

Car drivers with higher perceived safety tend to drive their vehicles with higher risk, a unique phenomenon on the roads in Jakarta, Indonesia

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Abstract — this study was conducted to examine the hypothetical model of how an individual's perceived safety and job satisfaction level influence his/her driving behavior. A survey with four instruments through purposive-sampling technique was conducted on 396 car drivers. The hypothetical model was tested through Structural Equation Modeling (SEM) using Linear Structural Relation (LISREL) software. The result of the hypothetical model test significantly shows that an increase in perceived safety tends to be followed by an increasingly reckless driving behavior. On the other hand, job satisfaction tends to be followed by an increasingly good driving behavior. The resulting fit indices, such as from *Root Mean Square Error of Approximation* or (RMSEA) and *Critical Number* (CN) shows that this hypothetical model can be accepted as a field data-suitable model (RMSEA 0.60; CN 274.75), and significant. Theoretical and practical implications for future directions are discussed.

Keywords—collective culture, conservation of resources theory, driving behavior, job satisfaction, job security, perceived safety

I. INTRODUCTION

On November 15th, 2014, Kompas, a leading newspaper in Indonesia, published an article about the rising importance of driving safety in public roads, particularly in Jakarta [1]. Public road facility construction in the past decade failed to show its progress [2] as a government's effort to reduce traffic congestion and improve driving safety [3]. A research by MacGregor and Slovic [4], claims that driving behavior is a variable that can predict traffic safety improvement. Reckless and irresponsible driving behavior, both of motorcyclists and car drivers in Jakarta, is increasingly concerning and visually rampant [5]. These behaviors affect other road users, which includes other individual drivers and public transportation passengers and drivers.

Unfavorable quality driving also indirectly disrupts organization operational efficiency. A current research found that motorcyclists with high job satisfaction tend to demonstrate poor driving behavior [6]. This research explains that an employee with high job satisfaction who commute to work with motorcycles will logically present his best optimum performance for his organization. However, looking at the reality of today's traffic condition, it is difficult for an individual to perform his/her best especially in fields related to on-time delivery service. This condition propels many drivers to recklessly pass through the traffic light in order to maintain his/her performance. Does this solution apply to the car drivers? Motorcyclists and car drivers are two separate groups who then choose different solutions in this particular situation [7], [8], [9]. This research focuses on the human factors to reduce car driving risks on road.

As one of the world's strategic countries, Indonesia's involvement in the global interaction scene created significant changes in organizations [10]. To answer the global challenges, many organizations use merger, acquisition, layoff and outsourcing as strategic methods. This company behaviour is a stressor for the employees [11], [12], [13]. Several researches have stated that an individual's feeling about his/her job security significantly influences his/her job satisfaction [14], [15], [16], [17], [18]. Researches embracing the role of job satisfaction in driving behaviour is still scarce to date. How far have the organization changes affected their employee's driving behaviour? Is job security related to the improvement of road safety in Jakarta?

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Perceived safety as a variable is often mentioned to have a significant role in driving behaviour [4], [19], [20], yet researches about this mostly were conducted outside Indonesia, thus further validation is required [21]. Two instances related to this are whether there is an existing correlation between them, and if so [6], what form it is for car drivers. This research was intended to test the hypothetical model of job security, perceived safety, and job satisfaction, as antecedents of driving behaviors, related to car drivers.

II. LITERATURE REVIEW

A theory of Conservation of Resources declares that an increase of a particular resource will be followed by an increase of other resource [22]. Recent economic condition in Indonesia started showing conducive improvement as compared to the past monetary crisis back in 1998 that lasted for more than 10 years [23]. This phenomenon can be assumed as a decreasing agent of job security threats. Stable condition is often found to be closely correlated with individual satisfaction [24], [25], [26]. Based on this reasoning, job security was expected to have a direct, positive and significant correlation to job satisfaction (Hypothesis 1).

Based on the Conservation of Resources theory and some supporting researches [27], [28], [29], [30], a conclusion can be drawn that job security increase that is followed by job satisfaction increase tend to be followed by better driving behavior. However, similar research conducted on motorcycling behavior shows a negative correlation [6]. Should driving behavior show the same correlation? The sample of this research are employees driving their own cars to their offices (car drivers) while the research subject of Ho, Leono, Suhartono, and Reynaldo [6] are employees commuting using motorcycles to conduct daily office tasks (motorcyclists). Obstacles to deliver performance (e.g. on time delivery) experienced by the motorcyclists on the road tend not to similarly be experienced by the car drivers. Based on this reasoning, job satisfaction was expected to have a direct, positive and significant correlation to driving behavior (Hypothesis 2).

