

## PUBLIC TRANSPORTATION USERS' BEHAVIOR BASED ON THEORY OF PLANNED BEHAVIOR

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### ABSTRACT

*Proper public transportation can reduce personal trip demand and result in less time allocated to driving and ultimately, decrease traffic load and environmental pollution. Today, the high rate of personal property ownership and its consequently increased traffic volumes have led to numerous problems, such as air pollution, reduce in fossil fuel resources, destruction of green spaces for road construction and decreased environmental quality. The purpose of this study was to investigate the effect of the variables of the theory of planned behavior including attitude, subjective norm, and perceived behavioral control on citizens using public transportation vehicles. In this research, a questionnaire was provided to citizens of Gorgan, north of Iran. 650 questionnaires were distributed among different schools of the city. The students were asked to hand out the questionnaires to their parents to answer. At last, 362 questionnaires were collected of which 339 were confirmed and later evaluated by statistical analyses via SPSS software. The three main variables of the theory of planned behavior, i.e., attitude, subjective norm, and perceived behavioral control, have significant effect on the citizens' intention using public transportation as their main choice. It was also found that among the factors influencing the intention of using public transportation, attitude plays the most important role. Another finding was that the subjective norm could have a significant effect on the behavior of citizens in using public transportation. Likewise, perceived behavioral control has a direct relation with the main behavior of citizens, yet its impact is not so high. The results indicated that those who used more public transportation were more aware of its benefits than others. It was also realized that in case of resolving some defects of public transportation, they will be more willing to use it. Regarding the ease or difficulty of using such public services, the findings revealed that the respondents had a desirable behavior about public transportation, but still some problems needed to be addressed. The results also indicated that subjective norm and perceived behavioral control had less impact on the attitude of the citizens in Gorgan, so more careful planning should be made on these two variables, that is, measures such as social pressures from authorities, influential individuals, as well as parents should be taken into account. It can be facilitated by increasing the possibilities of using public transport system.*

## 1. INTRODUCTION

Social developments in developing countries have made the issue of transportation, a top concern for the governments. Production and trade globalization is associated with the growth of car ownership in cities. Since the growth rate of car ownership is higher than the allocation of space to the street and parking lots, it would result in the shortage of necessary infrastructure and low quality

public transportation systems intensifying problems such as traffic, climate change, environmental problems, and air pollution (Li et al., 2015) (Li et al., 2015). Many consider the development of public transportation as a promoting step towards the resolution of traffic congestion. Lowering fuel consumption, pollution rates, total expenses and increasing efficiency and capacity to commute by the

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public transportation system are among the benefits of this system (Robert Lritiora, Mike Hunter, 1995). Identifying the determinants of increasing the use of public transportation is also influential, so predicting these factors can be affected by the economic conditions and especially by the demographic variables (e.g., age, gender, and income) (Pekkarinen, 1997). Among vehicles used for transportation, personal vehicles have the largest share of emissions of pollutants, such as CO<sub>2</sub>, which leads to global warming (Sakai, 2002). Despite plenty of efforts done to reduce the environmental impacts of personal cars using technological innovations (for instance, using more efficient engines, hybrid fuels, and fuel cell technology), different challenges like increasing rates of car ownership and its overuse can hinder the positive effects of such factors. Therefore, besides these technological innovations, travel demand management policies are required. That is, the factors related to the ways of using vehicle and the intention to reduce its use seems significant (Abrahamse et al., 2009). What is urgent today is public transportation that is defined as a dense development equipped with an optimal mixture comprised of uses beside the stations and the routes of public transportation means which in turn lead to formation of lively neighborhoods with high quality of life (Robert Lritiora, Mike Hunter, 1995).

