mean_1$= 4.91, $Mean_2$= 4.67, t= 4.24**), and assurance of the TNC($Mean_1$= 4.37, $Mean_2$= 4.08, t= 4.24**) but no significant difference on reliability of the system ($Mean_1$= 4.52, $Mean_2$= 4.54, t= 0.98).

Remarkably, both groups of respondents considered comfort and convenience of commuters as their number one quality while they rated assurance of the TNC as the last quality that would satisfy them in using TNVS.

Motivational dimensions of TNVS commuters

Table 3
Level of Agreement on the Motivational Dimensions of TNVS Commuters

Motivational Dimension	(1) Non-Student N=428		(2) Student N=449		t-value	Remark
	Mean	SD	Mean	SD		
Economic Benefits	4.25	0.85	3.70	0.91	9.13**	Significant diff.
Perceived Usefulness	4.60	0.63	4.40	0.62	4.65**	Significant diff.
Trust	4.75	0.75	4.59	0.77	3.19**	Significant diff.
Environmental Impact	4.18	1.50	3.94	1.52	2.42**	Significant diff.
TNVS Attributes	4.61	0.71	4.42	0.70	4.03**	Significant diff.

** Significant at p <.01
* Significant at p <.05

Table 3 shows the comparison between non-student and student'slevels of agreement on the motivational dimensions of travel behavior using TNVS. Results revealed that both groups of commuters strongly agreedthat the five dimensions,namely: economic benefit,perceived usefulness, trust, environmental impact and the TNVS Quality, were the motivating factors for using TNVS but there is a significant difference in the level of agreement on competence of driver ($Mean_1$= 4.64, $Mean_2$= 4.45, t= 3.54**), comfort and convenience of commuters ($Mean_1$= 4.91, $Mean_2$= 4.67, t= 4.24**), and assurance of the TNC($Mean_1$= 4.37, $Mean_2$= 4.08, t= 4.24**) andno significant difference on the reliability of the system ($Mean_1$= 4.52, $Mean_2$= 4.54, t= 0.98).

Notably, among the qualities of TNVS, both non-student and student respondents considered"comfort and convenience of commuters" as their number one quality. On the other hand, although both groups of respondents rated "assurance of the TNC"($Mean_1$= 4.37, $Mean_2$= 4.08, t= 4.24**) with highly satisfaction, it has thelowest rating.

Problems and complaints of TNVS commuters

Table 4
The Problems and Complaints of the TNVS Commuters

Problems Encountered	n	%	Rank
Asking for tips	4.00	2.63	3
Cancellation of booking	114.00	75.00	1
Car maintenance	3.00	1.97	4
Driver's attitude	20.00	13.16	2
Too long to book	3.00	1.97	4
High Fare	4.00	2.63	3
System problem on location	1.00	0.66	5
Surge	3.00	1.97	4
	152	100	

Table 4 shows the frequency of the complaints stated by the TNVS commuters. Out of 877 respondents, only 152 were able to state their problems encountered when they avail TNVS. The number one problem of the TNVS commuters is the cancellation of booking, 75% (114 out of 152), followed by the attitude of drivers 13.16% (20 out of 152). The third one is the high fare and the drivers who were asking for tip (4 out of 152).

Table 5
Suggestions given by the TNVS Commuters

Suggestions	n	%	Rank
Driver must be kind	1	0.70	6
Driver must be patient	1	0.70	6
Better pricing scheme	4	2.82	3
Maintenance of car	4	2.82	3
Observe the proper attitude while driving	**113**	**79.58**	**1**
Don't cancel the booking	1	0.70	6
accept booking especially during bad days	1	0.70	6
be wise in taking the shortest route	2	1.41	4
must be mindful of passenger	2	1.41	1
Driver must be careful	1	0.70	5
Driver must be accommodating	**5**	**3.52**	**2**
Don't ask for a tip	2	1.41	5
Terminate drivers who are rude	2	1.41	5
Provide promotion	1	0.70	6
Driver should be service oriented	1	0.70	6
Low Surge fee	1	0.70	6
	142	100	

Table 5 shows the suggestions given by the TNVS commuters. Out of 877 respondents, only 142 (16.19%) of the respondents were able to provide valuable suggestions, which must be considered in the recommendation to improve the satisfaction of the commuters. Most of the respondents want their ride to be safe and comfortable; they want the driver to observe the proper attitude while driving (79.58%). Another important suggestion of the commuters was they want the driver to be accommodating (3.52% or 5 out 142). The third most important for the commuters is that TNC must have better pricing scheme and the need to proper maintenance of car (2.82% or 4 out 142).