Perception surfaces as a product of a learning process [31], [32], which then underlies an individual's decisions in behaving [33], [34], [35]. Similarly, driving behavior can be predicted through driver's perceptions [36], [37], [38]. From different forms of perceptions an individual can have, as a car driver, perceived safety is isolated as the focus of this research. Any correlation with driving behavior and job satisfaction will be examined. How can job satisfaction predicts perceived safety? The Conservation of Resources tenet says that in general individuals will continuously strive to find, add and preserve resources [39]. Based on this tenet, job satisfaction was expected to have a direct, positive and significant correlation to perceived safety (Hypothesis 3).

How does perceived safety predict driving behavior? Munandar [21] claimed that theories produced outside Indonesia may have different result if applied within Indonesia. Indonesia traffic condition largely serves as a factor. By reconsidering chaotic traffic in Indonesia, it can be assumed that an individual's understanding about how to drive safely is not positively correlated with his/her driving behavior. An individual who has the understanding of safe driving, such as wearing the seatbelt and turning on the signal lamp before changing lanes, cannot implement what he/she views as important. This might be rooted from the chaotic traffic condition. Furthermore, penalty on traffic sign violations are not strictly imposed thus fails to create deterrence. Thus, it is logical to assume that perceived safety was expected to have a direct, negative and significant correlation to driving behavior (Hypothesis 4). Based on the prearranged hypotheses, the hypothetical model of this research can be shown at Fig. 1.



Fig. 1. The Hypothetical Model.
Numbers refers to the respective hypotheses, (+) refers to positive correlation and (-) refers to negative correlation.

III. PROJECT FRAMEWORK

A. Participants and Procedure

Purposive sampling method was utilized to determine the samples of this research, and a total of 396 completed questionnaires were returned, all of which were representing employees who drive their cars to commute to their offices to work. The hypothetical model with four latent variables is measured using four instruments, i.e., job security instrument (6 item-questionnaires), job satisfaction instrument (6 item-questionnaires), perceived safety instrument (9 item-questionnaires), and driving behavior instrument (17 item-questionnaires). This research defines job security as the level of an individual's belief towards his employability stability that is reflected in the security in organization and security in job [40]. Job satisfaction is

defined as an individual's level of satisfaction in his or her working place, which is reflected in the affection and resignation attitude [41]. Perceived safety is defined as an individual's understanding about the importance of driving safely [38], that is reflected in the important factors of safety and motivation. Driving behavior is defined as an individual's discipline in driving and reflected in speeding, inattention, rule violation and driving while being tired [42].

Pilot test was conducted on 30 respondents to measure the reliability of the four research instruments, using Cronbach's Alpha calculation method. The reliability test using SPSS Software version 20.0 shows that the Alpha coefficient [43] of the four research instruments are $> .70$ as shown in Table I. The four research instruments are proven reliable and proceeded to be used in the real research.

TABLE I
SUMMARY OF PILOT TEST INSTRUMENT (N= 30)

Instrument	Number of items tested	Number of items accepted	Reliability coefficient (<i>alpha Cronbach's</i>)
Job Security	6	6	0.80
Job Satisfaction	6	6	0.82
Perceived Safety	9	9	0.81
Driving Behavior	17	17	0.89

The purpose of this research is to test the hypothetical models consisting of exogenous and endogenous variables with continuum value. Analysis of the hypothetical models was tested through Structural Equation Model (SEM) calculation, using Linear Structural Relation (LISREL) software version 8.72. Fit indices used in this research to test the goodness-of-fit of the hypothetical model, are Root Mean Square Error of Approximation ($RMSEA \leq 0.08$), Comparative Fit Index ($CFI \geq 0.90$), Goodness of Fit Index ($GFI \geq 0.90$), and Critical N ($CN > 200$). After the model is proven to fit with field data (test of the goodness-of-fit), then significance level test can be conducted using all parameter in the hypothetical model to see the correlation between variables using t -value. Parameters are claimed to be valid if the $t > 2.58$ ($p < 0.01$) or $t > .96$ ($p < 0.05$).

