

# Have a Personal Vehicle: Really Need or Simply Want?

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**Abstract:** The more and more efficiently the community in owning and determining vehicle choices has resulted in increasingly increasing the trend of private vehicle use as the primary transportation mode replacing public transportation. Planned Behavior Theory is expected to accurately predict people's intentions and behavior in using private vehicles. The variables used are the independent variable Attitude Toward, Subjective Norm and Perceived Behavioral Control, then Intention Behavior as the intervening and Behavior dependent variable. The research population is the community of private motorists using cars and motorbikes in the city of Makassar. The number of samples used was 210 respondents. The sampling used is Purposive Random Sampling. Primary data and information through an open questionnaire. Analysis of research data with the Structural Equation Model with IBM AMOS Software. The results obtained show that attitude toward intention to behavior means that attitude variables compared to Subjective Norm and Perceived Behavioral Control variables predominantly affect Intention and Behavior. The Attitude Toward of vehicle users who are influenced by Behavior belief will ensure that the vehicles they use can make social values increase, will be more valued and respected. Vehicles are not only a means of transportation but also a symbol of a person's establishment.

**Keywords:** Attitudes Toward, Intention Behavior, Subjective Norms, Perceived Behavioral Control, Structural Equation Model (SEM), Theory of Planned Behavior.

## 1. Introduction

The role of urban transportation is significant to meet the needs of urban residents. In large cities, the population is large, meaning the number and type of needs are many, such as complex economic activities, high standards of health, and high mobility [1], [2]. There is a positive relationship between the size of a city, the population, the number and type of population needs, and more specifically the transportation needs and the availability of transportation capacity [3]. Developing countries with inadequate public transportation forced their residents to use private vehicles which caused a high level of private vehicle ownership. High vehicle growth causes congestion problems [4].

Urban severe traffic congestion has a direct negative impact on the implementation of urban services and the continuity of various economic, social, administrative and political activities [5], [6]. Massive losses caused by

congestion are substantial [7]. Several regions in the world have expressed concern about the global consequences of increasing vehicle growth in Asia [8], [9]. The vehicle usage trend will mostly follow the pattern of vehicle ownership, vehicle use figures are expected to continue to increase, both in OECD countries (Organization for Economic Co-operation and Development) and non-OECD, with higher growth rates [10]. The growth of motorized vehicles in Indonesia has increased rapidly where the average growth of motorized vehicles in Indonesia in each year is 10-11%. While national road growth is less than 3% per year, this condition occurs in almost all major cities in Indonesia including Makassar City [11].

On the one hand, the use of private vehicles is driven by the lack of excellent service for public vehicles, both in terms of networks, facilities, infrastructure, and so on. The low quality of services in terms of safety, comfort, feasibility, ease, and efficiency of public transport, which provides a feeling of inconvenience and security to users

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of urban transportation services, encouraging people to prefer to use private vehicles [12]. The addition of private vehicles operating in the city of Makassar increases the density of traffic which results in long travel times, due to many vehicles and low speed. The point is that the use of private vehicles causes congestion, inefficiency in the use of road space, and reducing road capacity. On the other hand, economic growth and the level of income of the people also encourages the level of ownership of private vehicles of the residents of Makassar City, which is the reason for the increase in vehicle traffic density on the highway.

Understanding the determinants of modality can provide useful insights for transportation planners and decision makers in predicting transportation mode choices from travelers, which in turn will also be beneficial in influencing the selection behavior through appropriate policies [13]. The choice of modes in the formulation of transportation policies plays a vital role. Because the choice of modes can affect how efficiently a person travels, how much city space is intended as a transportation function and the alternatives available for the traveler [14].

According to [15], attitudes are the most critical concepts in understanding user behavior, while perceptions play an important role in choosing a product because it will affect the behavior of individuals in determining their choices so that it can be said that these attitudes and perceptions are important factors that will determine a person's behavior, especially in assessing and choosing a particular item or service, in addition to other individual internal factors that influence it [13], [16].

Rational models of decision making in modal selection have made a significant contribution in predicting the choice of modes of transportation of travelers [17]. However, unfortunately, these rational models cannot understand the aspects of the individual's decision-making process internally from the voters and their perceptions of alternatives, but rather on external assessments carried out from a researcher's perspective on the attributes contained in the alternative, and then generalized into a general point of view [18]. Therefore, the rational economic model is less able to explain the role of determinant factors in influencing individual decisions in an election process. To overcome these weaknesses, understanding of individual behavior should be understood from the side of the individual itself using an approach from a psychological perspective [19]. One behavioral theory model that is based on attitude is Planned of Behavior Theory which states that behavior is determined by the intention to do it.

Generally, people want a healthy transportation system, which is available whenever needed and can serve all daily requests. The public wants the best transportation services with the cheapest transportation fares and guaranteed smoothness and safety.

## 2. Literature Review

The theory of planned behavior is a theory developed by Icek Ajzen which is a refinement of reason action theory proposed by Martin Fishbein and Icek Ajzen. The focus of the theory of planned behavior is the same as the Theory of Reason Action, namely the intention of individuals to carry out certain behaviors. The intention can see motivational factors that influence behavior. The intention is an indication of how hard people want to try and how much effort an individual will make to carry out a behavior.

Reason action theory says there are two determinants of intention, namely personal attitudes and subjective norms [20]. Attitude is an evaluation of positive or negative individuals towards certain behaviors. Whereas subjective norms are a person's perception of social pressure to do or not do certain behaviors [21]. However, the theory of reason action has not been able to explain behavior that is not entirely under someone's control. Therefore, in the theory of planned behavior, one factor that determines intention, namely perceived behavioral control. Perceived behavioral control is an individual's perception of the control he has about certain behaviors. This factor according to [22], refers to individual perceptions about easy or difficult to bring up certain behaviors and is assumed to reflect experience and anticipated obstacles. According to [23], these three factors, namely attitudes, subjective norms, and perceived behavioral control can predict only intentions in carrying out certain behaviors.

