Travel Experience and Multitasking of Toll Road Users in Jakarta Metropolitan Area, Indonesia: An Investigation for Passenger of Private Car, Taxi, and Ride-sourcing

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Abstract: Travellers performed activities during travel time to maximize their time and space constraint. Previous studies have suggested that this engagement will influence travel experience and consequently imply to well-being. This paper examines how travel experience of private car, taxi, and ride-sourcing passengers influenced by different types of secondary activities and its interaction with travelers' personal and travel characteristics. For those purposes, 216 respondents of aforementioned passengers were asked their travel experience in the formed of nine cognitive and affective questions using Satisfaction of Travel Scale Method (STS) in Jakarta Metropolitan Area (JMA). The results of this study found that performing relaxing activities such as resting/sleeping positively influenced travel experience across all the affective and cognitive domains. Positive cognitive evaluation of travel experience found associated with more multitasking engagement. This study also found that trip for working purpose associated with lower overall travel satisfaction.

Keywords: travel experience, multitasking, cognitive and affective, satisfaction of travel scale

1. INTRODUCTION

As a consequence of spatially separated activities, travel accounts a substantial part of individuals' daily time use. Experience in travel will influence individuals' daily satisfaction as well as emotional well-being (De Vos and Witlox, 2017; Ettema et al., 2012; Olsson et al., 2013). Travel experience or satisfaction is influenced by events experienced when using a travel mode (Jakobsson Bergstad et al., 2009). Studies have indicated that travel experience influenced by modes of travel (e.g. public transport and private transport), type of travel (i.e. working or leisure), and the activities during travel (Ettema et al., 2012; Mokhtarian and Solomon, 2001). In the latter case, previous studies have argued on how performing activities during travel could increase the travel experience, consequently making travel more positive within individuals' time and space constraint (Ettema et al., 2012). Individuals might use the absence of activities during travel to engaging in various activities (Mokhtarian and Solomon, 2001; Ettema et al., 2010, 2012). Therefore, opportunities to accomplish more activities will lead to increasing positive travel experience and imply for achieving better daily life satisfaction and greater well-being (Bergstad et al., 2011; Cao and Ettema, 2014; Friman et al.,

2013; Kahneman et al., 2004).

Many studies argue that the degree of activities engagement during travel is varied among modes (i.e. public and private transport) and in obligations within travel activities (i.e. driver or passengers) (Ettema and Verschuren 2007; Ettema et al., 2012; Kenyon and Lyons 2007, Lyons and Urry, 2005). Public transport offers various degrees of productivity in their journey, whereas, car requires active participation in driving and navigation which give fewer opportunities in engaging in-vehicle activities (Lyons and Urry, 2005). Furthermore, in the sense of obligations during travel, drivers attached with driving obligations, such as active attention and awareness for driving, while passengers have more flexibilities in engaging activities. Increasing flexibility in engaging various activities might increase the positivity of travel experience. Several studies have been carried for multitasking of public transport passenger, whereas for the specific passengers of private car and taxi are still limited (Lyons and Urry, 2005; Ohmori and Harata, 2008). The passengers of private car and taxi are substantially increasing in the metropolitan area in the developing countries due to rapid changes of the economy and significant motorization. In addition, the fact of emerging mobility services applications (i.e. uber, lyft, grab, etc.), its advancement, gives additional choices for mobility, which in fact the market in developing countries increased in the last decades.

Travel experience for private car passengers is different from drivers due to its flexibilities. For instance, while driver strictly attaches with obligations of driving, passengers have higher flexibility to engage in secondary activities. Furthermore, for the case of taxi and ride-sourcing, passenger are having a private space during their travel, differ than the passengers in public transport (e.g. bus and train) who share their space with other passengers. Therefore, the flexibilities to engage in activities might be increasing. With the substantial growth of the private car, taxi, and ride-sourcing passenger, their contributing to traffic congestion is significant. However, much less attention has been given to the issue of how multitasking activities for passengers lead to the better travel experience and influence their decision (Ettema et al., 2010, 2012; Friman, 2004; Friman et al., 2017; Kahneman et al., 2004). Note that from this point onward we refer private car, taxi and ride-sourcing passengers as the passengers.

With increasing number of mobility in urban areas, this study try to shed a light in exploring the travel experience of passengers, especially in developing countries. In the special issue of the development of autonomous vehicle can make travellers escape in the obligations of driving or, in other words, be a passengers. Therefore, this study could be a knowledge on investigating travel experience of passengers and the determinants which affect them. As stated above, the flexibilities difference (i.e. space and obligations), travel experience of the passengers is different from either private car drivers or public transport users. Therefore, the knowledge of the factors influencing travel experience increases our insight into how travel can be made more enjoyable in itself (Cao and Ettema, 2014; Jakobsson Bergstad et al., 2011). Further, investigating the passengers will provide better transport and urban policies that fit with someone who has more flexibilities and private space during their travel time. The study will focuses on answering these three questions. Do travel experience of the passengers of private car, taxi, and ride-sourcing have a significant relationship with their socio-demographic and travel characteristics? How travel experience of aforementioned passengers influence by their multitasking behavior? How interaction of different types of secondary activities, and personal and travel characteristics of travellers on the number of activated secondary activities during travel as well as travel frequency using tol road?

This study collected data from 216 passengers of private car, taxi, and ride-sourcing

during their home-work or work-home trip as a sample. Furthermore, this study uses satisfaction for travel scale method (STS) for capturing the individuals' travel experience (Ettema et al., 2011; 2012; Jakobsson Bergstad et al., 2009). The STS designed using similar dimensions as subjective well being (SWB) as it is a method for measuring SWB in the travel context. The STS consist of six affective and three cognitive evaluation questions. The remaining of this paper is as follows. After the introduction section this paper discusses how to measure travel experience followed by the method. In the following section, model estimation is presented followed by a discussion section. This article is closed with the conclusion section.