IV. CALCULATION, RESULTS, AND DISCUSSION

Mean, standard deviation, and correlation matrix are presented in Table II. The data shows that in average, respondents have good level of job security (3.49), job satisfaction (4.10), perceived safety (4.76), and driving behavior (4.53), which is above the median in 1 to 5 score scale. The mean of indicators are presented in Table III. In average, respondents feel secure about the organizations where they are working (3.33) as well as about their job (3.81); do not have resigning attitude (3.99) and have a considerably high affection towards their work (4.21); have high understanding about the important value of safety (4.77) and high motivation (4.75) in driving safely; tend to drive with average speed (4.48), tend to drive with attention (4.24), tend not to breach the road signs (4.80), and tend not to drive in a drowsy condition (4.61).

TABLE II
MEAN, STANDARD DEVIATION, CORRELATION MATRIX (N=396)

Latent Variable	M	SD	Score Scale	# of Item	1	2	3	4
Job Security	3.49	.87	1-5	6	(.87)			
Job Satisfaction	4.10	.71	1-5	6	-.36**	(.81)		
Perceived Safety	4.76	.49	1-5	9	-.12*	.073	(.86)	
Driving Behavior	4.53	.65	1-5	17	-.03	-.04	.46**	(.87)

Note: Reliability coefficients are reported along the diagonal.
* $p < .05$ and ** $p < .01$

Table IV reported the test-of-goodness fit from all research instruments. Test result shows that the four research instrument models are proven fit ($RMSEA \leq 0.08$; $CFI \geq 0.90$; $GFI \geq 0.90$; $CN > 200$). The next step was to test the significance level of all instruments. The significance test of four measurement models in this research was reported in Table V. All loading factors of every indicator have significant t -values ($t > 2.58$ with $p < .01$). In other words, all indicators are proven to be accepted as valid

indicators with an error tolerance value below 1%. Table V also shows the Construct Reliability (CR) and Variance Extracted (VE) calculation result report from all the four research instruments. Data shows that the four measurement models were proven to have good reliability (CR > 0.70; VE > 0.50). Thus, all of the four measurements of this study are proven reliable, fit and significant. This signifies that items measured in this research can be examined using these models of measurement. Thus, data produced can be utilized to examine theorized hypotheses that are presented in the hypothetical model.

TABLE III
MEAN OF INDICATORS (N=396)

Latent Variable & Indicator	Mean	SD	Score scale
Job security	3.49	0.87	
Security in Organization	3.33	0.91	1-5
Security in Job	3.81	0.71	
Job satisfaction	4.10	0.71	
Resigned attitude	3.99	0.77	1-5
Affection	4.21	0.64	
Perceived safety	4.76	0.49	
Safety value	4.77	0.48	1-5
Safety motivation	4.75	0.50	
Driving behavior	4.53	0.65	
Speeding	4.48	0.56	
Inattention	4.24	0.74	1-5
Rule violation	4.80	0.44	
Driving while tired	4.61	0.61	

TABLE IV
FIT MODEL TESTING OF RESEARCH INSTRUMENT (N=396)

Instrument	RMSEA < 0,08	CFI > 0,90	GFI > 0,90	CN > 200
Job Security	0,05	0,99	0,99	457
Job Satisfaction	0,06	0,97	0,99	397
Perceived Safety	0,03	0,99	0,99	516
Driving Behavior	0,05	0,99	0,99	247

TABLE V
SIGNIFICANCE OF LOADING FACTOR OF MEASUREMENT MODEL (N=396)

Latent Variable* & Indicator	Standardized Loading Factor	t-value (t > 2.58)	Construct Reliability CR >.70	Variance Extracted VE >.50
Job Security*			0.948	0.900
in Org.	0.90	17.54		
in Job	1.00	25.24		
Job Satisfaction*			0.992	0.985
Resign Att.	1.00	22.81		
Affection	0.99	20.98		
Perceived Safety*			0.921	0.854
S. Value	0.85	14.69		
S. Motivation	0.99	34.31		
Driving Behavior*			0.921	0.747
Speeding	0.75	21.56		
Inattention	0.83	39.16		
Rule Violation	0.95	39.05		
D. while tired	0.91	59.02		

Note: All loading factors are significant at $t > 2.58$ ($p < 0.01$)
All measurements are reliable (CR > 0.70) and valid (VE > 0.50)

Test of the goodness-of-fit on the hypothetical model shows that the model has fit indexes of RMSEA = 0.06, CFI = 0.98, GFI = 0.97, CN = 274.75. This means that the hypothetical model can be accepted as a model that fits the field data. Detailed result can be seen in Figure 2. The next step is to conduct significance test on the hypothetical model. Figure 3 described the *t*-value significance test result that shows that all parameter coefficients in the hypothetical model has $t > 1.96$ ($p < 0.05$). This means that all tested hypotheses in this research has valid parameter coefficients. In conclusion, all the hypothetical models in this research can be accepted with a less than 5% margin of error.