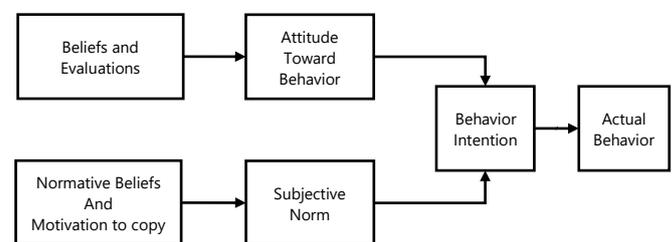


Figure 1. Theory of Reasoned Action [21].

Planned behavior theory tries to explain complex behaviors that require behavioral control or the ability to behavior. TPB explains that behavioral intention is not only influenced by attitudes toward behavior and subjective norms but also influenced by perceived behavioral control. Behavioral control that felt influenced by experience and one's estimates of the difficulty or not to carry out certain behaviors. Humans usually behave reasonably, they consider their behavior based on available information, and implicitly or explicitly also consider the consequences of their actions [20]. The behavior based on will factors which involve considerations to do or not do a behavior; wherein the process, various considerations will form the intention to do a behavior.

In the theory of reasoned action, it is stated that the intention to conduct a behavior has two main predictors,

namely attitude toward the behavior and subjective norm. The development of this theory, planned behavior theory, finds other predictors that also influence the intention to conduct a behavior by including the concept of perceived behavioral control [24].

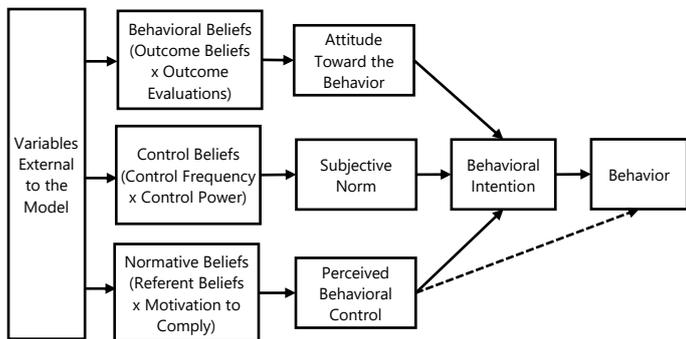


Figure 2. Theory of Planned Behavior [22].

So that there are three main predictors that influence the intention of individuals to perform a behavior, namely attitudes toward a behavior, subjective norms about a behavior, and perceptions of behavioral control [21], explained that planned behavior theory based on approaches to beliefs that can encourage individuals to perform certain behaviors.

Approaches to beliefs are carried out by associating various characteristics, qualities, and attributes based on information that already possessed; then the intention to behave automatically will be formed. The approach in planned behavior theory is devoted to specific behavior carried out by individuals and can be used for all behaviors in general [25].

How much influence the attitude toward the behavior, subjective norms, and perceived behavioral control on intention to perform a behavior determined by the intention to behave that will be described [26]. The magnitude of the influence of attitude toward the behavior, subjective norms, and perceived behavioral.

### 3. Research Methods

This study uses critical research which explains the causality of a relationship between variables through testing hypotheses [27]. This research is deductive research with the scientific approach that uses theoretical structures to form hypotheses, and then uses facts or empirical data to test hypotheses to get conclusions or conclusions [28].

#### 3.1. Study Location

This research was carried out in Makassar City, South Sulawesi Province with the target or research respondents being people who lived or were in the research area and owned and used private motorized vehicles (cars and motorbikes).

The city of Makassar chosen because of its strategic geographical location making it the gateway to the Eastern Region of Indonesia. City infrastructure that has been developed, linking between western Indonesia and eastern Indonesia has been able to create synergies between logistics functions, transportation functions, and trade.

#### 3.2. Population and Sample

The population in this study is in the form of people who use two-and four-wheeled motorized vehicles alternately in the city of Makassar. The number of both two-wheeled and four-wheeled vehicles operating in Makassar City reached 2.4 million (1.1 million 2 wheels and 1.3 million cars) [11].

In this study, it was planned to use the Maximum Likelihood (ML) estimation model with the number of samples proposed amounting to 100-200 samples as recommended [29]–[31]. However, seeing the outlier data at the time of the Structural Equation Model analysis later, the number of samples used was 210 samples.

#### 3.3. Research Design

Based on the Planned Behavior Theory model, the variables used in the study are Attitude (X1), Subjective Norm (X2) and Perceived Behavioral Control (X3) which are independent variables then Intention Behavior (Z) as an intervening variable and Behavior (Y) as the dependent variable.