Facilitation and promotion of public transportation are always accompanied by challenges. Attitudes, subjective norms, and perceived control behavior of citizens in terms of using public transport are among the key factors influencing the use of these devices, yet, unfortunately, their effectiveness has been less studied. Therefore, the present study seeks to fill the gap by measuring the citizens' perspective on using public transportation means based on the theory of planned behavior (Ajzen, Netemeyer & Ryn, 1991; I. Ajzen, 1985). The research has considered the subjective norms and perceived behavioral control along with the citizens' attitudes and their behavioral intention as the main prerequisites for the individual's basic behavior in a sample population of the citizens of Gorgan. The city of Gorgan, which is the capital of Golestan province, is struggling with various problems, such as lack of proper public transportation stations, improper availability of appropriate public transportation vehicles, and inadequate number of such facilities across the city; thus, by analyzing the effects of these variables, it has been attempted to minimize the severity of the problems.

This paper is structured as follows. Section 2 discusses the literature review of theory of planned behavior. Section 3 presents the variables of the theory of planned behavior while Section 4 presents the research methodology and its criteria. The results analysis from many point of views are given in Section 5. The paper ends by discussing the conclusion of the present study, limitations and proposing a further direction of the study in Section 6.

## **2. THEORY OF PLANNED BEHAVIOR (TPB)**

The theory of planned behavior has been used to explain numerous behaviors, such as losing weight and quitting smoking (C J Armitage & Conner, 2001), to predict the use of an upcoming public transportation service (Borhan et al., 2019; Shaaban & Maher, 2020) to explain the willingness to reduce noise pollution (Sánchez et al., 2018). It is also used in psychology and transportation. This theory predicts the occurrence of a particular behavior, provided that the person intends to commit such behavior (Bamberg & Schmidt, 2003). According to this model, the intention to do a behavior is predicted by three factors: a person has a positive view of behaviors (attitude), a person feels that he is behaving under social pressure (subjective norms), the person feels that he is inclined to behave (Perceived behavioral control). As a rule of thumb, in this model, the person's positive attitude toward doing work, favorable subjective norms, and perceived behavioral control make the person more likely to behave (Karen Glanz, Barbara Rimer, 2008). Harland et al. examined the variables of the theory of planned behavior and found that attitude and perceived behavior control were associated with a reduction in the use of vehicles in a sample of families (Harland et al., 1999). In the theory of planned behavior, it is assumed that the behavior is determined by the intention to do it. One is determined by the intention of the individual's behavior according to his attitude, his subjective norm, and his behavioral control (I. Ajzen, 2006). The theory of planned behavior has been successful in predicting and explaining human behavior (Ajzen, Netemeyer & Ryn, 1991). According to this theory, the actual behavior of a person in specific and different situations can be determined jointly by attitudes, subjective norms, and perceived behavioral controls of behavior. Ajzen (2006) explains that "attitude describes the individual's willingness or unwillingness in terms of his desirable behavior. In addition, an optimal or undesirable attitude directly affects the intensity of one's behavior and beliefs, subjective norms with normative beliefs, and with the expectation of others (the reference group). The control of perceived behavior is the perception of the individual regarding the ease or difficulty of performing the desired behavior. Here, beliefs that may facilitate or hinder the behavior of the individual are considered "(Ajzen, Netemeyer & Ryn, 1991).

## **3. VARIABLES OF THE THEORY OF PLANNED BEHAVIOR**

### **3.1 Attitude**

Attitude is defined as the "specific acquired behavioral tendency used to respond to a particular topic in a favorable or unfavorable way" (Ajzen 1987). Fishbein and Guinan (1960) stated that the attitudes