2. MEASURING TRAVEL EXPERIENCE

Subjective well-being (SWB) has been proposed as a measure of individuals' benefits in various life of domains as alternatives to decision utility (Kahneman, 1999). In general, SWB defined as the degree of individual's cognitive and emotional well-being to which an individual positively evaluates the overall quality of their lives (Diener and Suh, 1997; Ettema et al., 2012). SWB has attracted attention in various disciplines including transportation, geography, philosophy, economics, psychology, and sociology. In the sense of travel behavior, subjective well-being has a substantial relationship with activities and consequently travel. People travel in order to participate in activities, and this, in turn, links to a sense of well-being (Abou-Zeid, 2009; De Vos, 2018; Friman et al., 2017). Therefore, an important research question is how significant and how SWB depends on travel context (e.g. travel mode, level-of-service, travel time and length, etc.).

Essentially, travellers' satisfaction is an evaluation of events experienced when using a travel mode and transport system (Jakobsson Bergstad et al., 2009). With the evaluation, travel experience influenced overall SWB from three potential forms (Ettema et al., 2011). First, the satisfaction which focuses on the experience for the product itself will influence the global SWB directly such as positive or negative mood. For instance, for public transport found that satisfaction with bus services depends on a variety of non-instrumental factors such as cleanliness, privacy, safety, convenience, stress, social interaction, and scenery (Stradling et al., 2011). Low quality of infrastructure will result in declining satisfaction influence consequently lead to negative mood. Second, as travel is an instrument for participation in activities in different places, the service provides by the travel mode or the transport system will influence the activity participation to achieve various goals in daily life (Oishii et al., 1999). The third is the implication of travel for controlling the activities arrangement. As the way activities are planned and executed influences SWB if the travel quality is low consequently imply to the time pressure. It is leading to delay or more uncertainty in achieving the efficiency with which activities and projects can be carried out (MacLeod et al., 2008).

As a substantial part of individuals daily life, individuals evaluate their experience of daily travel and activities which influences their overall well-being (Cao and Ettema, 2014; Jakobsson Bergstad et al., 2011). The Satisfaction of Travel Scale (STS; see Ettema et al., 2012) is based on methods developed to measure SWB in the travel context. According to Diener et al. (1985), SWB consists of two dimensions: cognitive and affective well-being. Cognitive well-being defines as individuals' assessment of their life in general, mostly based on their objective life conditions. It is a judgment of individuals' life in terms of how good it is, rather than directly expressing individuals' emotions or mood. However, it cannot be ruled out, and it has been empirically demonstrated (Jakobsson Bergstad et al., 2012) that cognitive

well-being is in part based on memory for emotional experiences. Cognitive well-being is measured using existing scales such as the satisfaction with life scale (SWLS) (Diener et al., 1985) or a single item scale (World Values Survey, 2005). Affective well-being refers to an individual's emotional state. It may be measured by immediate self-reports of emotions or mood during the execution of activity or travel. Alternatively, affective well-being may be measured retrospectively. Schwarz et al. (2009) report that results from reconstruction methods, in which respondents recall how they felt during a specified past episode, are highly correlated with immediate reports.

The STS is designed using similar dimensions as SWB (Ettema et al., 2012). The satisfaction with travel can be regarded as SWB related to a travel domain and should, therefore, be measured based on similar principles. Thus, satisfaction with travel pertains with both cognitive and affective dimensions. Consequently, measurement of STS consists of sets of nine questions to enabling individuals to evaluate their trip in their cognitive and affective dimensions: (i.) First, the six questions, which is to measure affective related to the trip, are based on the Swedish Core Affective Scale (SCAS; see Västfjäll and Gärling, 2007). The first three items consist of pairs of activation-deactivation ranging from negative activation (hurried, worried, stressed) to positive deactivation (relaxed, confident, calm). Together these items measure the extent of positive de-activation. Questions 4-6 consist of pairs of adjectives ranging from negative deactivation (tired, bored, fed up) to positive activation (alert, enthusiastic, engaged). Together, these items measure the extent of positive activation. (ii.) Finally, the last three questions from 7 to 9 consist of pairs of descriptions related to the functionality of travel which ranging from negative to positive cognitive evaluations of travel focusing. Furthermore, the STS ratings for every question are in 7-point scales that starting from -3 (minimum) over 0 (neutral) to 3 (maximum).

Previous studies have investigated the application of STS for measuring travel experience in various context (Ettema et al., 2011, 2012, 2013; De Vos et al., 2016; Friman et al., 2013; and Olsson et al., 2013). Note that the STS refers to travel in general and that it, therefore, may be applied directly to the private car, public transport, walking and cycling trips. For instance, Ettema (2012) investigate the satisfaction for work commute for public transport user in Sweden using STS. The study found the implication of activities during travelling to travel experience or satisfaction. For the private car user, Ettema et al. (2013) investigate the influence of the design of the road to driver satisfaction in Sweden. It is found that STS influenced by experienced traffic safety, annoyance with other road users, the trip being tiring, being distracted by billboards, and lack of freedom to choose speed and lane. Furthermore, the study that investigate the role of mode choice and the residential neighbourhood to travel satisfaction done by De Vos et al. (2016) in Ghent, Belgium, using the STS method. The findings support previous study (Olsson et al., 2013; Martin et al., 2014) which underline the positive influence of active travel (i.e. walking and bicycling) to the travel satisfaction. The study also underline that travel satisfaction (i.e. affect and evaluation) of public transit users affected by both the residential neighbourhood and residential preferences. Surprisingly, the suburban residents experience public transit use more positively than urban residents. On the other hand, respondents with urban land use preferences and a positive stance toward active travel and public transit experience their public transit trip more positively than respondents with positive suburban and car attitudes.