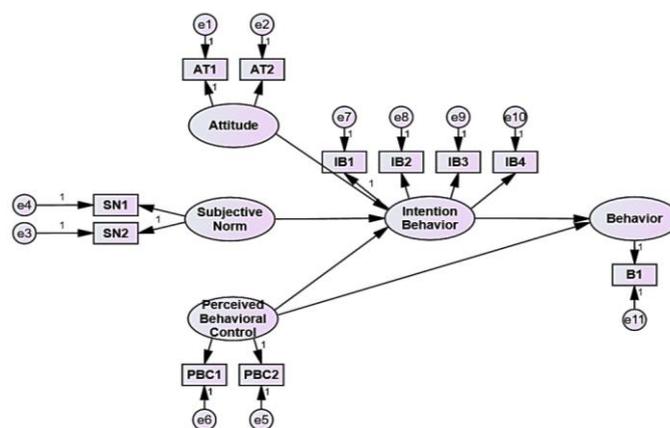


Figure 3. Research Design Theory Planned of Behavior (TPB)

Latent variables are formed by the presence of several indicators (constructs). The indicators (constructs) in this study are as follows:

Table 1. Indicator (Constructs) of the Latent Variable Research

Variable Latent	Construct	
Attitude	Behavioral beliefs	(AT1)
	Evaluation of behavioral belief	(AT2)
Subjective Norm	Normative beliefs	(SN1)
	Motivation to comply	(SN2)

Variable Latent	Construct	
Perceived Behavioral Control	Control beliefs	(PCB1)
	Perceived power	(PCB2)
Intention Behavior	Behavior	(IB1)
	Object target	(IB2)
	Situation	(IB3)
	Time	(IB4)
Behavior	Actual behavior	(B1)

### 3.4. Data Collection

Based on the type of population that has been known and determined, the sampling technique by this study is Purposive Random Sampling. The sampling technique with Purposive Random Sampling is part of the nonprobability sampling technique, which is a sampling technique that does not provide the same opportunity for each element (member) of the population to chosen as sample members [32]. In this study, the method used to obtain primary data is interviews, observations, and questionnaires as research instruments.

### 3.5. Data Analysis

Structural Equation Model (SEM) is a multivariate analysis method that can be used to describe the relationship of linear relationships simultaneously between the observation variables/which can be measured directly (manifest) and variables that cannot be measured directly (latent variables). Latent variables are unobserved or unmeasured directly [33].

Exogenous latent variables are latent variables that act as independent variables in the model. SEM is a combination of path analysis, confirmatory factor analysis, and regression analysis [34].

The SEM process certainly cannot be done manually apart from the limitations of human capabilities, also because of the complexity of the models and statistical tools used. Although many experts have realized the need to make a model that can explain many social phenomena about many variables, they have not been able to handle the complexity of mathematical calculations [35]. At much modern software specifically used for the analysis of SEM models, such as LISREL, AMOS, EQS, and M-plus. In this study, researchers used IBM AMOS v22 as an analysis tool.

## 4. Results and Discussions

### 4.1. Goodness of Fit Criteria (GOF)

The goodness of Fit (GOF) is an indication of the comparison between the models specified with the covariance matrix between the indicators or observed variables. If the Goodness of Fit (GOF) produced by a model is right, then the model can be recommended and vice versa if the Goodness of Fit (GOF) produced by a model is terrible (not fit), then the model must be rejected or modified by the model. According to [36], it is recommended to only report the fit model size from CMIN, RMSEA, one or more incremental fit indices (CFI, IFI, NFI, RFI, TLI), one of the parsimonious fit indices (PNFI, PCFI, PGFI). The results of the fit model size be follows:

**Table 2.** Goodness of Fit Criteria (GOF) Research Model.

No.	Criteria Goodness of Fit	Value	Cut-Off Value	Result	Source
1	Absolute fit measures				
	Chi-Square ( $X^2$ )	0.818	> 0.050	Model Fit	[33], [37], [38]
	Normal Chi-Square (CMIN/DF)	0.883	< 2.000	Model Fit	[39]–[41]
	Goodness of Fit Indices (GFI)	0.967	> 0.900	Model Fit	[37], [41], [42]
	Root Mean Square Error of Approximation (RMSEA)	0.000	< 0.080	Model Fit	[41], [43]–[47]
2	Incremental Fit Indices				
	Tucker Lewis Index (TLI)	1.030	> 0.900	Model Fit	[41], [48], [49]
	Comparative Fit Index (CFI)	1.000	> 0.900	Model Fit	[47], [50], [51]
	Incremental Fit Index (IFI)	1.019	> 0.900	Model Fit	[52]
3	Parsimonious Fit Indices				
	Parsimony Normed Fit Indices (PNFI)	0.604	> 0.500	Model Fit	[53], [54]
	Parsimony Comparative Fit Indices (PCFI)	0.659	> 0.500	Model Fit	[53], [54]

**Table 3.** Composite Reliability (CR), Average Variance Extracted (AVE), and Discriminant Validity (DV) Research Model.

Variable Latent	Construct Reliability (CR)	Average Variance Extract (AVE)	Discriminant Validity (DV)
Subjective Norm	0.520	0.629	0.793
Perceived Behavioral Control	0.574	0.171	0.413
Attitude Toward	0.779	0.892	0.944
Intention Behavior	0.530	0.642	0.801
Behavior	0.522	0.715	0.661

Table 2 above shows the results of Composite Reliability (CR), Average Variance Extracted (AVE), and Discriminant Validity (DV) in the research model.

Testing Construct Reliability done shows the extent to which a measuring instrument that can provide results that are relatively the same if it is measured again on the same object [31]. The minimum construct value of the dimensions forming the acceptable latent variable is 0.500. From the results obtained the value of all latent variables >0.500 which means the measuring instrument used is the instrument gives the same relative results if used on the same object.

Testing for Average Variance Extract (AVE) with a magnitude above or equal to 0.500. With the provisions of higher values indicate that the indicators have correctly represented latent constructs developed [55]. The results are shown from the AVE value, namely the Perceived Behavioral Control variable, obtained a value of less than <0.500, which means that the indicators on these variables are not good enough as indicators that can develop.

However, the indicators of other variables are very good, as seen from the AVE values obtained from each variable.

Discriminant Validity (DV) measures to what extent a construct is entirely different from other constructs. The high value of Discriminant Validity provides evidence that a construct is unique and able to capture the phenomena that are measured [33]. The results of obtaining a DV value equal to the AVE mentioned above, the DV value obtained is smaller <0.500 found in the Perceived Behavioral Control variable which means some indicators still cannot capture the phenomenon in the study.