of individuals toward an object can be measured by the individuals' senses, cognition, and behavior (Fishbein and Guinan 1996). Also, Wacker (1990) evaluated various studies and concluded that, despite what seems to be a close attitude to behavior, it is likely that attitudes were not closely related to behaviors, or were only slightly related to obvious behaviors (Wacker, 1990). Attitude plays an important role in behaviors of individuals. Of course, attitudes are not directly visible, since they are subjective situations that researchers need to assess through research indicators (Huang et al., 2004). According to Ajzen (1985), "if a person's attitude toward a given behavior is positive, it's more likely that he is committed to that particular behavior". Tenbült (2008) states that attitudes are more aggressive where people are highly involved with the desired object or topic or express their attitudes (Tenbült et al., 2008). Attitudes reflect the general feeling of the individual about the desirability or lack of desirability of numerous objects. In one's lifetime, subjective experiences lead to formation of many different attitudes about objects, actions, and events. These attitudes may be the result of direct observations or inference processes. Individual attitudes may change as a result of the variability of a person's belief system. Thus, an individual's attitude about an object is determined by a set of attitudes of his highlighted attitudes about that object (Ajzen 1987). Likewise, it can be assumed that citizens' attitudes are an important and affecting factor in the use of public transportation.

### 3.2 Subjective Norms

The second factor that affects people's intent to behave or not to behave is the subjective norms that are related to the social factor. Subjective norms are also related to understanding or perception of social pressures that are imposed on a person to do or not do the task. Regulating social norms are standards for implementation that individuals can accept or reject (Abrahamse et al., 2009). Ideas which are the basis of subjective norms are called normative beliefs. When a person wants to do something special, he realizes that the people who matter to him think that he should do that. Such important people for a person may be his spouses, friends, doctors, or other people. Subjective norms are evaluated by asking questions from audiences to judge the person about the probability of confirming or denying more people who are significant for him. In general, such norms refer to the effect of social environment on one's behavioral intention (I. Ajzen and M. Fishbein 1972). For example, it should be said that in Iran, in terms of private cars and public transportation taxis, wearing the seat belt was less common for the drivers in the past, but given the social pressures posed by authorities, influential people in the community, the placement of monitoring cameras in various parts of cities, as well as the influence of parents, increased the tendency to fasten the seat belt.

### 3.3 Perceived behavioral control

The third factor that affects people's intention to perform or not to act a given behavior is perceived behavioral control. This variable is defined in the theory of planned behavior as an individual's assessment of the severity or ease of a behavior. Perceived behavioral control is a behavior determinant that reflects the actual control of individuals over the given behavior. There are a number of environmental and organizational factors that can make a certain behavior easier or more difficult. It is assumed that perceived behavioral control reflects the prior experience of an individual as well as the predicted barriers to behavior (I. Ajzen & Driver, 1991)1987. From the perspective of the theory of planned behavior, the desired attitude and the optimal subjective norms and perceived behavioral control promote the intention of doing the behavior (Ajzen, Netemeyer & Ryn, 1991). The perceived behavioral control consists of two parts: the belief focusing on factors that facilitate or prevent the conduct of a specific behavior, as well as the perceived power to control any of these facilitating or inhibiting factors (I. Ajzen & Driver, 1991)1987. Moreover, perceived behavioral control is different from the source of control in that it emphasizes factors that are directly related to a particular behavior. As noted above, perceived behavioral control refers to an individual's perception of whether it easy or difficult to perform the behavior, whereas the source of control is generally a probability that persists in different situations and actions (Icek Ajzen, 2002)1998. A typical scene will contain many different objects, few of which are relevant to behavior at any given moment. Thus attentional mechanisms are needed to select relevant objects for visual processing and control over behavior. We examined this role of attention in the inferior temporal cortex of macaque monkeys, using a visual search paradigm. While the monkey maintained fixation, a cue stimulus was presented at the center of gaze, followed by a blank delay period. After the delay, an array of two to five choice stimuli was presented extrafoveally, and the monkey was rewarded for detecting a target stimulus matching the cue. The behavioral response was a saccadic eye movement to the target in one version of the task and a lever release in another. The array was composed of one "good" stimulus (effective in driving the cell when presented alone. If adopting a particular behavior requires opportunities such as resources and skills that the individual lacks, the person may not have complete control over the behavior. Controlling factors include both internal and external factors. The internal factors include skills, abilities, information and emotions such as stress, whereas the external factors cover environmental and situational factors. In addition, perceived behavioral control refers to the degree in which a person feels that performing or not committing the behavior is under his voluntary control (Christopher J. Armitage, 2005).