From the past study, it can be concluded that using tools such as STS may provide relevant insights into how qualitative and design-related factors influence the attractiveness of trips made by car or other travel modes. However, Ettema et al. (2012) stated that further tests needed to decide about the applicability of STS to measure the experienced utility of travel. Therefore, this study is one attempt to fill the gap to investigating how STS varies and reliable

across contexts.

3. METHOD

3.1 Data Collection

Data for this analysis is obtained from questionnaire distribution, which conducted from 21th May – 14th July 2018. The survey is part of the Availability and Willingness to Pay (ATP and WTP) of the Jakarta Toll Road Project, and the questionnaire prepared to collect personal and travel information and travel experience of toll users. The question of the travel experience is asked using the STS method. The STS consists of nine seven-point adjective scales representing cognitive and affective evaluation, which can be ssen in Table 1. The order between the rating scales was counterbalanced (Ettema et al., 2011; Jakobsson Bergstad et al., 2009).

Table 1. The Travel Satisfaction Scale (Ettema et al., 2013)

No	Negative activation - positive deactivation		No	Negative deactivation - positive activation		No	Cognitive evaluation	
	Scale (-3 ↔ 3)			Scale (-3 ↔ 3)			Scale (-3 ↔ 3)	
1	Hurried	Relaxed	4	Tired	Alert	7	Travel was worst I can think of	Travel was best I can think of
2	Worried	Confident	5	Bored	Enthusiastic	8	Travel was low standard	Travel was high standard
3	Stressed	Calm	6	Fed up	Engaged	9	Travel worked well	Travel worked poor

The questionnaire was prepared for the smartphone application, and surveyors interviewed respondents who use Toll Road within Jakarta Metropolitan Area (JMA). The toll road in Jakarta Metropolitan Area started to operate from 1978 with the first Jakarta – Bogor city toll road called Jagorawi. The first inner-city toll road of Jakarta operated from 1996 from Cawang to Pluit as a part of Jakarta Intra Urban Toll (JIUT) Road connection. In 2015, more than 230 km toll road operated in the Jakarta Metropolitan Area (Ministry of Public Works and Housing, 2015). The toll road is served inter-city connections as well as inner-city connection as illustrated in Figure 1.

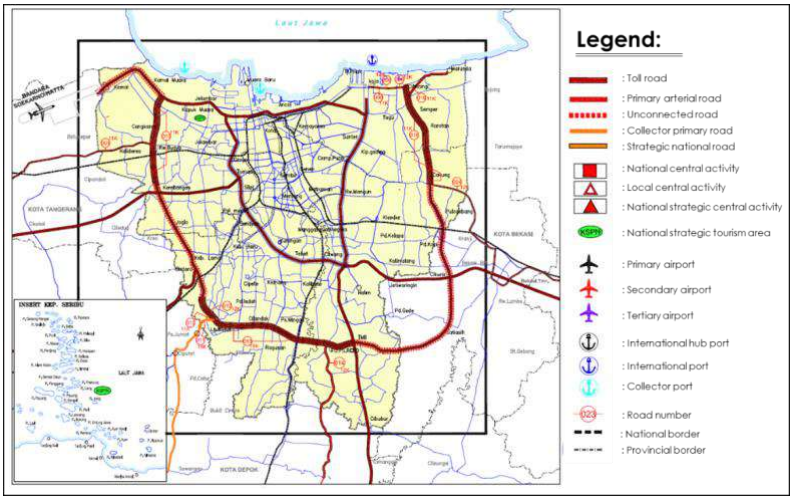

Figure 1. Toll Road and Road Network Map of DKI Jakarta and Surrounding (Ministry of

Public Works and Housing Law No. 250, 2015

Furthermore, the toll road served the mobility of the Jakarta Metropolitan Area (JMA) resident and its surrounding, which consist of eight cities and one province (Table 2). Among its cities, JMA has a varies social and economic characteristics. The core of urban areas is in DKI Jakarta province, which has higher job opportunities and access to business, social, leisure, and transport infrastructure than other cities. The study used simple random sampling with a 2% margin of errors to ensure the variability of the data (Yamane, 1967). From total populations of more than 31 million inhabitants, more than 3300 questionnaires were distributed.

Table 2. Jakarta Metropolitan Area General Statistics (Indonesia Statistics Bureau, 2015)

City/Regency/Province	Area (km^2)	Population 2015 (pax)	Density (pax/km^2)
DKI Jakarta Province	664.5	10,177,924	15,317
Bogor City	118.5	1,043,720	8,808
Depok City	200.3	2,033,508	10,152
Tangerang City	164.5	2,047,105	12,444
South Tangerang City	210.2	1,533,403	7,295
Bekasi City	210.5	2,733,240	12,985
Bekasi Regency	1,484.7	3,122,698	2,103
Tangerang Regency	1,110.6	3,257,780	2,933
Bogor Regency	3,440.7	5,331,149	1,549
Total	**7,604.6**	**31,280,527**	**4,113**

The survey was conducted in centre of activities such as office, mall, etc. as well as respondents residential area in of Jakarta Metropolitan Area. From 3300 questionnaires, only 3209 questionnaires can be analyzed further. For the purpose of this study, only 216 sets of the passengers responses were used in the analysis. From the data set, the majority is private car passengers (78.3%) followed by ride-sourcing and taxi passengers by 17.7% and 4.0% respectively. The reason for selecting this group is regarding the flexibilities to engage in secondary activities that the driver and the private space which is provided by taxi and ride-sourcing vary than public transport who share their space with other passengers (Keseru and Macharis, 2018; Lyons and Urry, 2005; Ohmori and Harata, 2008). Therefore the implication of multitasking to travel experience might be different.