Table 4 shows the value of influence between variables contained in the research model in terms of the Theory of Planned Behavior. From these results produce five (5) hypotheses that are interconnected and influence between variables. The basis for decision making:

- If the Probability Value (p)<0.05, it means that there is significant influence between variables.
- If the Probability Value (p)>0.05, it means that there is no significant influence between variables.

**Table 4.** Standardized Regression Weights Research Model.

			C.R.	Prob. (p)	Estimate	Result
Intention Behavioral	<---	Subjective Norm	1.454	0.146	0.198	Not Significant
Intention Behavioral	<---	Perceived Behavioral Control	1.314	0.189	0.110	Not Significant
Intention Behavioral	<---	Attitude Toward	4.792	0.000	0.756	Significant
Behavior	<---	Intention Behavioral	2.580	0.019	0.691	Significant
Behavior	<---	Perceived Behavioral Control	1.040	0.298	0.187	Not Significant

#### 4.2. Relationships and Impacts Between Variables

From the results of the analysis shown in Table 4 above, it obtained that the Intention Behavioral variable has a significant effect on the behavior, then Attitude Toward also has a significant effect on Behavioral Intention.

These results show clearly that intentions predominantly influence the behavior of people in using private vehicles. The use of private vehicles is extensive because the facilities provided are security, comfort, and speed to the destination that cannot give when using public transportation in addition to other social factors that are considered quite influential in deciding to use private vehicles. Traffic congestion is one of the risks obtained.

Environmental conditions and government policies that still do not provide excellent service to the public also contribute to people using private vehicles whether they are cars or motorbikes which, when viewed from a security standpoint, are vehicles that most often take casualties in the event of an accident.

The results of the research conducted [56], found that in driving a private vehicle, a person does not have to have a goal, but also because they like to drive their vehicles. This will probably have important consequences for vehicle demand management especially for the vehicle

industry. Symbolic and sentimental aspects significantly contribute to the positive value of driving.

The intention is a probability or possibility that is subjective, that is someone's estimate of how likely it is to carry out a specific action. That is, measuring intention is to measure the possibility of someone in carrying out certain behaviors [57].

Outcome of the choice process that has this reason is a desire to be involved in the chosen behavior. Intention to behave can be used as a measure of the best real behavior and states that the behavior is intentional so that it is quite complicated to be determined by someone's desire to state the behavior. Theory of reasoned action explained by the existence of subjective attitudes and norms that can shape one's intentions [58].

According to [59], intention can be used to predict how strong the individual's desire to display behavior; and how much effort planned or carried out by the individual to do this behavior. Ajzen [26], explains that the intention that has formed will still be a disposition of behavior to the right time and opportunity, where an effort is made to realize positive intentions into specific behaviors.

Giles and Cairns [60], in the study used the theory of planned behavior to predict intentions to donate blood and blood donor behavior. They find strong support for

the theory of planned behavior. Perceived behavioral control has a significant impact on one's motivation.

Bagozzi & Kimmel study in testing TPB also used attitudes with direct measurements. The results of their research show that attitudes positively influence intention, but there is no influence of subjective norms on intention. The inconsistency of subjective norms is possible because the concept of attitude is mixed up with the concept of subjective norms [61]. Attitudes can represent what liked or not liked by someone. The attitude of a consumer encourages consumers to make selections on several products [62]. So that attitudes are sometimes measured in the form of consumer choice. Consumer choice itself can say as an attitude towards an object and its relationship with other objects [63].

Attitudes are the direct antecedents of behavior. Whereas in the theory of reasoned action, attitudes are not antecedents directly from behavior. The direct antecedents of behavior are intentions, and attitudes function as one of the determinants of intention [25]. This opinion supported by the opinion of many experts who state that intention is a disposition factor whose relationship is closest to the tendency to behave [64]–[67]. Plus, much of the research that has done further strengthens the predictive validity of intention to behavior [59].

According to [25], attitude is a general feeling that states someone's admiration for an object that drives his response, both in the form of positive and negative responses. In a positive attitude, the tendency to act is to approach and expect certain objects while the negative attitude tends to act to stay away or avoid certain objects.

The research conducted shows that the influence of attitudes toward non-significant intentions in TPB shows that attitude constructs are not detailed and explicit concepts to explain one's intentions in achieving goals. On the contrary, the results of this study show that the attitude constructs in are a concept that explains a person's intention in achieving goals [60], [68], [69]. This clear conceptualization of attitudes provides theoretical implications. Namely the concept of individual attitudes influences one's tendency to behave [61].

According to [70], attitudes formed from existing social interactions experienced by individuals. Social interaction means more than just the presence of social contacts and relationships between individuals as members of social groups. In social interaction, there is an interplay between individuals with one another; there are reciprocal relationships that also influence the behavior patterns of each as a member of society. Furthermore, social interaction includes the relationship between individuals with the physical environment and the psychological environment around them.

Most people have the view that vehicles are not merely utility goods but also prestige goods. A person has prestige if he gets recognition. They assume that the vehicle brand has become a symbol of social status. Similar

results are conveyed by [71], about the meaning of ownership of an object, the study revealed that the use of cars is not only a necessary function but also functions as an important symbolic and practical. Research shows that policymakers should not only focus on instrumental motives for car use, but they must consider many social and affective motives [72].