The confirmatory factor analysis of TNVS quality

Table 6
Confirmatory Factor Analysis of TNVS Quality

TNVS Quality	Regression Weights
Competence of Driver	
1. TNVS drivers are not reckless drivers (tendency to over speed and snake-driving).	0.714
2. The drivers are fully knowledgeable of the route.	0.808
3. Drivers have the tendency to take the shortest route possible.	0.763
4. Drivers follow the traffic rules and regulations.	0.794
Comfort of commuters	
1. The car is well-maintained	0.838
2. The car is new, clean and a good working air- conditioner.	0.903
3. The ride is convenient and not stressful.	0.884
Assurance to the commuters	
1. The passenger is not denied for a ride in whatever destination.	0.746
2. Drivers do not overcharge or ask for compulsory tips over the stated amount.	0.874
3. Drivers are courteous and mindful of passengers.	0.766
Reliability of the System	
1. Securing a ride is quick through the cellphone application.	0.856
2. The estimated time of arrival for pick up stated in the App is accurate.	0.856

Table 6 shows the Confirmatory factor analysis of TNVS Quality. Results showed that the dimensions of the four criteria, namely competence of the driver, comfort and convenience of commuters, assurance of the TNC, and reliability of the system, were good indicators of TNVS quality as perceived by commuters.

Comfort and convenience of commuters (β=0.847) and reliability of the system (β=0.846) were the strongest indicators among the others. The car condition, like its newness, cleanliness and whether it has a good air-conditioning unit, is the highest indicator (β=0.903), followed by on whether the ride is convenient and not stressful (β=0.884). Under the reliability of the system criterion, "securing a ride is quick through the cellphone"and "the estimated time of arrival for pick up stated in the application is accurate" (β=0.856) were both good indicators of reliability.

Table 7
Confirmatory Factor Analysis of the Motivational Dimensions

Motivational Factors	Regression Weight
Economic Benefit	
1. I can afford TNVS because of the kind of allowance/employment that I have.	0.91
2. My salary/allowance is enough to allow me to take TNVS.	0.78
3. I find it cheaper to use TNVS rather than my own car.	0.70
4. TNVS is worth its price.	0.62
5. I find it more practical to use TNVS rather my own car because of the high price of gas.	0.67
Perceived Usefulness	
3. The availability of the usual public transportation from my place to my work is quite limited.	0.51
4. It will take me several transfer rides from my place of origin to my chosen destination.	0.77
5. My job/schedule allows me telecommuting or flexibility so I could commute at my own pace and duration.	0.52
6. I find TNVS transport convenient.	0.68
7. I find TNVS time-efficient.	0.57
8. I prefer a more comfortable mode of transportation when I go out for leisure.	0.58
9. I find it very difficult to get a ride for jeepneys and buses during bad weather.	0.55
10. TNVS transport provides convenience especially when it is raining or during a very hot weather	0.71
Trust	
1. A good level of information on driver is managed by the TNC.	0.59
2. A good level of information on estimated time of arrival is managed by TNC	0.63
3. A good level of information on fare is managed by the TNC.	0.65
4. A good level of information on direction is managed by the TNC.	0.63
5. I take TNVS whenever I need to go to unfamiliar places.	0.62
TNVS Quality	
1. Driver's competence	0.69
2. Commuter's comfort and convenience	0.67
3. Assurance of the TNCs	0.76
4. Reliability of the system	0.62

Table 7 depicts the CFA of motivational dimensions of travel behavior of TNVS riders. Results showed that under the economic benefit dimension, riders perceived that the affordability of TNVS is related to the kind of allowance/employment they have (β=.91). The least indicator of economic benefit is that TNVS is worth its price (β=.62).

Under the perceived usefulness dimension, the first two items were dropped because the p-values were greater than .05. The number one indicator of perceived usefulness dimension was thatriders will take several transfer rides from their place of origin to their chosendestination (β=.77).

With the trust dimension, riders perceived"a good level of information on fare is managed by the TNC" (β=.65) as the number one indicator. While "a good level of information on driver is managed by the TNC" β=.52) is considered the last indicator.

For the items on TNVS quality dimension, riders perceived the"assurance of the TNCs" (β=.76) as the number one indicator. While "reliability of the system" β=.62) is considered the last indicator.

The emerging model

Table 8. *Model Fit Indices for SEM Model*

Model Fit Indices	Value
Average path coefficient (APC)	0.183
Average R-squared (ARS)	0.244
Average adjusted R-squared (AARS)	0.242
Average block VIF (AVIF)	1.986
Average full collinearity VIF (AFVIF)	1.968
R-squared contribution ratio (RSCR)	0.954

To show the acceptability of the emerging model as compared to the hypothesized model, the table shows a list of model fit indices. The emerging model has APC = .183, ARS = .244 and AARS = .242, which are all significant at .01 level and indicate good model fit of the data. The said model also shows an acceptable AVIF = 1.973, AFVIF = 1.943, which is less than 5 and thus indicates that there are no other latent variables that overlap in the meaning of the existing latent variables. R-squared contribution ratio (RSCR = 0.950) is greater than .90, which indicates that there are no negative R-squared contributions in a model.

