PAPER • **OPEN ACCESS**

Modeling the effects of social media, materialism, and car use habit on student's ridesharing behavior

To cite this article: Rudy Setiawan 2019 *IOP Conf. Ser.: Mater. Sci. Eng.* **508** 012125

View the article online for updates and enhancements.



IOP ebooks™

Bringing you innovative digital publishing with leading voices to create your essential collection of books in STEM research.

Start exploring the collection - download the first chapter of every title for free.

This content was downloaded from IP address 120.234.63.196 on 18/09/2019 at 16:21

IOP Conf. Series: Materials Science and Engineering **508** (2019) 012125 doi:10.1088/1757-899X/508/1/012125

Modeling the effects of social media, materialism, and car use habit on student's ridesharing behavior

Rudy Setiawan*

Department of Civil Engineering, Faculty of Civil Engineering and Planning
Petra Christian University, Surabaya, Indonesia

*rudy@petra.ac.id

Abstract. This study reports an investigation the effects of social media related to car information, materialism towards car ownership, and car use habit on student's ridesharing behavior based on the Theory of Planned Behavior framework of behavior model. Results indicated that Attitude, Subjective Norm, and Perceived Behavior Control explains up to 98.8% variance of behavioral intention to ride-share. In turn, intention and car use habit explain up to 26.9% of the variance of actual ridesharing behavior. If students' has a strong car use habit, the effect of social media and materialism on their attitude toward commuting by car to campus can be ignored. The implications of these findings are, even though both social media and materialism affect the student's attitude for using the car, however, students' car use habit gives more influence to the student's attitude for using the car than social media and materialism.

1. Introduction

Nowadays, it is common in several big campuses in Surabaya, that students tend to choose to use a car to commute to campus because it is a better option compared with other transportation modes such as a motorcycle, public transit, etc. Most of the students tend to drive alone when commuting by car to campus. Consequently, lead to traffic congestion because of limited parking space inside the campus and limited capacity of the road around the campus. Thus, campuses have to choose between adding more car parking space to accommodate the increasing student's car use or building more facilities, such as classroom, laboratory, etc. to support teaching and learning activities, and also to preserving campus green space. Therefore, campuses have to play their active role to promote sustainable campus transportation policy in balancing the growing demand for parking spaces and the increased need to build new facilities [1]. Implementation of sustainable campus transport policy, such as reserved parking for those who choose not to drive alone when commuting by car to campus can give various benefits such as saving cost for adding parking space and "greener" campus [2]. It means, ridesharing can be seen as not only an alternative transportation options to reduce single occupancy vehicle (SOV) trips and also reduce greenhouse gases (GHGs) emission [3]. Therefore, it is necessary to investigate several factors that might affect student's intention to rideshare, such as social media, materialism, habit, that probably affect their attitude, subjective norms, and perceived behavior control, which in turn affect their intention and actual behavior to rideshare when commuting by car to campus. The purpose of the present study was to verify the effects of social media exposure related to car advertising, materialism towards car ownership, and car use habit on ridesharing behavior based on the Theory of Planned Behavior (TPB) framework of behavior model. The Theory of Planned Behavior (TPB) is the common

Content from this work may be used under the terms of the Creative Commons Attribution 3.0 licence. Any further distribution of this work must maintain attribution to the author(s) and the title of the work, journal citation and DOI.
Published under licence by IOP Publishing Ltd

conceptual frame to explain the determinants of specific behavior. TPB argues that behavioral intention to engage in a behavior is the major predictor of actual behavior, and that intention is affected by attitude, subjective norms, and perceived behavior control [4]. The present study added three factors to TPB consist of, social media exposure related to car advertising (SM), materialism towards car ownership (M), and car use habit (H) that hypothetically might increase the variance of attitude toward car use (ATT) explained by S, M, and H. Based on the latest survey report, students were the largest internet user, and the second largest internet content accessed was social media [5]. Social media might affect consumers' attitude, especially through advertising [6], On the other side, there is a relationship between materialism with car ownership and car use [8], and materialism will influence individual subjective feelings or attitudes [9]. Furthermore, adding mode choice habit will improve the predictive power of TPB [10]. In this study, the conceptual model is represented in Figure. 1 (SM: social media exposure related to car advertising, M: materialism towards car ownership, and H: car use habit; ATT: toward car use; SN: subjective norm; PBC: perceived behavioural control; BI: behavioral intention to rideshare; AB: actual rideshare behavior).