3.2. Respondent Characteristics

Table 3 shows the data description of the respondent (N=216). From the survey, it was found that the majority is older than 26-40 years old (48.8%). The distribution of respondents' income dominated with range 6,000,001 IDR to 10,000,000 IDR with 27.6% and 10,000,001 IDR to 18,000,000 IDR with 25.5%. In the sense of travel characteristics, the majority of respondents have travel length more than 20 km (77.8%). Furthermore, dominantly respondents have long travel time with 60 to 120 minutes of travel time (52.8%) while only a few respondents (1.4%) have less than 30 minutes of travel time. More than 78% of the respondents using a private car with driver, while respondents who were using ride-sourcing constitute 17.7% of the respondents. In the sense of travel frequency of the trip, the majority of the respondents (55.6%) is only performing the trip 1-2 times per week. Only 19.5% of respondents who performed the trip more than four times per week which could be classified as a routine trip.

Moreover, these sociodemographic and travel characteristics are compared between

gender and their resident location (i.e. DKI Jakarta, or Greater Jakarta) which also described in Table 3. Data shows that the preferred mode and distribution of age are found as differences between male and female. Furthermore, the type of activities during travel are summarized, as shown in Table 3. The activities were divided into two based on the engagements, offline, and online. The online activities mainly involved smartphones, or other types of gadgets, and have a connection with the internet, while the offline activities related to non-smartphone, non-gadget activities, or non-internet activities. Most of the respondents were reading a book/newspaper for offline activities (91.7%) while working/studying (86.1%) and reading/sent email (83.3%) activity engagement was the most frequent online activities.

The tabulation of trip purposes, multitasking, and trip frequency also described in Table 4. It is found that fewer trip frequency (1-2 trip/week) attempt by the respondents who have tourism purpose (25.5%) and working purposes (22.2%). More than 55% respondents are engaging in working trip while 2% respondents engaging in a business trip. Most of the respondents who have fewer trip frequency using toll road also found have fewer multitasking degree (1-2 activities) which found constitute more than 27% of the respondents. Respondents who perform working trip and tourism and other trip found have 1-4 multitasking, which constitutes 43.6% and 25.0%, respectively.

Table 3. Respondent Characteristics and Comparison (n=216)

Variables		Percentage (%)	Chi-square	
			Gender (Male vs Female)	Resident Location (Jakarta vs Greater Jakarta)
Income‡	< 6,000,000 IDR	18.1	9.037	2.798
	6,000,000 IDR - 10,000,000 IDR	27.8		
	10,000,001 IDR - 18,000,000 IDR	24.5		
	18,000,001 IDR - 24,000,000 IDR	10.2		
	24,000,001 IDR - 30,000,000 IDR	11.1		
	> 30,000,000 IDR	8.3		
Age	<18 years old	0.0	9.198**	13.133**
	18-25 years old	19.1		
	26-40 years old	48.8		
	41-60 years old	29.8		
	> 60 years old	2.3		
Travel Length	< 10 km	1.4	6.34	1.741
	10-20 km	20.8		
	20.1 - 30 km	39.8		
	30.1 - 45 km	25.9		
	> 45 km	12.0		
Travel Time	< 30 minutes	1.4	3.374	0.932
	30-60 minutes	37.0		
	60-120 minutes	52.8		
	>120 minutes	8.8		
Travel Frequency Using Toll Road Per Week	1-2	55.6	4.368	5.238
	3-4	25.0		
	5-6	15.3		
	Everyday	4.2		
Modes	Private car	78.3%	9.830**	3.085
	Taxi	4.0%		
	Ride-sourcing	17.7%		

‡Rp. 14,500 equal to 1 USD; * Significant at 10%; ** Significant at 5%

Table 4. Activities during Travel Characteristics

Offline Activities	Percentage (%)		Purpose of the Trip	Trip/week Proportion (%)		
	Yes	No		1-2	3-4	> 4

Reading book/newspaper	91.7	8.3	Working	22.2	18.5	15.3
Eating/drinking	74.5	25.5	Business	0.0	1.9	0.5
Enjoying view	74.5	25.5	School	7.9	0.9	1.9
Sleeping	66.2	33.8	Tourism and other	25.5	3.7	1.9
Socialization	47.7	52.3	Multitasking	Trip/week Proportion (%)		
Online Activities	Percentage (%)			1-2	3-4	> 4
	Yes	No	1-2	27.8	8.3	8.3
Phone-calling	65.7	34.3	3-4	18.5	9.7	5.6
Reading/sending email	83.3	16.7	>4	9.3	6.9	5.6
Listening music	55.6	44.4	Purpose of the Trip	Multitasking Proportion (%)		
Playing game	82.9	17.1		1-2	3-4	>4
Social media smartphone	53.7	46.3	Working	21.8	21.8	12.5
Working/studying	86.1	13.9	Business	0.5	0.5	1.4
Taking picture/video	74.0	26.0	School	6.0	2.8	1.9
			Tourism and other	16.2	8.8	6.0

4. MODELS ESTIMATION

This section presents the estimation results of models of travel experience and its relation with the individuals' activities engagement during the travel period as well as personal and travel characteristics. The first models are the evaluation of travel experience in the form of Positive Activation (PA), Positive Deactivation (PD), Cognitive Evaluation (CE), and Overall Satisfaction of Travel (Ettema et al., 2012; Ettema et al., 2013; Friman et al., 2013). The analysis was performed by estimating multiple linear regression (MLR). Furthermore, the latter models investigated the trip frequency and the number of multitasking activities. The analysis was performed by estimating ordinal logistic regression (OLR). For the trip frequency model, the dependent variable's responses were grouped into three ordinal response categories, the first category representing 1–2 trips/week, the second category representing 3–4 trips/week, the third category representing more than 4 trips/week. For the multitasking activities model, the dependent variable consists of three groups of ordinal response category. The first group is representing 1-2 activities engagement, while the second group representing 3-4 activities engagement. The last group represent more than 4 activities engagement during travel.