The structural equation model reveals that the conceptual framework exhibited the adequacy of the emerging model to be accepted based on the following model fit indices. The conceptual framework (Figure 1) purported to test a hypothesized model that shows the effect of motivational factors on the level of satisfaction of the TNC's services. Structural equation analysis leads to the development of an emerging model. The model is revealed by the acceptable values of the model fit indices (see Table 8).

Table 8
Path Coefficients and P-values

Path	Path coefficients	P - values	Effect Sizes	Effect Size Interpretation (Cohen, 1988)**
Economic benefit→Satisfaction	.158	<0.001	.068	Small
Perceived usefulness→Satisfaction	.435	<0.001	.281	Medium
Trust→Satisfaction	.105	<0.001	.059	Small
Environmental Impact→ Satisfaction	-.059	.0400	.025	Small
TNVS Quality → Satisfaction	.068	.021	.033	Small
Satisfaction → Patronage	.270	<0.001	.073	Small

***0.02 – small, 0.15 – medium, 0.30 – large*

Figure 2. The Emerging Model

The model proves that all hypotheses must be accepted at an Alpha less than .05 except hypothesis 4. The first hypothesis that "economic benefit has a positive effect on the satisfaction of TNVS commuters" ($\beta = .16$, $p < .01$) must be accepted, which indicates that an increase in the economic benefit score results to an increase in the satisfaction of the TNVS commuters. Further, we can note significant total effect of economic benefit on satisfaction although the effect is just small, as suggested by the scale of Cohen (1988).

The second hypothesis "perceived usefulness has a positive effect on satisfaction of TNVS commuters" ($\beta = .44$, $p < .01$) must be accepted.This indicates that an increase in the perceived benefit score results to an increase in the satisfaction of the TNVS commuters. Further, we can note medium significant total effect of perceived benefit on satisfaction (Cohen, 1988).

The third hypothesis is "trust has a positive effect on the satisfaction of TNVS commuters," and the last hypothesis is "satisfaction has a positive effect on the frequency of utilization (patronage) of TNVS commuters" ($\beta = .11$, $p < .01$).

The fourth hypothesis is "environmental impact has a negative effect on the satisfaction of TNVS commuters" ($\beta = -.06$, $p < .05$). Hence, this hypothesis must be rejected.This indicates that an increase in the environmental impact score will not increase the satisfaction of the TNVS commuters.

The fifth hypothesis that TNVS quality has a positive effect on the satisfaction of TNVS commuters ($\beta = .07$, $p < .01$) should be accepted. It implies that an increase in TNVS quality score results to an increase in the satisfaction of the TNVS commuters.

The last hypothesis that satisfaction has a positive effect on the patronage/increase utilization of TNVS ($\beta = .07$, $p < .01$) should be accepted. It implies that an increase in satisfaction score results to an increase in the patronage/increase utilization for TNVS.

DISCUSSION

The main purpose of the study is to provide a model illustrating the effect of motivational dimensions of travel behavior of TNVS riders/commuters on their satisfaction, which would eventually lead to the increase in utilization or patronage for TNVS for the sustainable operation of the TNCs.

Results have supported thefirst hypothesis (H1) that economic benefits have a positive yet small impact on the satisfaction of TNVS commuters. This indicates thatTNVS riders were motivated to use TNVS provided that the price is economical.So saving money or financial benefits constitute a reason for using the TNVS (ridesharing).The result of this study is similar to the studies conducted by Barnes and Mattsson (2016) and Hamari et al. (2016).

In addition, the study reveals that the perceived usefulness is the strongest determinant of TNVS user satisfaction and this has supported the second hypothesis (H2) that perceived usefulness has a positive effect on satisfaction ofTNVS commuters. This indicates that TNVS riders use TNVS if the availability of the usual public transportation from their place to their work is quite limited.The study provided empirical evidence that perceived usefulness leads users to be more satisfied. This result is in line with the results in other contexts (Boakye, 2015; Zheng et al., 2013).

Additionally, results support the third hypothesis (H3) that trust has a positive but only small effect on the satisfaction of TNVS commuters. It is important, therefore, to manage adequately the community that participates in the sharing service, because it will help create a trustworthy environment that will satisfy their users.Regarding trust, little empirical evidence has been provided when assessing the motivational factors of sharing economy, as Mohlmann (2015).

Results did not support the fourth hypothesis (H4) that environmental impact has a positive effect on the satisfaction of TNVS commuters. The result is parallel to other studies (Barnes and Mattsson, 2016; Mohlmann, 2015) that environmental advantages are not considered relevant for TNVS users, rather it is in contrast with the idea that an increasing awareness of environmental pressure leads people to try to find ways tohave a more sustainable society (Gansky, 2010).