### 3.4 Behavioral intention

A major factor in the theory of planned behavior is the individual's intention to perform a specific behavior. Behavioral intention refers to the individual's intention to perform a particular behavior. Strong intention is shown by a subjective possibility that one will perform the desired behavior (Crano William & Radmila, 2013). In the theory of planned behavior, intention is the most important predictor of behavior. The behavioral strikes summarize the combination of people's plans, including the actions and motivations of individuals to engage in a particular behavior. Therefore, people who are triggered to perform a behavior are more likely to do it successfully. According to the proposed model of Ajzen, the individual's intention to perform a particular behavior is the result of three factors: individual attitude, subjective norms, and perceived behavioral control (Notani, 1998) with perceived behavioral control serving as an antecedent to both behavioral intention and behavior. Conditions under which perceived behavioral control can be expected to be a stronger versus a weaker predictor of behavior and behavioral intention are identified. Four such moderators are identified, and causal models are estimated at each level of the moderator. Results show that perceived behavioral control is a stronger predictor of behavior when it is operationalized as a global measure, is conceptualized to reflect control over factors primarily internal to an individual, and is used for nonstudent samples and familiar behaviors. Perceived behavioral control is found to be a stronger predictor of behavioral intention with student samples and familiar behaviors and is equally predictive under the operationalization and conceptualization moderators. (PsycINFO Database Record (c).

The present study examines a set of variables of the theory of planned behavior in terms of the using public transportation for commuting and the intention to increase it. An expanded version of the theory of planned behavior has been used to predict the use of public transportation (Heath & Gifford, 2002). Since the theory of planned behavior analyzes the behavior of the individual during the work, it is expected that the defined variables can be effective in increasing the behavior of using public transportation vehicles by the citizens. In general, it is assumed that attitudes have a positive impact on the individual's behavior in using public transportation. In addition, perceived behavior control has a positive effect on the intention of a person to perform a given behavior. This variable also has a direct impact on the person's apparent behavior. It is also assumed that if a person intends to do something, he will most likely do that. By looking at the literature and finding out the research gap in the attitude, the subjective norm and controlling the perceived behavior of citizens regarding the use of public transportation, it can be inferred that several quantitative studies have been done in this regard, yet this study seeks to examine the attitude, the subjective norm, and control of perceived citizenship behavior to evaluate the significance of these variables as factors determining the behavior of citizens in the city of Gorgan and analyze their impact.

## 4. RESEARCH METHODOLOGY

### 4.1 Participants

The questionnaires were designed separately for each of the variables of the theory of planned behavior. They were also designed in relation to the demographic characteristics of the citizens, and were provided to the citizens of Gorgan, mostly parents of students from different schools to pose questions about the use of transportation vehicles. In order to determine sample size we assumed values of 95% confidence level, standard deviation 0.5%, and a margin of error 0.05%, respectively with response rate of 60 percent. At first, a pilot study was conducted among ordinary people of the society in order to resolve the problems with questionnaires. After the final confirmation, 650 questionnaires were distributed among the different schools in the city. The students were asked to hand out the questionnaires to their parents and to return them to the school within a few days. Finally, 362 questionnaires were collected and after checking and removing the defects, 339 questionnaires were confirmed and analyzed by statistical analysis.

### 4.2 Questionnaire

The questionnaire consists of two parts: general and specialized questions. The general section includes demographic questions, and the specialized section includes 36 questions assessing attitude, subjective norms, behavioral control, behavioral intention, and citizens' behavior towards the use of public transportation. All questions were designed based on the five Likert spectrum. The Cronbach's alpha of the questionnaire was 0.802 which was above 0.7, so the validity of the questionnaire was confirmed. Table 1 shows the general profile of the survey respondents.