The other variables in TPB show different results between variables. Namely there is no influence between Subjective Norms on Intention Behavioral, Perceived Behavioral Control to Intention Behavioral, Perceived Behavioral to Control Behavior

Social pressures around them do not always influence the desire to use private vehicles. Decisions in using private vehicles, especially cars, are also influenced by where they headed. Generally, people have cars and cars that are used interchangeably according to the needs and conditions at that time. Subjective norms can see in the dynamics between the impulses perceived by individuals from the people around them (significant others) with the motivation to follow their views (motivation to comply) in doing or not doing this behavior.

The results of the analysis shown in table 4 show that the Perceived Behavioral Control variable directly does not affect the Behavior variable. However, a different opinion was expressed by [22], about the direct relationship between PBC and behavior because PBC considered as a substitute for measuring real control over the behavior of individuals. The factors that drive the use of private vehicles are dominated by symbolic factors. Vehicles, in general, are still the value of a person's success. The more expensive and new vehicles a person has, the higher the value of success in the eyes of others.

Behaviors that cannot be controlled previously by individuals but are also influenced by factors regarding non-motivational factors which considered as opportunities or resources needed for behavior to be carried out. So in his theory, Ajzen [23], added one more determination, namely the control of perceptions of behavior regarding the ease or difficulty of the behavior carried out.

There is consistent evidence that habits can override moral norms and environmental concerns in predicting behavior [73], [74]. Especially true when PBC is weak, and habits are strong. As [17], concluded, "Norms are only predictors of behavior if there are no strong opposing habits in power." However, there are also examples of habits that do not have a direct effect on decisions above and above moral norms.

Research conducted [75], to determine whether the perceived behavioral control is different from attitudes because it is not clear whether these variables differ theoretically from attitudes. They performed a factor analysis of attitudes and perceived behavioral control. Their research produced two factors and attitude items and perceived behavioral control had weights on different

factors. Their study also found that attitudes predict behavioral beliefs but do not predict control beliefs, and the opposite applies to perceived behavioral control. This study proves that attitudes and perceived behavioral control are two theoretically different variables.

Terry and O'Leary [76], suggest that in the theory of planned behavior, self-efficacy and perceived behavioral control should be measured by separate measuring instruments. Factor analysis reveals that two variables can be distinguished empirically. The effect of perceived behavioral control and self-efficacy on intention and behavior is different. Self-efficacy affects intention but not on behavior, whereas the perceived behavioral control does not influence intention but appears as a variable that significantly influences behavior.

For behaviors that negatively evaluated, [61], find that the perceived behavioral control relationship is inversely related to intention. They use the theory of planned behavior to predict intentions to commit three violations in driving. The more a person feels she has control over the behavior of driving a violation, the weaker the intention of the person to commit the violation in question.

Conner and McMillan [77], also found the same thing in cannabis use. In their study, higher levels of perceived behavioral control were associated with intention to use marijuana less frequently. People who have a perception that they have control over cannabis use intend to use marijuana less frequently.

Subjective norms are components that contain decisions made by individuals after considering people's views that influence specific behaviors [78]. Subjective norms are individual perceptions about whether other people will support or not realize the action [79]. According to [64], subjective norms are perceptions of social pressure in carrying out certain behaviors. Subjective norms are individual beliefs to obey the direction or advice of those around them to participate in an activity.

According to [80], that subjective norms are interpreted as social pressure to commit or refrain from these behaviors. This component is a function of normative beliefs, which are determined by the degree to which others accept a behavior (referents' behavioral expectation) and the degree to which someone is motivated to follow the opinions of those references (motivation to comply).

Results of the study [81], show that it is essential to strengthen personal norms, by making people more aware of problems related to car use and to increase their sense of responsibility because the latter will activate personal norms that lead to the level of acceptance that higher and stronger intentions. We think studies like the ones reported here can provide valuable new insights for increasing acceptance and the impact of sustainable transportation policies that are beginning to be considered and applied in Latin American cities such as Buenos Aires.

The predictive validity of the theory of planned behavior tested by [82]. They found that the theory of

planned behavior has predictive validity for three months. Their research also found that there were two processes in perceived behavioral control, namely self-efficacy and perceived control.

A person's normative beliefs are expectations of perceived behavior from individuals' important referrals or groups (i.e., spouse, family, friends) [83]. Normative beliefs or motivations to adhere to perceived expectations of each referral can result in perceived social pressure or "subjective norms" [84].

Private vehicle users assume that facilities in private vehicles are more satisfying than public transportation facilities, private facilities can be in the form of air conditioning, can play music and videos, extensive baggage and so on, while in public transportation these facilities are minimal or even there is no. When using a private vehicle, it is no longer difficult to make the desired trip, but if taking public transportation, the route of travel has been determined and not infrequently the passengers have to shift when the way is different [85].

Habits, daily routines, and one's attitude play a role in the process of individual mobility, especially the chosen alternative transportation [86]–[89]. It means that a person's lifestyle and activities that he does will form a pattern of transportation choices. The alternative chosen by an office employee with homemakers and teenagers will undoubtedly be different. For example, a student prefers to take a car to campus because it is considered more prestige [86].

## **5. Conclusions**

The effect of having a private vehicle makes the owner as if trapped in a prestigious circle. It is this effect that gives rise to a new lifestyle where behaviors such as changing cars and competing to buy new and expensive cars become commonplace and are even considered a necessity to maintain prestige and strengthen their existence in a social environment. In the use of private vehicles not only increases the personal value of someone but also as a social line in the community.

The growth in ownership of private vehicles both motorcycles and cars are inseparable from the still lack of public transportation provided by the government. Facilities and security that not obtained from the community are one of the factors why private vehicles are still the idol of community travel. Further research is still very much needed to investigate methods to change the variables found in Theory of Planned Behavior (TPB) effectively and then the study is also designed to evaluate its effectiveness. How much it is necessary to have a private vehicle in either a car or a motorcycle in excess and alternately.