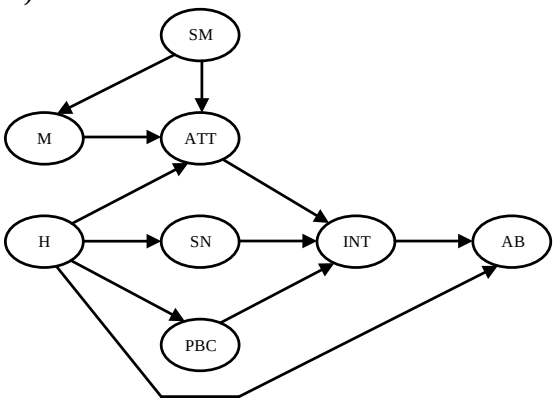

Figure 1. Conceptual framework

2. Method and Materials

The self-report data on students car use habit, attitudes, subjective norms, perceived behavioral control, materialism, social media exposure, behavioral intention, and actual ridesharing behavior were collected from two state universities and five private universities in Surabaya, Indonesia: (1) Airlangga University (UNAIR), (2) (ITS), (3) Surabaya University (UBAYA), (4) Widya Mandala Catholic University (WM), (5) Ciputra University (UC), (6) Hang Tuah University (HT), and (7) Petra Christian University (PCU) were approached to participate in the study. 351 students (211 females, 140 male) completed the study. The breakdown of students was as follows: 30 (UNAIR), 42 (ITS), 75 (UBAYA), 48 (WM), 17 (UC), 56 (HT), and 83 (PCU). All of the respondents were commuting by car to campus and has ridesharing experience on the previous semester. Table 1 outlines the observed variables and question items of the present study. Each latent variable has three or more indicators, with the exceptions for behavioral intention to rideshare (INT) and actual rideshare behavior (AB) for traveling to campus (Table 1) and all items were coded using a 5-point scale. All latent variables have an internal consistency as measured by Cronbach's $\alpha \geq 0.60$. Most of the question items for the latent variable were adopted and modified from several numbers of earlier studies, such as materialism toward car ownership (M) [11], social media exposure related to car advertising (SM)[6], and car use habit (H) [12]. Total of six models was estimated using the Analysis of Moment Structure (AMOS), consist of Theory of Planned Behavior only (TPB), TPB with the addition of habit (TPB+H), TPB with the addition of materialism (TPB+M), TPB with the addition of materialism and habit (TPB+M+H), TPB with the addition of materialism and social media (TPB+M+SM), and the last one is TPB with the addition of materialism, social media, and habit (TPB+M+SM+H).

3. Results and Discussion

Table 2 outlines the results that met the statistical portion of the suitability of the six models. There are five invalid constructs with Variance Extracted (VE) < 0.50, i.e. INT (0.485), ATT (0.284), PBC (0.233), M (0.391), and SM (0.350) but all of the invalid constructs are qualified Construct Reliability (CR) ≥ 0.70, except INT (0.653) and PBC (0.635) (Table 3). The model is considered optimal because of the Modification Indices (MI) does not suggest any addition of error covariance that can increase the model goodness of fit, and increase validity and reliability model construct significantly.

Table 1. Questions Used for the Latent Variables

Latent Variable	Questions (scale mean, st. dev.)
Actual rideshare behavior/AB (1 item)*	• How often did you rideshare when commuting by car to campus in the previous semester (3.03, 1.286)
Intention/INT (2 items, Cronbach's $\alpha = 0.607$)**	• I intend to rideshare when commuting by car to campus next semester (3.65, 1.071) • I plan to rideshare when commuting by car to campus next semester (3.14, 1.275)
Attitude/ATT (9 items, Cronbach's $\alpha = 0.799$)**	• I like to driving a car (2.87, 1.248) • When commuting by car to campus, this will be … … comfortable (4.18, 0.945) … flexible (4.04, 1.07) … cost-effective (3.34, 1.297) … time-saving (3.33, 1.348) … relaxing (4.13, 0.975) … secure (4.22, 0.839) … convenient (4.36, 0.88) • It is hard for me not to commuting by car to campus while my friend does it (2.47, 1.278)
Subjective norm/SN (2items, Cronbach's α =0.758)**	• My family support me to commuting by car to campus (3.93, 1.063) • My friend support me to commuting by car to campus (3.65, 1.075)
Perceived Behavioral Control/PBC (6 items, Cronbach's α = 0.687)**	• I am able to ridesharing with other people (3.61, 1.063) • I am able to ridesharing with my friend (4.44, 0.883) • I enjoy spending time while ridesharing to campus (3.7, 1.03) • I believe I can rideshare when commuting by car to campus (3.61, 1.136) • I am able to ridesharing because I am able to mingle with other people (3.42, 1.115) • It is easy for me to give someone a ride when commuting by car to campus (3.7, 1.068)
Materialisme/M (7 items, Cronbach's $\alpha = 0.821$)**	• I admire people who drive luxury cars (2.98, 1.368) • My life would be better if I own my dream car (2.69, 1.319) • The cars I own say a lot about how well I'm doing (2.55, 1.241) • Buying my dream car gives me a lot of pleasure (3.67, 1.178) • I'd be happier if I could afford to buy a better car than that I own now (3.29, 1.307) • I like a lot of luxury in my life (2.49, 1.269) • I like to spend money on secondary needs (2.81, 1.153)
Sosial Media/SM	• In general, car advertising through social media provides relevant information about the new car (3.46, 1.035)