The explanatory variables for all of the models were the type of online and offline activities, including personal and travel characteristics. The type of activities tested to investigate the hypothesis that the secondary type activities with influence outcomes of travel experience for the specific domain (i.e. cognitive and affective). Another hypothesis was that travel experience and the type of activities influenced by trip frequency (e.g. routine and occasional). Furthermore, it is interesting also to investigate whether the type and number of activities during travel is dependent on their travel experience, secondary activities, travel and personal characteristics.

4.1 Travel Experience Analysis

To investigate the travel experience, this study conducted regression analyses with the three STS domains and the overall STS, serving as dependent variables. In order to test the reliability of the STS, Cronbach's alphas were calculated for the three underlying dimensions of STS (PA, PD, and CE) and the overall STS. Cronbach's alpha (Field, 2009) is based on the variances and covariances of the items supposed to measure each dimension and expresses the extent to which these items, in fact, vary in a consistent way. Such that it can be inferred that averaging them provides a reliable measure of the dimension. Table 5 illustrates the reliabilities of all the indexes (Ettema et al., 2013) as indicated by Cronbach's alphas which

were satisfactory. It shows that the Cronbach's alphas are larger than 0.7 for every STS domains and more than 0.9 for overall STS. It also appears that the PA, PD, CE, and overall STS are significantly correlated (see Table 5). Thus, STS measures three correlated dimensions of satisfaction with travel capturing different aspects. The average item scores indicate positive experience for PA, PD, and overall STS, whereas negative for CE.

Furthermore, in order to investigate influencing factors, MLR analyses carried out in which every STS domains (PA, PD, and CE) and for the overall STS (average across the three dimensions) which shows in Table 5. Although the goodness-of-fit (R-square) of the four models are low to moderate, significant effects are found for several variables. The insignificant explanatory variables are retained in the models due to its relation to other variables.

Table 5. Reliability of Measurement Scales and Correlations between Dimensions

STS Domains	Mean	Std. Dev.	Cronbach's Alpha	Correlation		
				PD	CE	Overall STS
Positive Activation	0.032	1.235	0.721	.747**	.767**	.912**
Positive Deactivation	0.338	1.178	0.779		.765**	.915**
Cognitive Evaluation	-0.020	1.234	0.805			.923**
Overall STS	0.117	1.114	0.907			

* Significant at 10%, ** Significant at 5%

4.1.1 Positive Activation

Individuals' affective evaluation degree of an alert, enthusiast, and engaged are performed in the positive activation model. In regards to the likelihood of the model, the variance explained in the model is 25.8% (R^2=0.258). Eating/drinking and rest/sleeping, as offline activities, shows influence positively to positive activation.

The model revealed that socialization also a slightly significant influence on positive activation. In regards to online activities, listening to music found to be influence positive activation. Furthermore, marginally significant influence shows for variables of personal and travel characteristics. For personal characteristics, senior citizen (age more than 60 years old) tends to have positive activation. While high-income travelers (more than IDR 18 million income) most likely have negative activation. Travel length (more than 30 km/trip) tend to have a negative impact on positive activation. The purpose of the trip to perform working activities also shows the negative impact on positive activation.

4.1.2 Positive Deactivation

The positive deactivation domains represent the individuals' affective evaluation degree of relax, calm, and confidence during the trip. With the explanatory variables of personal and travel characteristics, model suggests 26.9% (R^2=0.269) of variance explained. Several variables of offline activities found to shape the positive deactivation dimension. The offline activities that were explaining positive de-activation are reading book/newspaper and rest/sleeping. In addition, socialization activity engagement also implies positive deactivation. Marginally significant variables in offline activities found for eating/drinking activity. In particular, it implies positive deactivation. It can also be noted, listening to music, as online activity, found marginally significant influence positive deactivation. In addition, the personal and travel characteristics are found to influence the deactivation dimension. Male travelers found to have positive deactivation rather than female travelers. Furthermore, marginally significant also found for several variables of travel characteristics (i.e. trip frequency and purposes). As fewer than 3 trips/week and working trip are associated with negative

deactivation.