Furthermore, the fifth hypothesis (H5) is that TNVS qualities have a positive effect on the satisfaction of TNVS commuters. This result was supported by the studies conducted by Mohlmann (2015) that service quality has a positive impact on the sharing economy. The qualities of TNVS, such as "comfort and convenience"(Hu and Jen, 2006;Nathanail, 2008), reliability of the service (Salameh and Hassan, 2015), driver's competence and behavior (Hensher,2003) and assurance (Sanjuq,2014), were all consistent with the result of the study.

Lastly, there is enough evidence to accept the sixth hypothesis (H6) that satisfaction has a positive effect on the patronage of TNVS commuters. In line with this, results have indicated that satisfaction of TNVS riders leads to patronage (increase utilization) of TNVS. This result was confirmed by the study conducted by Mohlman (2015) that the satisfaction of user has a positive effect in the sharing economy.Remarkably, the role of satisfaction as a mediating variable to motivational dimensions and patronage was well established.

CONCLUSION

This study attempted to develop a model that would be used to have a basis for circular flow of sustainable TNVS operation.

The travel behavior has changed in recent years, and the sharing economy is an essential part of this transformation. Grab is the only ridesharing company that provides TNVS in Metro Manila. This study provides an innovative model to study how different motivational factors lead ridesharing users to be more satisfied, which ultimately leads to patronage. Böcker and Meelen (2017) acknowledged that "the study of user motivations is important for evaluating whether the innovation can really make a shift towards a more sustainable society," and this sustainable transition implies the change of consumer criteria (Kemp and van Lente, 2011). Thus, the emerging model also contributes to the literature as a new determinant of user satisfaction and patronage in the sharing economy.

The researcher found that satisfaction of TNVS users is driven by economic benefit, perceived usefulness, service quality, trust, and the TNVS quality. The researcher found that the satisfaction of TNVS users will influence the patronage of the service, which will eventually lead to sustainable TNVS operation. Based on the results, commuters were experiencing a lot of problems regarding TNVS, especially the cancellation of bookings during rush hour, the rude attitude of the drivers, and the high fare during rush hours. These complaints definitely affect the level of satisfaction of the TNVS riders, which can affect their utilization of this service. The suggestions given by the commuters must be considered carefully since they are the ones who avail the service and they know exactly what they want in a product or service. The TNCs must design a plan that would address the issues of the commuters.

The study revealed that the environmental impact is not a determinant of the motivational factor of the commuter for them to use TNVS. With this result, management of TNCs should also emphasize the environmental benefits of sharing and work toward the creation of a trustworthy community. This study helps managers of sharing services to redefine their communication strategies to retain users, achieve performance-related goals, and develop competitive advantages.

For managers of traditional services, this study can also help to gain a deeper understanding of new trends in consumer behavior, allowing a better knowledge of the changing environment.

The characteristics of the Grab riders were so diverse that require a good marketing strategy to meet if not exceed their expectations regarding TNVS. The result of this study can be used as baseline information to improve its product or to provide service. Thus, using the results of this study, the management of the TNCs can develop appropriate marketing strategy to capture their target market. Knowing these motivational dimensions can be

an advantage for marketing TNVS since proper marketing strategies may be applied to capture bigger market share.

The researcher wants to propose a model that would be applicable for the TNVS operation that would guarantee sustainability. It is based on the circular flow ofeconomic activity (Quesnay, 1758, in Faik, 2015). We can also describe the circular flow of sustainable TNVS operation, which is operationally illustrated in Figure 3.

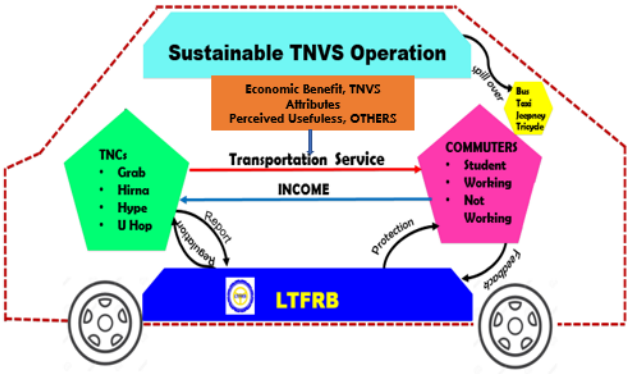

Figure 3. Circular Flow of Sustainable TNVS Operation

The Circular Flow of Sustainable TNVS Operation

In this flow, Utility Maximizing Theory and Expectation-Confirmation Theory recognize that commuters are willing to compromise as long as they will gain more satisfaction in terms of comfort, assurance, safety and reliability of service. The management of TNCs must entail a conscious assessment of the needs of the commuters precisely because they have to establish and maintain the objective purpose of the act of servicing the riding public to help improve the quality of human life. Furthermore, the TNCs are not simply provider of service but are also receivers of income from the riding public. The symbioticrelationship between TNCs and commuters is supervised by LTFRB under LTO, a government agency that provides the mechanisms to ensure safe and convenient transportation to the riding public.