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## References

- [1] A. O'sullivan, *Urban economics*. McGraw-Hill/Irwin, 2007.
- [2] D. Banister, "The sustainable mobility paradigm," *Transp. policy*, vol. 15, no. 2, pp. 73–80, 2008.
- [3] D. Banister, S. Watson, and C. Wood, "Sustainable cities: transport, energy, and urban form," *Environ. Plan. B Plan. Des.*, vol. 24, no. 1, pp. 125–143, 1997.
- [4] R. Petersen, *Land Use Planning and Urban Transport: sustainable transport-a sourcebook for policy-makers in developing cities*. Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ), 2002.
- [5] K. Gwilliam, "Urban transport in developing countries," *Transp. Rev.*, vol. 23, no. 2, pp. 197–216, 2003.
- [6] H. S. Perloff and L. Wingo Jr, *Issues in urban economics*. RFF Press, 2013.
- [7] A. M. Rao and K. R. Rao, "Measuring urban traffic congestion-a review.," *Int. J. Traffic Transp. Eng.*, vol. 2, no. 4, 2012.
- [8] J. Dargay, D. Gately, and M. Sommer, "Vehicle ownership and income growth, worldwide: 1960-2030," *Energy J.*, pp. 143–170, 2007.
- [9] B. Andrea, L. Todd, and M. Gopinath, "Transport Demand Management: Training Document," *GTZ Ger.*, 2009.
- [10] A. Broaddus, "Sustainable transportation: lessons from London," *Focus (Madison).*, vol. 11, no. 1, p. 10, 2014.
- [11] BPS-Statistics of Makassar, *Makassar in Figures*. Makassar: BPS-Statistics of Makassar, 2017.
- [12] G. Tertoolen, D. Van Kreveld, and B. Verstraten, "Psychological resistance against attempts to reduce private car use," *Transp. Res. Part A Policy Pract.*, vol. 32, no. 3, pp. 171–181, 1998.
- [13] G. Beirão and J. A. S. Cabral, "Understanding attitudes towards public transport and private car: A qualitative study," *Transp. policy*, vol. 14, no. 6, pp. 478–489, 2007.
- [14] J. de Dios Ortuzar and L. G. Willumsen, *Modelling transport*. John Wiley & Sons, 2011.
- [15] P. Hersey and K. H. Blanchard, "Management of organizational behavior: Utilizing human resources." Academy of Management Briarcliff Manor, NY 10510, 1969.
- [16] R. Hiscock, S. Macintyre, A. Kearns, and A. Ellaway, "Means of transport and ontological security: Do cars provide psycho-social benefits to their users?," *Transp. Res. Part D Transp. Environ.*, vol. 7, no. 2, pp. 119–135, 2002.
- [17] C. A. Klöckner and E. Matthies, "How habits interfere with norm-directed behaviour: A normative decision-making model for travel mode choice," *J. Environ. Psychol.*, vol. 24, no. 3, pp. 319–327, 2004.
- [18] D. McFadden, "The measurement of urban travel demand," *J. Public Econ.*, vol. 3, no. 4, pp. 303–328, 1974.
- [19] M. E. P. Seligman and M. Csikszentmihalyi, *Positive psychology: An introduction.*, vol. 55, no. 1. American Psychological Association, 2000.
- [20] M. Fishbein and I. Ajzen, *Predicting and changing behavior: The reasoned action approach*. Psychology Press, 2011.
- [21] M. Fishbein and I. Ajzen, *Belief, attitude, intention and behavior: An introduction to theory and research*. 1975.
- [22] I. Ajzen, "The Theory of Planned Behavior," *Organ. Behav. Hum. Decis. Process.*, vol. 50, no. 2, pp. 179–211, 1991.
- [23] I. Ajzen, "Perceived behavioral control, self-efficacy, locus of control, and the theory of planned behavior," *J. Appl. Soc. Psychol.*, vol. 32, no. 4, pp. 665–683, 2002.
- [24] T. J. Madden, P. S. Ellen, and I. Ajzen, "A comparison of the theory of planned behavior and the theory of reasoned action," *Personal. Soc. Psychol. Bull.*, vol. 18, no. 1, pp. 3–9, 1992.
- [25] M. Fishbein and I. Ajzen, "The influence of attitudes on behavior," *Handb. attitudes*, pp. 173–222, 2005.
- [26] I. Ajzen, *Attitudes, Personality, and Behavior*, 2nd ed. Berkshire, England: Open University Press, 2005.
- [27] Malim, Tony. and Birch, Ann., *Research Methods and Statistics*. London: Macmillan Press Ltd, 2006.
- [28] J. W. Creswell, *Research Design: Qualitative, Quantitative, and Mixed Method Approaches*, 4th ed. Thousand Oaks, California: SAGE Publications, Inc., 2014.
- [29] T. Z. Keith, *Multiple Regression and Beyond: An Introduction to Multiple Regression and Structural Equation Modeling*, 2nd ed. New York: Routledge, Taylor & Francis Group, 2015.
- [30] B. M. Byrne, *Structural Equation Modeling with AMOS: Basic Concepts, Applications, and Programming*, 2nd ed. New York: Routledge, Taylor & Francis Group, 2010.
- [31] J. F. Hair, W. C. Black, B. J. Babin, and R. E. Anderson, *Multivariate Data Analysis*, 7th ed. Harlow, England: Pearson New International Edition, 2014.
- [32] M. Q. Patton, *Qualitative research and evaluation methods*, 3rd ed. Thousand Oaks, CA: SAGE Publications, 2002.
- [33] G. D. Garson, *Partial Least Squares: Regression & structural equation modeling*. Asheboro, USA: Statistical Publishing Associates, 2016.
- [34] M. S. Khine, L. C. Ping, and D. Cunningham, *Application of Structural Equation Modeling in Educational Research and Practice: Contemporary Approaches to Research*, 7th ed. Rotterdam, Netherlands: Sense Publishers, 2013.
- [35] D. Kaplan, *Structural Equation Modeling: Foundations and Extensions (Advanced quantitative techniques in the social sciences)*, 10th ed. Thousand Oaks, California: SAGE Publications, Inc., 2000.
- [36] R. Gerson, *Measuring customer satisfaction*. Crisp Learning, 1993.
- [37] K. G. Jöreskog and D. Sörbom, *LISREL 8: Structural equation modeling with the SIMPLIS command language*. Scientific Software International, 1993.
- [38] J. J. Hox and T. M. Bechger, "An introduction to structural equation modeling," 2007.
- [39] B. Wheaton, B. Muthen, D. F. Alwin, and G. F. Summers, "Assessing reliability and stability in panel models," *Sociol. Methodol.*, vol. 8, pp. 84–136, 1977.
- [40] E. G. Carmines, "Analyzing models with unobserved variables," *Soc. Meas. Curr. issues*, vol. 80, 1981.
- [41] R. E. Schumacher and R. G. Lomax, *A Beginner's Guide to Structural Equation Modeling: Third Edition*, 3rd ed. Mahwah, NJ: Lawrence Erlbaum Associates, 2010.
- [42] J. S. Tanaka and G. J. Huba, "A general coefficient of determination for covariance structure models under arbitrary GLS estimation," *Br. J. Math. Stat. Psychol.*, vol. 42, no. 2, pp. 233–239, 1989.
- [43] J. H. Steiger and J. C. Lind, "Statistically based tests for the number of common factors," in *Paper presented at the*