Hypothesis 1 is supported by the results of this study. Job security is directly positive and significantly correlated to job satisfaction, with coefficient of $r = 0.30$ ($t = 6.01$). This means that the influence of increased job security to the increase of job satisfaction can be explained by $(0.30)^2$ or 9%. With the possibility of receiving an error of less than 1%, then the hypothesis is acceptable and significant.

The result of this study also supports Hypothesis 2. Job satisfaction is directly positive and significantly correlated to driving behavior, with coefficient of $r = 0.08$ ($t = 2.22$). This means that the increased job satisfaction could explain the better driving behavior by 0.64%, with the possibility of an error less than 5%. Therefore, Hypothesis 2 can be accepted and is significant. Hypothesis 3 is supported by the result of this study. Job security is directly positive and significantly correlated to perceived safety, with coefficient of $r = 0.14$ ($t = 2.92$).

The increased job security could explain the increase of perceived safety by 1.96%, with a less than 1% possibility of error. So, Hypothesis 3 can be accepted and is significant.

Hypothesis 4 is supported by the results of this study. Perceived safety has direct and negative correlation with driving behavior, in coefficient of $r = -0.49$ ($t = -6.79$). This means that the increased perceived safety could explain the worse driving behavior by 24.01%, with the possibility of an error less than 1%. Therefore, Hypothesis 4 can be accepted and is significant.

Based on the short elaboration from this research, conclusion can be made that the four hypotheses of this research, embraced in the hypothetical model, have been tested and received significant support from the results of this research. The hypothetical model is accepted as a fit model based on fit indices set previously (RMSEA, CFI, GFI, CN). The hypothetical model has passed the two testing stages needed to test the model using SEM analysis, i.e. the goodness-of-fit test and significant level test [44].

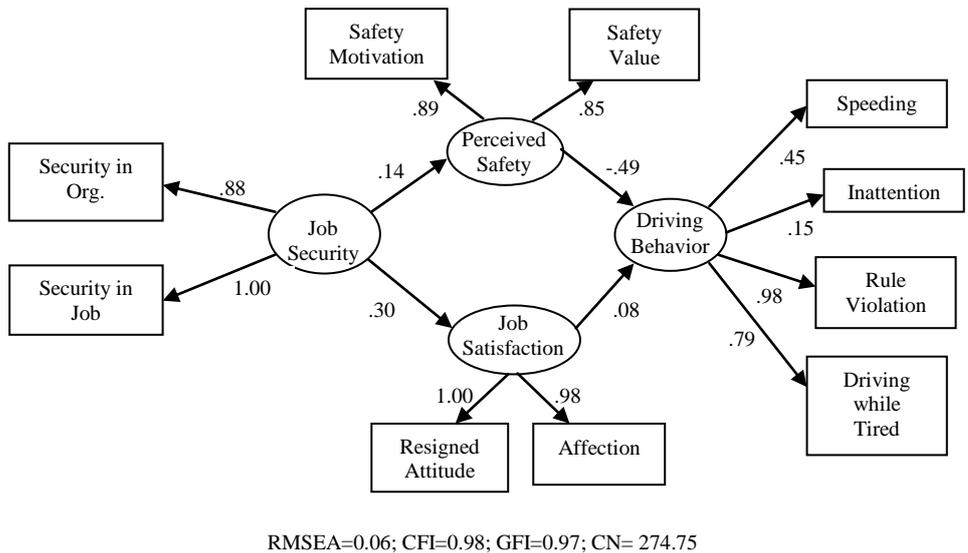
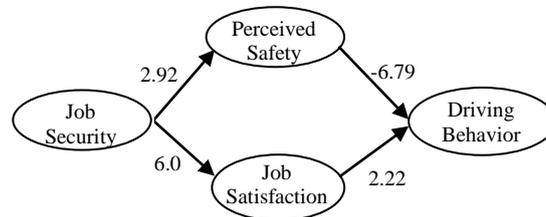