Table 6. Travel Experience Models

Variables	Positive Activation		Positive Deactivation		Cognitive Evaluation		Overall STS	
	Unstd. Beta	t	Unstd. Beta	t	Unstd. Beta	t	Unstd. Beta	t
Constant	3.041	7.896	3	7.266	2.673	5.927	2.788	11.93
Offline Activities								
Reading book/newspaper [D]	0.198	0.591	0.775	2.428**	0.754	2.168**	0.551	1.838*
Eating/drinking [D]	0.613	2.613**	0.45	1.916*	0.337	1.403	0.351	1.695
Enjoying view [D]			0.263	1.223	0.083	0.022	0.279	0.153
Sleeping [D]	0.642	3.288**	0.748	3.847**	0.616	3.034**	0.631	3.583**
Socialization [D]	0.326	1.841*	0.381	2.173**	0.129	0.715	0.272	1.734
Online Activities								
Phone-calling [D]	-0.356	-1.780*	-0.334	-1.559	-0.484	-2.259**	-0.468	-2.538**
Reading/sending email [D]			0.072	0.267	0.135	0.492	0.09	0.37
Listening music [D]	0.345	1.987**	0.324	1.910*	0.242	1.337	0.233	1.478
Playing game [D]	-0.269	-1.066	0.165	0.67				
Social media smartphone [D]			0.178	0.833				
Working/Studying [D]					-0.134	-0.498	-0.327	-1.427
Taking picture [D]	0.349	0.973	0.298	0.847	0.312	0.809	0.36	1.075
Socio-Demography								
> 60 years old [D]	0.963	1.732*	0.365	0.706			0.379	0.786
< 25 years old [D]	0.258	1.177	0.152	0.739	0.366	1.645	0.208	1.082
< 6,000,000 IDR income [D]	-0.214	-0.973						
> 18,000,000 IDR income [D]	0.39	1.879*			-0.095	-0.468		
Apartment resident [D]	-0.388	-0.991			-0.227	-0.579		
Dormitory resident [D]	0.501	1.652	0.419	1.453	0.535	1.701*	0.531	1.938*
Female traveler [D]					-0.282	-1.616		
Male traveler [D]	0.202	1.152	0.377	2.327**			0.252	1.695
Travel Characteristics								
Working trip [D]	-0.367	-1.840*	-0.301	-1.857*	-0.199	-0.999	-0.294	-1.993**
School trip [D]	-0.313	-0.991			-0.249	-0.777		
1-2 multitasking [D]			0.276	1.054				
> 4 multitasking [D]	-0.224	-0.716	-0.483	-1.348	-0.277	-0.772	-0.151	-0.489
< 20 km travel length [D]					0.356	1.512		
> 30 km travel length [D]	-0.338	-1.893*	-0.261	-1.525	-0.356	-1.836*	-0.319	-1.987**
< 1 hour travel time [D]							-0.069	-0.425
> 1 hour travel time [D]	0.277	1.487	-0.183	-1.032	0.361	1.858*		
1-2 trip/week [D]	-0.346	-1.514	-0.385	-1.782*				
>5 trip/week [D]							0.192	0.956
Private car user [D]	-0.276	-1.333			-0.17	-0.618		
Ride sourcing user [D]			-0.159	-0.664	-0.227	-0.683	-0.081	-0.365
Travel alone [D]	-0.297	-0.915	-0.311	-1.022				
Travel with 1 person [D]	-0.339	-1.689*	-0.228	-1.266				
> 1 person traveling with [D]					0.261	1.367		
ANOVA [RMS; F; Sig.]	[3.519; 2.748; 0.000]		[3.351; 2.919; 0.000]		[3.202; 2.432; 0.000]		[3.326; 3.221; 0.000]	
Model Summary [R; R2; Adjusted R-Square]	[0.508; 0.258; 0.164]		[0.519; 0.269; 0.177]		[0.485; 0.235; 0.138]		[0.499; 0.249; 0.172]	

[D] = dummy variables 1 if yes; 0 otherwise; * Significant at 10%, ** Significant at 5%

4.1.3 Cognitive Evaluation

Travelers cognitive evaluation model constitutes the evaluation of standard of the trip, which performed in the model (Table 6). The model explains 23.5% of the variance (R_2=0.235). Reading book/newspaper during travel found to have a positive impact on cognitive evaluation as well as rest/sleeping. In term of online activities, phone-calling activity shows negative influence on the cognitive evaluation. In regards to the personal and travel characteristics, marginally impact on the cognitive evaluation has found in the several variables. Dormitory resident travelers slightly tend to have a positive cognitive evaluation. Longer travel length (more than 30 km) found marginally influence negativity to the cognitive evaluation of travelers.

4.1.4 Overall Satisfaction

Overall satisfaction of travel is measured by averaging all of the dimensions across the STS. It constitutes of overall satisfaction from every domain (Friman et al., 2013). Table 5 shows the result of overall satisfaction model which the model could explain 24.9% of the variance (R2=0.249). Despite the low-to-medium r-square, several variables found to be significant influence the overall satisfaction, which support previous models as well as past studies findings.

Similar to previous models, maintenance activities (i.e. rest/sleeping) have a significant impact on overall satisfaction. In could be noted that travelers utilized their travel time to have their' oneself time, preparing for engaging activities or resting after daily activities. This finding related to the opportunities provided by travel time for relaxing and including preparing "mentally" between origin and destination for their role in daily lives (Mokhtarian and Solomon, 2001). Furthermore, similar to the CE model, phone-calling have a significant negative impact on overall satisfaction. This might be related to the pressure of information that produces by the activities. It supports by finding in the PA model, which indicates the marginal significance of phone-calling effect to the negative deactivation.

Furthermore, the travel characteristics also found significant influence the overall satisfaction. Working trip found negatively influence overall satisfaction. This may, in particular, pertain to the instrumental effect (Jakobsson Bergstad et al., 2011) of travel purposes, which give the sense of pressure to the travel itself due to the activities performed. As working related to tight and hectic schedule, therefore, might imply to the satisfaction of travel as well as a travel experience. In addition, longer travel length found to have a significant negative impact on the overall satisfaction. As adding travel length imply to travel duration, therefore the chain implication of negativity might occur to influence travel experience.

4.2 Trip Frequency Using Toll Road and Multitasking Analysis

The findings above indicates the instrumental effect of travel purposes to the travel experience. Furthermore, from the data description, the frequency of toll road users suggested associated with particular travel purpose. To investigate the relationship, the relation analysis between trip frequency using toll road and travel purposes is performed separately using OLR one every variable (Belgiawan et al., 2014). The relation analysis (Table 7) shows that working trip is associated with lower trip frequency and tourism trip are associated with higher trip frequency using the toll road. From the relation analysis, OLR model of trip

frequency estimated for investigating the interaction of different types of secondary activities, and personal and travel characteristics of travellers for different trip frequency.

Table 7. Relation Analysis of Trip Frequency Using Toll Road and Travel Purposes

Variable	Working Trip [D]	Business Trip [D]	School Trip [D]	Tourism Trip [D]
Trip Frequency Using Toll Road	-1.492**	-1.125	.774	1.755**

[D] = dummy variables 1 if yes; 0 otherwise; * Significant at 10%, ** Significant at 5%

The estimation of OLR model of trip frequency shown in Table 8 and the model of travel multitasking in Table 9. In order to test the model goodness of fit, the overall model fit test showed that the null hypothesis of the model with independent variables being as good as the model without independent variables can be rejected on both of the models. This means that the two models have good fitness since models with predictors are better than models without predictors. It is also notable that the parallel line test showed a greater *p-value* than the level of confidence. That is to say, each group mutually aligned, therefore the OLR model is suitable for the data variation and consequently further interpretation. With significant effect found in various variables and based on the statistical and practical significance, the overall model results are highly acceptable.