- annual meeting of the Psychometric Society, May 1980, 1980.
- [44] M. W. Browne and R. Cudeck, "Alternative ways of assessing model fit," *Sage Focus Ed.*, vol. 154, p. 136, 1993.
- [45] L. J. Williams and E. O'Boyle Jr, "The myth of global fit indices and alternatives for assessing latent variable relations," *Organ. Res. Methods*, vol. 14, no. 2, pp. 350–369, 2011.
- [46] F. Chen, P. J. Curran, K. A. Bollen, J. Kirby, and P. Paxton, "An empirical evaluation of the use of fixed cutoff points in RMSEA test statistic in structural equation models," *Sociol. Methods Res.*, vol. 36, no. 4, pp. 462–494, 2008.
- [47] L. Hu and P. M. Bentler, "Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives," *Struct. Equ. Model. a Multidiscip. J.*, vol. 6, no. 1, pp. 1–55, 1999.
- [48] L. R. Tucker and C. Lewis, "A reliability coefficient for maximum likelihood factor analysis," *Psychometrika*, vol. 38, no. 1, pp. 1–10, 1973.
- [49] P. M. Bentler and L. T. Hu, "Evaluating model fit," in *Structural equation modeling: Concepts, issues, and applications*, Thousand Oaks, CA: SAGE Publications, 1995, pp. 76–99.
- [50] P. M. Bentler, "SEM with simplicity and accuracy," *J. Consum. Psychol.*, vol. 20, no. 2, pp. 215–220, 2010.
- [51] T. A. Brown, *Confirmatory factor analysis for applied research*. New York: Guilford Publications, 2014.
- [52] K. A. Bollen, "A new incremental fit index for general structural equation models," *Sociol. Methods Res.*, vol. 17, no. 3, pp. 303–316, 1989.
- [53] L. James, S. Mulaik, and J. M. Brett, *Causal analysis: Assumptions, models, and data*. Beverly Hills: Sage publications, 1982.
- [54] C. C. DiClemente and J. O. Prochaska, "Self-change and therapy change of smoking behavior: A comparison of processes of change in cessation and maintenance," *Addict. Behav.*, vol. 7, no. 2, pp. 133–142, 1982.
- [55] R. H. Hoyle, *Structural Equation Modeling: Concepts, Issues, and Applications*. Thousand Oaks, California: SAGE Publications, Inc., 1995.
- [56] P. L. Mokhtarian and I. Salomon, "How derived is the demand for travel? Some conceptual and measurement considerations," *Transp. Res. part A Policy Pract.*, vol. 35, no. 8, pp. 695–719, 2001.
- [57] P. Sheeran, "Intention—behavior relations: a conceptual and empirical review," *Eur. Rev. Soc. Psychol.*, vol. 12, no. 1, pp. 1–36, 2002.
- [58] J. P. Peter, J. C. Olson, and K. G. Grunert, *Consumer behavior and marketing strategy*, 7th ed. New York, United States: New York, NY: McGraw-Hill/Irwin, 2005.
- [59] I. Ajzen, "From intentions to actions: A theory of planned behavior," in *Action control*, Springer, 1985, pp. 11–39.
- [60] M. Giles and E. Cairns, "Blood donation and Ajzen's theory of planned behaviour: an examination of perceived behavioural control," *Br. J. Soc. Psychol.*, vol. 34, no. 2, pp. 173–188, 1995.
- [61] R. P. Bagozzi and S. K. Kimmel, "A comparison of leading theories for the prediction of goal-directed behaviours," *Br. J. Soc. Psychol.*, vol. 34, no. 4, pp. 437–461, 1995.
- [62] M. W. Allen, S. Hung Ng, and M. Wilson, "A functional approach to instrumental and terminal values and the value-attitude-behaviour system of consumer choice," *Eur. J. Mark.*, vol. 36, no. 1/2, pp. 111–135, 2002.
- [63] P. Quester, C. Neal, S. Pettigrew, M. R. Grimmer, T. Davis, and D. Hawkins, *Consumer behaviour: Implications for marketing strategy*. McGraw-Hill, 2007.
- [64] R. S. Feldman, R. S. Feldman, and B. Rimé, *Fundamentals of nonverbal behavior*. Cambridge University Press, 1991.
- [65] H. C. Triandis, "The self and social behavior in differing cultural contexts," *Psychol. Rev.*, vol. 96, no. 3, p. 506, 1989.
- [66] J. D. Fisher and W. A. Fisher, "Changing AIDS-risk behavior," *Psychol. Bull.*, vol. 111, no. 3, p. 455, 1992.
- [67] P. M. Gollwitzer, "Implementation intentions: strong effects of simple plans," *Am. Psychol.*, vol. 54, no. 7, p. 493, 1999.
- [68] S. Santoso, B. S. Dharmmesta, and B. M. Purwanto, "Model of Consumer Attitude in the Activity of Cause-Related Marketing," *Mediterr. J. Soc. Sci.*, vol. 6, no. 4, p. 499, 2015.
- [69] B. S. Dharmmesta, "An Analysis of Consumer Attitudes Toward the Government Policies Designed to Increase Domestic Brand Consumption in Indonesia." Thesis Ph, D dalam bidang Marketing, University of Stratclyde, Glasgow, UK, 1992.
- [70] G. R. Jones and J. M. George, "The experience and evolution of trust: Implications for cooperation and teamwork," *Acad. Manag. Rev.*, vol. 23, no. 3, pp. 531–546, 1998.
- [71] H. Dittmar, *The social psychology of material possessions: To have is to be*. Harvester Wheatsheaf and St. Martin's Press, 1992.
- [72] L. Steg, "Car use: lust and must. Instrumental, symbolic and affective motives for car use," *Transp. Res. Part A Policy Pract.*, vol. 39, no. 2–3, pp. 147–162, 2005.
- [73] L. Eriksson, J. Garvill, and A. M. Nordlund, "Interrupting habitual car use: The importance of car habit strength and moral motivation for personal car use reduction," *Transp. Res. Part F Traffic Psychol. Behav.*, vol. 11, no. 1, pp. 10–23, 2008.
- [74] C. A. Klöckner, E. Matthies, and M. Hunecke, "Problems of Operationalizing Habits and Integrating Habits in Normative Decision-Making Models," *J. Appl. Soc. Psychol.*, vol. 33, no. 2, pp. 396–417, 2003.
- [75] D. Trafimow and A. Duran, "Some tests of the distinction between attitude and perceived behavioural control," *Br. J. Soc. Psychol.*, vol. 37, no. 1, pp. 1–14, 1998.
- [76] D. J. Terry and J. E. O'Leary, "The theory of planned behaviour: The effects of perceived behavioural control and self-efficacy," *Br. J. Soc. Psychol.*, vol. 34, no. 2, pp. 199–220, 1995.
- [77] M. Conner and B. McMillan, "Interaction effects in the theory of planned behaviour: Studying cannabis use," *Br. J. Soc. Psychol.*, vol. 38, no. 2, pp. 195–222, 1999.
- [78] J. C. Mowen and M. Minor, "Customer Behavior." Prentice Hall Inc, New Jersey, United State, 1995.
- [79] R. A. Baron, B. Byrne, and N. R. Branscombe, *Social Psychology*, 10th ed. New York, United States: Allyn and Bacon, Inc, 2003.
- [80] C. A. Henle, C. L. Reeve, and V. E. Pitts, "Stealing time at work: Attitudes, social pressure, and perceived control as predictors of time theft," *J. Bus. Ethics*, vol. 94, no. 1, pp. 53–67, 2010.
- [81] A. Jakovcevic and L. Steg, "Sustainable transportation in Argentina: Values, beliefs, norms and car use reduction," *Transp. Res. Part F Psychol. Behav.*, vol. 20, pp. 70–79, 2013.
- [82] C. J. Armitage and M. Conner, "The theory of planned behaviour: Assessment of predictive validity and perceived control," *Br. J. Soc. Psychol.*, vol. 38, no. 1, pp. 35–54, 1999.
- [83] I. Ajzen, "Residual effects of past on later behavior:

- Habituation and reasoned action perspectives," *Personal Soc. Psychol. Rev.*, vol. 6, no. 2, pp. 107–122, 2002.
- [84] K. I. Dunn, P. Mohr, C. J. Wilson, and G. A. Wittert, "Determinants of fast-food consumption. An application of the theory of planned behaviour," *Appetite*, vol. 57, no. 2, pp. 349–357, 2011.
- [85] Hafram, Maryam. and Hasim, Abdul Hafid., "Factors Affecting Subjective Norms in use and have a Private Vehicle in Makassar, Indonesia," *J. Eng. Appl. Sci.*, vol. 13, no. 7, pp. 1590–1595, 2018.
- [86] S. Bamberg, M. Hunecke, and A. Blöbaum, "Social context, personal norms and the use of public transportation: Two field studies," *J. Environ. Psychol.*, vol. 27, no. 3, pp. 190–203, 2007.
- [87] B. Verplanken, H. Aarts, A. D. Van Knippenberg, and A. Moonen, "Habit versus planned behaviour: A field experiment," *Br. J. Soc. Psychol.*, vol. 37, no. 1, pp. 111–128, 1998.
- [88] T. Schwanen, D. Banister, and J. Anable, "Rethinking habits and their role in behaviour change: the case of low-carbon mobility," *J. Transp. Geogr.*, vol. 24, pp. 522–532, 2012.
- [89] M. Csikszentmihalyi, *Flow and the psychology of discovery and invention*, vol. 56. New York: Harper Collins, 1996.
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