On the left side of the framework, there is also a flow of resources between the government agency and the TNCs. LTFRB must regulate the operations of TNCs by providing guidelines and in return, TNCs are expected to follow and give regular reports to this agency. Further, there is a larger social objective to LTFRB that extends beyond the intrinsic value of the regulation by generating a radial effect to a wider economy inclusive of other transportation modes such as taxi, FX/van, bus, and jeepney.

On the right side, the commuters should give feedback to the LTFRB regarding the problems they have encountered in availing TNVS. Based on the feedback, LTFRB should act accordingly. In the long run, the exchange of resources (service and income) between TNCs and commuters may go beyond the mediation of the LTFRB as ideal relationships are formed between them.

It is envisioned that the aforementioned model circular flows contribute to a larger goal of sustainable TNVS operation. Further, it is expected that the model conceptualized in this study shall not merely stay as a research concept but shall evolve to become an essential reality in the conduct of operations not only by TNCs but by other transportation modes as well.

REFERENCES

Abbas, H. A., andHamdy, H. I. (2015). Determinants of continuance intention factor in Kuwait communication market: Case study of Zain-Kuwait. *Computers in Human Behavior*, *49*, 648–657.

ABS-CBN News. 25 October 2016. "Grab launches instant messaging platform". Retrieved 30 August 2017.

Anderson, E. W., Fornell, C., andMazvancheryl, S. K. (2004). Customer satisfaction and shareholder value. *Journal of Marketing*, *68*(4), 172–185.

Anderson, E. W., and Sullivan, M. W. (1993). The antecedents and consequences of customer satisfaction for firms. *Marketing Science*, *12*, 125–143.

Bardhi, F., and Eckhardt, G. M. (2012). Access-based consumption: The case of car sharing. *Journal of Consumer Research*, *39*, 881–898.

Barnes, S. J., andMattsson, J. (2016). Understanding current and future issues in collaborative consumption: A four-stage Delphi study. *Technological Forecasting and Social Change*, *104*, 200–211.

Belk, R. (2014). You are what you can access: Sharing and collaborative consumption online. *Journal of Business Research*, *67*, 1595–1600.

Bernama. Free Malaysia Today. 17 May 2014. "MyTeksi launches GrabCar service". Retrieved 13 April 2017

Bhattacherjee, A. (2001). Understanding information systems continuance: An expectation-confirmation model. *MIS Quarterly*, *25*, 351–370.

Bhattacherjee, A. (2002). Individual trust in online firms: Scale development and initial test. *Journal of Management Information Systems*, *19*, 211–241.

Bitner, M. J., and Hubbert, A. R. (1994). *Encounter satisfaction versus overall satisfaction versus quality*. Thousand Oaks, CA: SAGE.

Boakye, K. G. (2015). Factors influencing mobile data service (MDS) continuance intention: An empirical study. *Computers in Human Behavior*, *50*, 125–131.

Bock, G. W., Zmud, R. W., Kim, Y. G., and Lee, J. N. (2005). Behavioral intention formation in knowledge sharing: Examining the roles of extrinsic motivators, social-psychological forces, and organizational climate. *MIS Quarterly*, *29*, 87–111.

Böcker, L., andMeelen, A. A. H. (2017). Sharing for people, planet or profit? Analysing motivations for intended sharing economy participation. *Environmental Innovation and Societal Transitions*, *23*, 28–39.

Botsman, R., and Rogers, R. (2011). *What's mine is yours: How collaborative consumption is changing the way we live*. London, England: Collins.

Calvin (13 July 2014). "GrabTaxi officially launched in the Philippines". Pinoy Tech Blog. Retrieved 19 March 2017

Casprini, E., Di Minin, A., andParaboschi, A. (2018). How do companies organize nascent markets? The BlaBlaCar case in the inter-city shared mobility market. *Technological Forecasting and Social Change* (In Press). doi:10.1016/j.techfore.2018.01.012

Chai, J. C. Y., Deans, K. R., andBiggemann, S. (2012). The influence of acculturation on consumer relational bonding in banking relationships. *Journal of Strategic Marketing*, *20*, 393–410.

Chang, W. L., and Wang, J. Y. (2018). Mine is yours? Using sentiment analysis to explore the degree of risk in the sharing economy. *Electronic Commerce Research and Applications*, *28*, 141–158.

Chen, S. C., and Lin, C. P. (2015). The impact of customer experience and perceived value on sustainable social relationship in blogs: An empirical study. *Technological Forecasting and Social Change*, *96*, 40–50.