The models show that the frequency of the trip using toll road more likely influences their pattern of secondary activities engagement. Travelers who send/read email and working/studying during their travel tend to have a lower frequency of toll trip. It might be related to the purposes of the toll trip, as low-frequency trip most likely related to special purposes trip (i.e. attending the meeting in a special place or tourism trip). Social media activities are associated with a more repetitious trip using toll road. A possible explanation is related to the nature of the social media activities, which tend to be a flexible activity for various purposes (i.e. entertainment, leisure, socialization, and for killing time). In terms of offline activities, traveller who socialize (i.e. talking or chatting) tend to have a higher toll trip frequency.

Substantial influence is shown for cognitive evaluation. Found that higher cognitive evaluation associated with lower trip frequency using toll road. Possible explanation related to the purposes of the travel is that low-frequency toll trip most likely related to special purposes trip (i.e. attending the meeting in a special place or tourism trip). Marginally significant influence found in positive deactivation, which tends associated with higher toll road trip frequency. It is interesting to note; the working trip is associated with lower trip frequency using toll. It supports previous findings of fewer trip and activities engagement during travel. In addition, car user passenger tends to have a lower trip frequency. It is noticeable also that person who travels alone with driver tend to have a lower trip frequency using toll road.

Table 8. Trip Frequency Using Toll Road Model

Variables	**Estimate**	**t-stat**
Threshold		
[Frequency = 1-2 day/week]	-3.533	-2.7964
[Frequency = 3-4 day/week]	-1.83	-1.4763
Satisfaction for Travel Scale		

Positive Activation	0.248	1.1652
Positive Deactivation	0.404	1.8775*
Cognitive Evaluation	-0.519	-2.3869**
Online Activities		
Reading/sending email [D]	-1.888	-4.2095**
Playing smartphone game [D]	-0.671	-1.5141
Social media smartphone [D]	0.692	2.0674**
Working/Studying [D]	-0.74	-1.7172*
Offline Activities		
Socialization [D]	0.658	2.1011**
Personal Characteristics		
> 60 years old [D]	0.644	1.1292
< 6,000,000 IDR income [D]	-0.509	-1.2917
Dormitory resident [D]	0.018	0.0277
Travel Characteristics		
Private car user [D]	-1.795	-4.4462**
> 30 km travel length [D]	0.508	1.5826
Working Trip [D]	-1.899	-4.9888**
School Trip [D]	0.153	0.2505
Travel alone [D]	-0.64	-1.1577
Goodness of Fit Parameters		
-2LL (0); -2LL (β); [χ2;df.;p-value]	428.348; 340.007 [88.341; 15; 0.000]	
Cox and Snell R_2; Nagelkerke R_2; McFadden R_2	[0.336; 0.389; 0.206]	
Test of Parallel Lines [χ2; df.; p-value]	[23.337; 15; 0.077]	

[D] = dummy variables 1 if yes; 0 otherwise; * Significant at 10%, ** Significant at 5%

Model of travel multitasking is shown in Table 9. The models investigate the relation of travel experience and the type of activities correlation with number of secondary activities engaged during trip using toll road to the number of activities conducted during travel. The investigation will relate to degree of de/active continuity of the secondary activities type (Kenyon and Lyons, 2007). In the sense of STS domains, found that higher PA associated with the more activities engagement. Individuals' might evaluate the travel in the degree of alert, enthusiast, and engaged, because they participate in more activities. Participation of a type of secondary activity more likely deactivate another/other secondary activity/ties during travel. Several online activities have a significant effect on how many secondary activities performed during travel. The highest effect in reducing the number of engaged secondary activities is read/sending email. This finding may confirm that for passengers, this activity has a high degree of active attention and continuity in engagement compared to other online activities defined in this study. A lower degree of continuity in online activities showed in playing game activity. In the sense of offline activities, socialization tends to have higher possibility of reducing number activities engagement. The activities which have less active attention and a low degree of continuity in engagement are more likely to able to be combined with another/other secondary activities.

Personal characteristics variables such as income found to be insignificant in shaping the multitasking. The estimated model also shows that travel characteristic associated with a low number of engaged secondary activity participation. For instance, traveller who has traveled with more than one person tend to have lower activities engagement. For this to say that travelling together might increase the possibility to perform social activities (i.e. talking and socializing) therefore, more likely deactivate other secondary activity/ties during travel.

Table 9. Travel Multitasking Model

Variables	Estimate	t-stat
Threshold		

[Multitasking = 1-2 activity(s)]	-8.75	-7.4764
[Multitasking = 3-4 activities]	-5.486	-5.4691
Satisfaction for Travel Scale		
Positive Activation	0.685	2.8251**
Positive Deactivation	0.048	0.2002
Cognitive Evaluation	-0.343	-1.4402
Online Activities		
Reading/sending email [D]	-3.093	-5.6032**
Playing smartphone game [D]	-1.973	-3.9419**
Social media smartphone [D]	-2.782	-7.1823**
Working/Studying [D]	-0.733	-1.5078
Offline Activities		
Socialization [D]	-1.38	-4.0335**
Personal Characteristics		
< 6,000,000 IDR income [D]	-0.163	-0.3738
Travel Characteristics		
Private car user [D]	-0.685	-1.7967*
> 30 km travel length [D]	-0.185	-0.5593
Working trip [D]	0.009	0.0261
> 1 person traveling with [D]	-0.846	-2.2197**
Goodness of Fit Parameters		
-2LL (0); -2LL (β); [χ2;df.;p-value]	456.058; 271.883 [184.175; 13; 0.000]	
Cox and Snell R_2; Nagelkerke R_2; McFadden R_2	[0.574; 0.652; 0.403]	
Test of Parallel Lines [χ2; df.; p-value]	[12.202; 13; 0.511]	

[D] = dummy variables 1 if yes; 0 otherwise; * Significant at 10%, ** Significant at 5%

5. DISCUSSIONS

Present result shows that activities participation during travel influences to travel experience in both affective and cognitive dimensions. Thus, it supports previous studies on what activities travelers engage during their travel time and how their engagement shape their travel experience and consequently imply to subjective well-being (De Vos, 2018; De Vos and Witlox, 2017; Ettema et al., 2012; 2013; Friman et al., 2013; Jakobsson Bergstad et al., 2011). With the unique characteristics provided by the private car, taxi, and ride-sourcing, the findings in this study also extend the knowledge to the field regarding travel experience for passengers who have more private space during their travel.