(5 items, Cronbach's α = 0.765)**	• Car advertising through social media tells me which car brands have the features I am looking for (3.17, 1.212) • Car advertising through social media helps me keep up to date about the new car (3.3, 1.219) • From car advertising through social media, I learn about the car and what to buy to impress others (2.51, 1.246) • Information through social media, influence me to buy the car (2.46, 1.264)
Car use habit/H (5 items, Cronbach's α = .845)**	• Commuting by car to campus is something … … I did for a long time (3.92, 1.213) … that makes me weird if I do not do it (2.78, 1.374) … I do automatically (3.54, 1.405) … I do frequently (3.68, 1.23) … that belongs to my routine (3.73, 1.284)

* scale: 1 = once, 5 = always; ** scale: 1 = disagree, 5 = agree

Table 2. Model Goodness of Fit

	TPB	TPB+H	TPB+M	TPB+M+H	TPB+M+SM	TPB+M+SM+H
Absolute-Fit Measures						
χ^2 (Chi-Square)	484.22	563.43	781.13	948.75	1,024.06	1,239.43
Significance of Probability	0.000	0.000	0.000	0.000	0.000	0.000
Degree of Freedom	153	251	305	438	438	597
CMIN/df	3.165	2.245	2.561	2.166	2.338	2.076
GFI	0.880	0.888	0.861	0.858	0.848	0.843
RMR	0.164	0.093	0.155	0.157	0.147	0.158
RMSEA	0.079	0.060	0.067	0.058	0.062	0.055
Incremental-Fit Measures						
TLI	0.811	0.886	0.823	0.863	0.829	0.857
NFI	0.796	0.843	0.773	0.799	0.766	0.782
AGFI	0.835	0.855	0.828	0.828	0.817	0.815
RFI	0.746	0.812	0.739	0.772	0.735	0.757
IFI	0.851	0.906	0.848	0.881	0.851	0.874
CFI	0.848	0.905	0.846	0.879	0.849	0.872

Table 3. Reliability and Validity of Model Constructs

	TPB	TPB+H	TPB+M	TPB+M+H	TPB+M+SM	TPB+M+SM+H
Construct Reliability						
INT	0.653	0.655	0.653	0.654	0.653	0.654
ATT	0.776	0.781	0.778	0.770	0.778	0.769
SN	0.796	0.772	0.800	0.773	0.800	0.773
PBC	0.635	0.638	0.635	0.638	0.635	0.638
M	n/a	n/a	0.816	0.816	0.815	0.817

SM	n/a	n/a	n/a	n/a	0.713	0.713
H	n/a	0.836	n/a	0.836	n/a	0.836
Variance Extracted						
INT	0.485	0.488	0.486	0.487	0.486	0.487
ATT	0.299	0.299	0.298	0.284	0.298	0.284
SN	0.671	0.634	0.678	0.634	0.678	0.634
PBC	0.233	0.234	0.234	0.234	0.234	0.235
M	n/a	n/a	0.395	0.395	0.391	0.395
SM	n/a	n/a	n/a	n/a	0.350	0.351
H	n/a	0.514	n/a	0.515	n/a	0.515

Based on the six structural models (Table 4 and Figure 1), students' perceived behavior control (PBC) was the strongest factor that influences their behavioral intention to rideshare when commuting by car to campus. While students' car use habit was the strongest factor that influences students' attitude toward car use (ATT) compare with both materialism toward car ownership (M) and social media exposure related to car advertising (SM) influence the attitude (ATT). Added social media exposure related to car advertising, students' materialism towards car ownership, and students' car use habit in the Theory of Planned Behavior model, despite all, the relationship between factors were statistically significant for all models, only have small changes to all standard loading factors, both positive and negative. Although social media exposure related to car advertising has a significant effect on students' materialism towards car ownership, both social media and materialism do not have a significant effect on students' attitude toward commuting by car to campus when car use habit included in the model (TPB+M+SM+H). But materialism has a significant effect on students' attitude toward commuting by car to campus when car use habit excluded from the model (TPB+M+SM). The similar conclusion also applies to the comparison between TPB+M model and TPB+M+H model, if car use habit ignored, materialism influence attitude almost three times compared with if car use habit included in the model. In other words, if students' has a strong car use habit, the effect of social media exposure and materialism toward car ownership on their attitude toward commuting by car to campus can be ignored.