Chin, W.W. (1998). The partial least squares approach for structural equation modeling. In G.A. Macoulides (Ed.), *Modern methods for business research* (pp. 295–336). Mahwah, NJ: Lawrence Erlbaum Associates.

Chiu, C. M., and Wang, E. T. G. (2008). Understanding web-based learning continuance intention: The role of subjective task value. *Information and Management*, *45*, 194–201.

Chudzian, J. (2015). Importance of economic and noneconomic factors in collaborative consumption. *Economics and Management*, *7*(4), 14–22.

Cu, Brian. (February,2018). www.grab.com/ph/press/others/grab-philippines-official-statement/. Retrieved 1 March 2019

Davis, F. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*, *13*, 319–340.

Davis, F. (1993). User acceptance of information technology: System characteristics, user perceptions and behavioral impacts. *International Journal of Man-Machine Studies*, *38*, 475–487.

DeLone, W. H., and McLean, E. R. (2003). The DeLone and McLean model of information systems success: A ten-year update. *Journal of Management Information Systems*, *19*(4), 9–30.

Do, Anh-Minh (26 February 2014). "MGrabTaxi enters Vietnam, intensifying the battle for mobile taxi booking apps". Tech in Asia. Retrieved 20 March 2017

Efthymiou, D., Antoniou, C., and Waddell, P. (2013). Factors affecting the adoption of vehicle sharing systems by young drivers. *Transport Policy*, *29*, 64–73.

Erez, M., andGati, E. (2004). A dynamic, multi-level model of culture: From the micro level of the individual to the macro level of a global culture. *Applied Psychology*, *53*, 583–598.

Erjavec, H. S., Dmitrovic, T., andBrzan, P. P. (2016). Drivers of customer satisfaction and loyalty in service industries. *Journal of Business Economics and Management*, *17*, 810–821.

Ert, E., Fleischer, A., and Magen, N. (2016). Trust and reputation in the sharing economy: The case of Airbnb. *Tourism Management*, *55*, 62–73.

Fornell, C., Johnson, M. D., Anderson, E. W., Cha, J., and Bryant, B. E. (1996). The American customer satisfaction index: Nature, purpose, and findings. *Journal of Marketing*, *60*(4), 7–18.

Fornell, C., andLarcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research*, *18*, 39–50.

Frenken, K., and Schor, J. (2017). Putting the sharing economy into perspective. *Environmental Innovation and Societal Transitions*, *23*, 3–10.

Gansky, L. (2010). *The mesh: Why the future of business is sharing*. New York, NY: Penguin Books.

Gamboa, Rey (March 23, 2018). "Filipinos-its-uber-and-out". The philstar.com. Retrieved 2 March 2019

Gracia, D. B., Ariño, V. C., andBlasco, M. G. (2015). The effect of culture in forming e-loyalty intentions: A cross-cultural analysis between Argentina and Spain. *Business Research Quarterly*, *18*, 275–292.

Grassmuck, V. (2012). The Sharing Turn: Why we are generally nice and have a good chance to cooperate our way out of the mess we have gotten ourselves into. In W. Sützl, F. Stalder, R. Maier and T. Hug (Eds.), *Cultures and ethics of sharing* (pp. 17–34). Innsbruck: Innsbruck University Press.

Hair, J. F., Hult, T. M., Ringle, C. M., andSarstedt, M. (2017). *A primer on partial least squares structural equation modeling (PLS-SEM)* (2nd ed.). Thousand Oaks, CA: SAGE.

Hair, J. F., Ringle, C. M., andSarstedt, M. (2011). PLS-SEM: Indeed a silver bullet. *Journal of Marketing Theory and Practice*, *19*, 139–151.

Hamari, J., Sjöklint, M., andUkkonen, A. (2016). The sharing economy: Why people participate in collaborative consumption. *Journal of the Association for Information Science and Technology*, *67*, 2047–2059.

Hsiao, C. H., Chang, J. J., and Tang, K. Y. (2016). Exploring the influential factors in continuance usage of mobile social apps: Satisfaction, habit, and customer value perspectives. *Telematics and Informatics*,*33*, 342–355.

Hsu, C. L., and Lin, J. C. C. (2015). What drives purchase intention for paid mobile apps? An expectation confirmation model with perceived value. *Electronic Commerce Research and Applications*, *14*, 46–57.

Jin, S. T., Kong, H., Wu, R., and Sui, D. Z. (2018). Ridesourcing, the sharing economy, and the future of cities. *Cities*, *76*, 96–104.

Johnson, M. D., Herrmann, A., and Huber, F. (2006). The evolution of loyalty intentions. *Journal of Marketing*, *70*, 122–132.