Results affirm that the type of activities will result in different implication to affective and cognitive dimension of travel experience. Eating/drinking and listening to music during travel tend to make travel more alert, enthusiast and engaged. While reading book/newspaper and engage in socialization activities (i.e. talking or chatting) has an impact to make travelers relax, calm, and confidence during travel. Reading book/newspaper also imply positively to cognitive evaluation, therefore it makes the trip more pleasant. However, phone-calling tend give a negative effect on the cognitive evaluation of the trip. This might related to the pressure of information that produces by the activities (i.e., the pressure of working related conversation). It supported by finding in the previous model, which indicates the marginal significance of phone-calling effect to the tired and fed up feeling. It is interesting to note the tendency of resting activities (i.e., sleeping) implies positively for all travel experience domains, including activation and deactivation. The most likely explanation is referred to nature the resting activities, which provide a space relaxing and including preparing "mentally" between origin and destination for their role in daily lives (Mokhtarian and Solomon, 2001). Rogers et al. (2003) stated that during sleep, learning or memory

consolidation, and restorative processes are occurring throughout the brain and the body. Sleeping also a source of energy before engaging daily activities, set up moods and emotions (Asgeirsdottir and Zoega, 2011).

Another finding of overall STS evaluation is the negative effect of a working trip. It found negatively influence overall satisfaction. The possible reason is particular pertain to the instrumental effect (Jakobsson Bergstad et al., 2011) of travel purposes, which give the sense of pressure to the travel itself due to the activities performance in other domains at a specific time. As working related to tight and hectic schedule, therefore, might imply to the travel experience. It is worth to note also that longer travel length implies to negative feelings, which indicates that longer travel is making travel experience decline.

Apart from STS models, the finding of trip frequency using toll road tendency influenced by the cognitive evaluation. Higher cognitive evaluation associated with lower toll road trip frequency. The association of lower trip frequency also found influence by secondary activities engagement. Travelers who send/read email and working/studying during their travel tend to have a lower frequency of toll road trip. Apart from the purposes, it might be related to several obligations that engage during travel time is potentially related to achieving satisfaction in other domain at the other time (Ettema et al., 2012). The findings supported by the association of lower toll road trip frequency with working trip found in the model. Moreover, social media activities are associated with the more repetitious trip using toll road. A possible explanation is related to the nature of the social media activities, which tend to be a flexible activity for various purposes (i.e., entertainment, leisure, socialization, and for killing the time).

Furthermore, the findings confirm that undertaking some type of online and offline activities refrain individuals' to do another/other secondary activity/ties. Reading/sending email tend to accounts most of their travel time and therefore negatively effect on the number of the task they engage during travel time. That is to say, read/send email to have a higher degree of continuity and attention, which might be related to the pressure of the achievement in other domains and influenced by the tight schedule of trip purposes (i.e., working trip). On the other hand, playing game activity tend to have flexibilities to combine with other activities. The estimate models confirm the existence of the nature of activities to multitasking engagement. With private space characteristics, the activities engagement and its continuity are differ than public transport (Rizki et al., 2019). Since previous research has focused on the public transport (Ettema et al., 2012; Olsson et al., 2013; Rizki et al., 2019) and private car driver (Ettema et al., 2013) this paper fill the gap for investigating the behavior of the passengers of private car, taxi, and ride-sourcing.

Another finding is a traveler, who has traveled with more than one person tend to have lower secondary activities engagement. A potential explanation goes back to the nature of the individuals as a social person. Travelling together might increase the possibility to perform social activities (i.e. talking and socializing), therefore more likely deactivate another/other secondary activity/ties during travel (Mokhtarian and Solomon, 2001).

6. CONCLUSIONS

Travel experience of the passengers significantly influenced by performing relaxing activities (i.e., rest/sleeping and reading book/newspaper). The results underline the importance of make travel modes more pleasant to perform activities. The evidence from this study can contribute to promoting the provision of facilities that support the activities of users. Furthermore, in a sense to making public transport compete with the more private-space

modes, this study found that private mode offers the space for relaxing activities (i.e. resting/sleeping) and productive activity (i.e., reading, working/studying, and socializing). Therefore, public transport operators can design the public transport infrastructure more i.) relax-activities friendly by ensuring the safety, comfort, and security of passengers during travel and ii.) productive-activities friendly by, for example, provide free internet which could enable travellers for finish their obligations in other domains and other time. It also could promote public transport as a way to value the travel as more useful by undertaking more productive activities during a trip and/or connecting with others using the internet.

Along with the findings from this study, there are some limitations. Apart from the importance to comprehend multitasking in the effort of making travel more pleasant, research has recognized travel experience as an important aspect that influenced individuals' decision-making. The fundamental statement of the objective of happiness from Kahneman (1999) has underlined how utility experience is a key central to include in decision-making modeling. While this study only explores the nature of multitasking influence to the travel experience, its implication to the experienced utility and decision-making is remain missing. The extended studies could provide substantial knowledge on how the tendency of multitasking implies to decision-making and therefore its substantial implication for making public transport travel more attractive compete with other modes.

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