**Table 1:** Descriptive statistics of social and economic variables

	Frequency	Percent %
Gender (n = 362)		
Male	218	60.2
Female	144	39.8
Job (n = 362)		
Government employee	158	43.6
Company's employee	23	6.4
Services	8	2.2
Shopkeeper	21	5.8
Student	57	15.7
Others	95	26.2
Income (n = 351)		
Under 1 million	89	24.6
1 to 2 million	111	30.7
2 to 3 million	97	26.8
More than 3 million	54	14.9

	Frequency	Percent %
Education level (n = 361)	102	28.2
Under the diploma	62	17.1
Diploma	108	29.8
BS	89	24.6
BS up		
How do you usually travel in a city? (n = 362)	261	72.1
Personal car	20	5.5
Along with another person's car	10	2.8
Walking	69	19.1
Public transportation	2	0.6
Bike		

As it can be seen in Table 1, the general profile of the questionnaire included gender, job, income, education, and the way of commuting for intra-city trips. According to Table 1, the respondents included 144 women (39.8%) and 218 men (60.2%). Among these respondents, most used to drive their own car in the city (72.1%). It was followed by those using public transportation (19.1%). Then, there were people who were taken with someone else's car (5.5%). 2.8 % used to walk and 0.6 % used bicycles for commuting in the city.

### 4.3 Research Criteria

All questions were measured with a five-point Likert scale, ranging from 1 "least frequently" to 9 "most frequently" unless otherwise indicated, which, if necessary, the items of the questionnaire were expanded in the closest case, for example, very high numbers to high scores.

#### 4.3.1 Use of public transportation for commuting

The responses showed that the ratio of the people using public transportation for commuting, as well as the ratio of those who used personal cars or bicycles or other modes of transportation. Of the 339 citizens participating in the study, about 20% (69 people) tended to use more public transportation, of which 7% (24) were consistently using public transportation. 80% (271) of the citizens are less inclined to use such services, of which 29% (97 people) did not use public transport at all. Most participants (about 72%) were using their own personal car for in-city commuting. 5.5 % used to move in the city using someone else's car, 10 people (more than 2.8%) used to walk, and the remaining 0.6 % went biking to the inner city.

#### 4.3.2. Intention to use public transport for commuting

Behavioral intention was raised with 3 questions in the questionnaire, for example: "Do you intend to use public transport?" The questions

were designed in a scale of 5 points where 1 indicated "definitely not", 3 "probably not", 5 "I'm not sure", 7 "Probably yes", 9 "Definitely yes". Regarding the question, a total of 44% and 33% chose the options "definitely yes," and "probably yes" respectively, indicating that the growing intention to use public transport.

#### 4.3.3. Attitudes towards use of public transportation

The first 10 questions with 2 sections and the last question of the questionnaire on the attitudes of the people including items such as "cost savings, dealing with different characters, resting during travel" were measured. In response to the last question was "What is your opinion on the use of public transport?" about 35% and 46 % chose the options "very favorable" and "favorable" respectively, indicating the relatively favorable conditions of public transport.

#### 4.3.4. Subjective Norm

These questions included 8 topics, regarding how other people, "i.e., important people of life, parents, spouses, neighbors, and best friend", affect your use of public transport. For example, it was observed that, in terms of the impact of important people in life, nearly half of the respondents chose "the unlikely" and "very unlikely" options. It showed that such people do not have much impact on one's use of public transport. Regarding the role of parents, about 60% responded the positive choices. It also indicated that parents had a positive impact on the behavior of individuals associated with the use of public transportation.

#### 4.3.5. Perceived behavioral control

Three questions have been asked to measure the characteristics and difficulties encountered by respondents in understanding the use of public transportation. First, they were asked "How do you find travelling by public transportation?" and the options were 1 "very difficult", 3 "difficult", 5 "none", 7 "easy", 9 "very easy". Another question was "How much control do you have on using public transport?" The third question was related to controlling perceived behavior, "How many factors outside your control can avoid you ride and take public transportation?" (e.g. no station near your home or office, weather conditions, etc.). By asking such questions, it was attempted to see how easy it is to use public transportation for citizens and what factors can further facilitate their use. The responses also showed that on average, the perceived behavioral control was relatively high among respondents.