Fig. 2. Coefficient of the Hypothetical Model Parameters with Standardized Solution

TABLE V
SIGNIFICANCE OF LOADING FACTOR
OF MEASUREMENT MODEL (N=396)

Latent Variable* & Indicator	Standardized Loading Factor	t-value (t > 2.58)	Construct Reliability CR >.70	Variance Extracted VE >.50
Job Security* in Org.	0.90	17.54	0.948	0.900
in Job	1.00	25.24		
Job Satisfaction* Resign Att.	1.00	22.81	0.992	0.985
Affection	0.99	20.98		
Perceived Safety* S. Value	0.85	14.69	0.921	0.854
S. Motivation	0.99	34.31		
Driving Behavior* Speeding	0.75	21.56	0.921	0.747
Inattention	0.83	39.16		
Rule Violation	0.95	39.05		
D. while tired	0.91	59.02		

Note: All loading factors are significant at $t > 2.58$ ($p < 0.01$)
All measurements are reliable (CR > 0.70) and valid (VE > 0.50)



RMSEA=0.06; CFI=0.98; GFI=0.97; CN= 274.75

Fig. 3. Significance Level of the Hypothetical Model

V. CONCLUSIONS

Research result supporting Hypothesis 1, Hypothesis 2, and Hypothesis 3 are aligned with the Conservation of Resources theory [39], which stated that an increase of a particular resource will be followed by an increase of other resource. An individual with job stability tends to have a better satisfaction in job (Hypothesis 1), that could activate a better driving behavior (Hypothesis 2). The latter includes a higher tendency to obey the traffic rules, avoid drowsy driving, observe his surrounding traffic situation and obey the speed limit. The result of this research, which also supports Hypothesis 3, indicates that an individual who experience improvement in job stability tend to be more motivated to understand important factors for safe driving. Hypothesis 1,2,3, other than proven to be fit with the field data and significant, can be viewed as a form of generalization of Conservation of Resources theory in a collective culture context.

Research result that supports Hypothesis 4 does not coincide with Conservation of Resources theory because as Munandar [21] reminds, cultural difference may account for different results. Some of Ho's researches [29], [30], that were also conducted in collective culture, also show results in support of this opinion. Research results of Ho, Leono, Suhartono and Reynaldo [6] which was conducted in a collective culture context similarly shows results aligned with the proof from Hypothesis 4 in this study. Weiten [45] claims that group condition can create more safety feelings as compared to being alone. Indonesian society is constructed from a collective culture where social solidarity creates a high level of social comfort. In a traffic accident, it is normal to see a lot of people surrounding the accident location, extending their helping hands without hesitation. An individual in this context has a high level of personal security, a fact that accounts for his/her reckless and regulation-breaching driving behavior tendency. On the contrary, an individual who does not entirely comprehend how to drive

safely tends to drive cautiously. A condition in support of this phenomenon is the absence of strict punishment for dangerous driving behavior. This thoroughly removed the reasons to have safe driving behavior perception in the minds of the drivers, let alone to implement it. According to Franken [46], everybody has the tendency to take the simplest options in everything. Correspondingly, an individual's perception of safe driving behavior and how to execute it does not immediately lead to his/him executing it if the situation does not allow him/her to. The cognitive dissonance theory could also explain this finding [47]. In one side, despite understanding the importance of safety, the chaotic traffic in Jakarta may force an individual to behave differently in order to accomplish demanding tasks. As the hypothetical model is a fit model and the contribution is 24.01% ($r = -.49$) with the possibility of an error less than 1%, the support for Hypothesis 4, from this research, deserves attention.

Therefore, further researches are required, in particular the ones involving traffic regulations, norms or other variables that can constructively predict driving behavior especially on the roads of Jakarta, Indonesia. Improving driving behavior allows conducive and comfortable traffic environment to be possible to achieve.

This study also has some limitations. As a new theoretical model, further studies still need to be conducted for generalization purpose. Research sample needs to involve more respondents through random sampling technique. Cohort and longitudinal research techniques also may be tried to see clearer facts. All hypotheses-supportive results provided by this study are expected to be tested and applied in further studies to fix the limitations in this research.

Results from this research are expected to contribute a new paradigm to government organizations and agencies taking care of traffic and transportation problems. One instance is how an organization can apply employment system that supports job stability in order to help improving employees' driving behaviour. The results of this study are expected to be beneficial for individuals and community at large to continuously conduct betterment that supports well-being and sustainability.

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