Table 4. Standard Loading Factor and Variance (R^2)

	TPB	**TPB+H**	**TPB+M**	**TPB+M+H**	**TPB+M+SM**	**TPB+M+SM+H**
SM→M	n/a	n/a	n/a	n/a	0.817[c]	0.809[c]
M R^2	n/a	n/a	n/a	n/a	0.668	0.655
SM→ATT	n/a	n/a	n/a	n/a	-0.063*	0.089*
M→ATT	n/a	n/a	0.419[c]	0.141[a]	0.480[b]	0.070*
H→ATT	n/a	0.801[c]	n/a	0.782[c]	n/a	0.782[c]
ATT R^2	n/a	0.642	0.175	0.185	0.185	0.635
H→SN	n/a	0.710[c]	n/a	0.709[c]	n/a	0.709[c]
SN R^2	n/a	0.504	n/a	0.502	n/a	0.502
H→PBC	n/a	0.391[c]	n/a	0.389[c]	n/a	0.387[c]
PBC R^2	n/a	0.153	n/a	0.151	n/a	0.150
ATT→INT	0.239[c]	0.173[a]	0.240[a]	0.168[a]	0.241[c]	0.172[a]
SN→INT	-0.203[c]	-0.352[c]	-0.204[c]	-0.352[c]	-0.205[c]	-0.353[c]
PBC→INT	0.925[c]	0.995[c]	0.924[c]	0.996[c]	0.924[c]	0.995[c]
INT R^2	0.954	0.988	0.953	0.988	0.953	0.988
INT→AB	0.514[c]	0.458[c]	0.515[c]	0.458[c]	0.516[c]	0.459[c]

H→AB	n/a	0.147[a]	n/a	0.148[a]	n/a	0.147[a]
AB R^2	0.264	0.269	0.265	0.268	0.266	0.268

* = non significant ($p > 0.05$), [a] $p < 0.05$, [b] $p < 0.01$, [c] $p < 0.001$

4. Conclusion

Added social media exposure related to car advertising, students' materialism towards car ownership, and students' car use habit in the Theory of Planned Behavior model (TPB+M+SM+H) only affect the variance that can be explained by that three variables on the student's attitude toward car use, and relatively not affect the variance of the students' subjective norm, perceived behavioral control, intention to rideshare and actual rideshare behavior.

5. References

[1] Poinsatte F and Toor W 1999 Finding a New Way: Campus Transportation for the 21st Century
[2] Goodwin G, Sabaroche S and Council W 2014 Exploring Sustainable Transportation for Texas Southern University
[3] Erdoğan S, Cirillo C and Tremblay J-M 2014 Ridesharing as a green commute alternative: a campus case study *International Journal of Sustainable Transportation* 9-5-377–388
[4] Ajzen I 1991 The theory of planned behavior *Organizational Behavior and Human Decision Processes* 50-2-179–211
[5] Asosiasi Penyelenggara Jasa Internet Indonesia 2017 Penetrasi & Perilaku Pengguna Internet Indonesia 2017.
[6] Soo JT and Chia L 2007 Are we measuring the same attitude? understanding media effects on attitude towards advertising *Marketing Theory* 7-4-353–377
[7] Sirgy MJ, Gurel-Atay E, Webb D, Cicic M, Husic M, Ekici A, Herrmann A, Hegazy I, Lee DJ and Johar JS 2012 Linking advertising, materialism, and life *Social Indicators Research* 107-1-79–101
[8] Gatersleben B 2011 Auto Motives: Understanding Car Use Behaviors 137–148
[9] Lu ACC, Gursoy D and Del Chiappa G 2016 The influence of materialism on ecotourism attitudes and behaviors *Journal of Travel Research* **55**-2-176-189
[10] Setiawan R, Santosa W and Sjafruddin A 2015 Effect of habit and car access on student behavior using cars for traveling to campus *Procedia Engineering* 125-571–578
[11] Richins ML 2004 The material values scale: measurement properties and development of a short form *Journal of Consumer Research* 31-1-209-219
[12] Verplanken B and Orbell S 2003 Reflections on past behavior: a self-report index of habit strength *Journal of Applied Social Psychology* **33**-6-1313–1330