## 5. RESULT ANALYSIS

Several correlations and regressions were used to investigate the effects of the research variables on the use of public transportation by citizens. These analyses were performed using SPSS 23 software. First, the relationship between independent variables and the amount of public transportation used by the citizens and their intention to

increase it were reported. Second, using the multiple regressions, the independent variables of the theory of planned behavior were used to examine the frequency of using public transportation system and its intention to use it in the behavior of the citizens were measured. Finally, the direct relationship between the perceived behavioral control and the behavior of the citizens was investigated.

Table 2 shows a list of relationships between reports on the use of public transportation and the intention to increase it, attitude, subjective norms, perceived behavioral control, and previous behaviors of the citizens.

**Table 2:** Mean, standard deviation, and correlation between the variables of the theory of planned behavior and using public transportation and intention to increase it

Variables	M	SD	1	2	3	4
1. Public Transportation use	4.82	6.98				
2. Intention to Increase Public Transportation use	7.08	1.74	.337**			
3. Attitude	7.05	2.03	.177**	.520**		
4. Subjective norm	5.41	2.42	.238**	.303**	.247**	
5. Perceived behavioral control	5.74	1.59	.243**	.272**	.308**	.165**

The use of public transport was measured as a percentage of the travel of citizens for doing in-city work. The purpose of increasing the use of public transport was measured on a five-point scale, ranging from 1 “definitely not” to 9 “definitely yes”. The perceived behavioral control was also measured on a five-point scale, ranging from 1 “very difficult” to 9 “very easy”. Other variables were measured on similar five-point scales.

The results of this study showed that people’s intention to use public transportation had a significant positive effect on the use of public transportation ( $R = 0.337$ ). Comparing attitude with subjective norms and perceived behavioral control in terms of the main behavior of citizens also indicated that its correlation was lower than other variables ( $R = 0.177$ ). The result obtained for the subjective norms also showed that this variable was more highly correlated with the behavior of citizens than the use of public transport ( $R = 0.238$ ). The correlation between the perceived behavioral control and the citizens’ behavior in using public transport was also high ( $R = 0.243$ ). Moreover, with regard to the citizens’ intention to use public transportation and its relationship with the three main variables, the results showed that the correlation of attitude was more than subjective norms and perceived behavioral control in people’s behavioral intention ( $R = 0.520$ ). The relationship between

the three main variables also revealed that the correlation between the perceived behavioral control and the attitude was stronger than that of the subjective norms with the citizens’ attitude ( $R = 0.308$ ).

Analysis of the results was done using multiple regressions on the use of public transport, the intention to increase it as the dependent variables and the variables related to the theory of planned behavior as independent variables. At first, the results of using public transportation and the intention to increase it in terms of attitude, subjective norm, and perceived behavioral control were obtained according to the regression analyses. Table 3 shows that the respondents acted better off for the purpose of using public transport than the main behavior of using it, that is, for the citizens, the intention to use public transport was more than its actual use, so there were factors preventing the citizens using public transportation services.

**Table 3:** Multiple regression results for using public transportation and the intention to increase it as a dependent variable and the variables related to the theory of planned behavior as an independent variable

	Public Transportation use for commuting			Intention to Increase Public Transportation use for commuting		
	R <sup>2</sup>	B	t	R <sup>2</sup>	B	t
Perceived behavioral control	.104	.039	3.577**	.313	.116	2.308**
Attitude towards car use		.011	1.303		.381	9.438***
Subjective norm		.025	3.567**		.126	3.865**

Note: \*  $P < 0.05$

$P < 0.01$  \*\*

$P < 0.001$  \*\*\*.