Kaewkitipong, L., Chen, C. C., andRactham, P. (2016). Using social media to enrich information systems field trip experiences: Students' satisfaction and continuance intentions. *Computers in Human Behavior*, *63*, 256–263.

KahLeng, Lee (28 July 2016). "MyTeksi rebrands into Grab". The Star (Malaysia).
Archived from the original on 12 January 2017. Retrieved 1 January 2018.

Karatepe, O. M. (2011). Service quality, customer satisfaction and loyalty: The moderating role of gender. *Journal of Business Economics and Management*, *12*, 278–300.

Kathan, W., Matzler, K., andVeider, V. (2016). The sharing economy: Your business model's friend or foe? *Business Horizons*, *95*, 663–672.

Kemp, R., and van Lente, H. (2011). The dual challenge of sustainability transitions. *Environmental Innovation and Societal Transitions*, *1*, 121–124.

Kim, Y. G., Woo, E., and Nam, J. (2018). Sharing economy perspective on an integrative framework of the NAM and TPB. *International Journal of Hospitality Management*, *72*, 109–117.

Kock, N., and Lynn, G. (2012). Lateral collinearity and misleading results in variance-based SEM: An illustrationand recommendations. *Journal of the Association for Information Systems*, *13*, 546–580.

Kumar, V., Dalla, P. I., and Ganesh, J. (2013). Revisiting the satisfaction–loyalty relationship: Empirical generalizations and directions for future research. *Journal of Retailing*, *89*, 246–262.

Kumar, V., Lahiri, A., and Dogan, O. B. (2018). A strategic framework for a profitable business model in the sharing economy. *Industrial Marketing Management*, *69*, 147–160.

Lamberton, C. P., and Rose, R. L. (2012). When is ours better than mine? A framework for understanding and altering participation in commercial sharing systems. *Journal of Marketing*, *76*(4), 109–125.

Lutz, C., and Newlands, G. (2018). Consumer segmentation within the sharing economy: The case of Airbnb. *Journal of Business Research*, *88*, 187–196.

Kumari, S.M. andGeethanjali, N. (2010). A survey on shortest path routing algorithms for public transport travel. *Global Journal of Computer Science and Technology,* 9, 73-75.19.77Ateneo de Manila University

Martin, C. J. (2016). The sharing economy: A pathway to sustainability or a nightmarish form of neoliberal capitalism? *Ecological Economics*, *121*, 149–159.

Mauri, A. G., Minazzi, R., Nieto-García, M., andViglia, G. (2018). Humanize your business. The role of personal reputation in the sharing economy. *International Journal of Hospitality Management*, *73*, 36–43.

McMeekin, A., andSoutherton, D. (2012). Sustainability transitions and final consumption: Practices and socio-technical systems. *Technology Analysis and Strategic Management*, *24*, 345–361.

Meelen, T., andFrenken, K. (2018, January 14). Stop saying Uber is part of the sharing economy. *Fast Company*. Retrieved from https://www.fastcompany.com/ 3040863/stop-saying-uber-is-part-of-thesharing-economy

Minh, Anh (6 June 2014). "GrabTaxi launches beta trial in Jakarta". Digital News Asia.
Retrieved 20 March 2017

Moeller, S., andWittkowski, K. (2010). The burdens of ownership: Reasons for preferring renting. *Managing Service Quality: An International Journal*, *20*, 176–191.

Mohlmann, M. (2015). Collaborative consumption: Determinants of satisfaction and the likelihood of using a sharing economy option again. *Journal of Consumer Behaviour*, *14*, 193–207.

Moriuchi, E., and Takahashi, I. (2016). Satisfaction trust and loyalty of repeat online consumer within the Japanese online supermarket trade. *Australasian Marketing Journal*, *24*, 146–156.

Narboneta C. andTeknomo, K. (2016). A Study of Metro Manila's Public Transportation Sector: Implementing a multimodal public transportation route planner. from:

Oghuma, A. P., Libaque-Saenz, C. F., Wong, S. F., and Chang, Y. (2016). An expectation confirmation model of continuance intention to use mobile instant messaging. *Telematics and Informatics*, *33*, 34–47.

Oliver, R. L. (1980). A cognitive model of the antecedents and consequences of satisfaction decisions. *Journal of Marketing Research*, *17*, 460–469.

Owyang, J., Samuel, A., and Grenville, A. (2014). *Sharing is the new buying: How to win in the collaborative economy*. Retrieved from http://es.slideshare.net/jeremiah_owyang/sharingnewbuying

Parasuraman, A., Zeithaml, V. A., and Berry, L. L. (1988). SERVQUAL: A multiple-item scale for measuring consumer perceptions of service quality. *Journal of Retailing*, *64*(1), 12–40.

Parente, R. C., Geleilate, J. M. G., and Rong, K. (2018). The sharing economy globalization phenomenon: A research agenda. *Journal of International Management*, *24*, 52–64.

Pavlou, P. A. (2003). Consumer acceptance of electronic commerce: Integrating trust and risk with the technology acceptance model. *International Journal of Electronic Commerce*, *7*(3), 101–134.

Peterson, R. A. (1994). A meta-analysis of Cronbach's coefficient alpha. *Journal of Consumer Research*, *21*, 381–391.

Piscicelli, L., Cooper, T., and Fisher, T. (2014). The role of values in collaborative consumption: Insights from a product-service system for lending and borrowing in the UK. *Journal of Cleaner Production*, *97*, 21–29.

Schiel, F. (2015). *The phenomenon of the sharing economy in Germany: Consumer motivations for participating in collaborative consumption schemes*. Retrieved from http://essay.utwente.nl/68106/

Schor, J., and Fitzmaurice, C. (2015). Collaborating and connecting: The emergence of the sharing economy. In L. Reischand J.

Thogersen (Eds.), *Handbook of research on sustainable consumption* (pp. 410–425). Cheltenham, UK: Edward Elgar.

Schnabel, Chris (19 February 2015). "GrabCar PH relaunches". Rappler. Retrieved 13
April 2015.

Siddharth, Philip (10 June 2014). "Harvard Inspires Man to Ditch Family Riches for Taxis" (PDF*)*. Bloomberg. Singapore Management University. Archived from the original on 1 January 201*8*. Retrieved 17 April 2017.

Seiders, K., Voss, G. B., Godfrey, A. L., and Grewal, D. (2007). SERVCON: Development and validation of a multidimensional service convenience scale. *Journal of the Academy of Marketing Science*, *35*, 144–156.

Siddharth, Philip (10 June 2014). "Harvard Inspires Man to Ditch Family Riches for Taxis" (PDF*)*. Bloomberg. Singapore Management University. Archived from the original on 1 January 201*8*. Retrieved 17 April 2017

Stone, M. (1974). Cross-validatory choice and assessment of statistical predictions. Journal of the Royal Statistical Society, 36, 111–147.

Tegos, Michael (6 December 2016). "Grab launches GrabShare, its own version of UberPool". Tech in Asia. Retrieved 5 January 2018

Tomlinson, J. (2003). Globalization and cultural identity. In D. Held and A. McGrew (Eds.), *The global transformations reader: An introduction to the globalization debate* (2nd ed., pp. 269–277). Malden, MA:Blackwell.

Tussyadiah, I. (2015). An exploratory study on drivers and deterrents of collaborative consumption in travel. In I. Tussyadiahand A. Inversini (Eds.), *Information and communication technologies in tourism* (pp. 819–832). Switzerland: Springer.

Van Lierop, D., and El-Geneidy, A. (2016). Enjoying loyalty: The relationship between service quality, customer satisfaction, and behavioral intentions in public transit. *Research in Transportation Economics*, *59*, 50–59.

Vogel, V., Evanschitzky, H., andRamaseshan, B. (2008). Customer equity drivers and future sales. *Journal of Marketing*, *72*(6), 98 108.

Work, D., and A. Bayen. Impacts of the Mobile Internet on Transportation Cyberphysical
Systems: Traffic Monitoring Using Smartphones. Presented at the National Workshop for Research on High-Confidence Transportation Cyber-Physical Systems: Automotive, Aviation, and Rail, 2008.

Wu, J. H., Tennyson, R. D., and Hsia, T. L. (2010). A study of student satisfaction in a blended e-learning system environment. *Computers and Education*, *55*, 155–164.

Yang, S., Song, Y., Chen, S., and Xia, X. (2017). Why are customers loyal in sharing-economy services? A relational benefits perspective. *Journal of Services Marketing*, *31*, 48–62.

Yin, F. S., Liu, M. L., and Lin, C. P. (2015). Forecasting the continuance intention of social networking sites: Assessing privacy risk and usefulness of technology. *Technological Forecasting and Social Change*, *99*, 267–272.

Zhang, T. C., Gu, H., andJahromi, M. F. (2018). What makes the sharing economy successful? An empirical examination of competitive customer value propositions. *Computers in Human Behavior* (In Press). doi:10.1016/j.chb.2018.03.019

Zhang, T. C., Jahromi, M. F., andKizildag, M. (2018). Value co-creation in a sharing economy: The end of price wars? *International Journal of Hospitality Management*, *71*, 51–58.

Zheng, Y., Zhao, K., andStylianou, A. (2013). The impacts of information quality and system quality on users' continuance intention in information-exchange virtual communities: An empirical investigation. *Decision Support Systems*, *56*, 513–524.

Zhao, Y. Mobile Phone Location Determination and Its Impact on Intelligent Transportation Systems. Intelligent Transportation Systems, IEEE Transactions on, Vol. 1, No. 1, 2000, pp. 55–64