The results of perceived behavioral control, attitude and subjective norms against using public transportation were positive ( $R^2 = 0.104$ ). The other obtained figures were: the perceived behavioral control ( $B = 0.039$ ,  $t = 3.577$ ,  $P < 0.001$ ), the attitude ( $B = 0.011$ ,  $t = 1.303$ ,  $P < 0.001$ ), and the subjective norm ( $B = 0.025$ ,  $t = 3.567$ ,  $P < 0.001$ ), all indicating the significant effect of these variables on the use of public transport. Attitudes, subjective norms, and perceived behavioral control included 31% of the variance for the purpose of using public transportation. As shown in Table 3, the respondents were more likely to increase the use of public transportation ( $B = 0.116$ ,  $t = 2.308$ ,  $P < 0.01$ ), had a positive and high attitude toward using public transport ( $B = 0.381$ ,  $t = 9.438$ ,  $P < 0.01$ ). Likewise, the subjective norm had a relatively positive effect on the use of public transport ( $B = 0.126$ ,  $t = 3.865$ ,  $P < 0.01$ ). Table 4 shows the direct relationship between the perceived behavioral control and the citizens’ behavior in the use of public transport.

**Table 4:** A summary of data with simple linear regression model in terms of perceived behavioral control and citizens' main behavior

Model	Beta <sup>a</sup>	t-value	p-level	R <sup>2</sup>
Overt Behavior <sup>b</sup> :				
Perceived behavioral control	.243	4.708	.000	.059

a: Regression standard coefficient

b: Citizens' main behavior

As shown the results of Table 4, the perceived behavioral control can have a direct and positive impact on the behavior of citizens in using public transportation. In this study, the effect of the perceived behavioral control was positive, but it was not so high. This means that Gorgan citizens do not have much control over their behavior in using public transportation, and the degree of easiness or difficultness use of it, as well as the barriers to its use have no high effect on the use or non-use of public transport ( $R^2 = 0.059$ ).

## 6. DISCUSSION AND CONCLUSION

This study examined the effects of the variables available in the theory of planned behavior for the use of citizens from public transportation. It was based on three questions (1) Do the citizens' attitudes affect their intention to use public transportation? (2) Do subjective norms and perceived behavior control influence the intention of using public transportation? And (3) Does perceived behavioral control have a positive impact on the main behavior of the citizens in relation to the use of public transportation?

About 11% of the variance in the use of public transportation for traveling was effective with the related variables. These results showed that the citizens of Gorgan act better in terms of the intention of using public transportation than the main behavior of using it. The perceived behavioral control, attitude, and subjective norms were positive against using public transportation. In the present study, it seems that due to the relatively high correlation between the independent and the dependent variables, and given the positive impact of the main variables of the research, the citizens of Gorgan were more likely to use public transportation and intend to increase its use. Moreover, most of them were aware of the benefits of public transportation. It was also found that those who used more public transportation were more aware of its benefits than others, so if some problems with the use of public transportation were resolved, their willingness to use it would be greater. It was also concluded that lack of facilities and unavailability of public transportation had a major impact on the unwillingness of the public to use such services. In addition, some citizens referred to unavailability of transportation stations near their place of residence as the main cause of this reluctance. The ease or

severity of using public transportation was assessed and the findings showed that respondents had a good behavior in relation to the use of public transportation, and the results also revealed that the perceived behavioral control had less relevance to the citizen's main behavior in using public transportation.

It was also found that gender affects the level of public transport use, that is, women showed greater tendency to use public transportation than men. Likewise, in terms of the income-related outcomes, it was concluded that the lower the income of citizens, the more the willingness to use public transportation, and this seems logical, so it requires taking more accurate programs in adjusting the attitudes of people with higher income levels.

The present study showed that all three variables, the theory of planned behavior, especially the attitude toward increasing the use of public transport and consequently, the reduction of personal car use, had a positive effect. In the previous studies, Harland et al. also found that two of the variables of the theory of planned behavior including attitudes and perceived behavioral control were positively associated with vehicle use (Harland et al., 1999).

In general, a logical consequence of these findings was that different types of variables related to the theory of planned behavior affect various behavioral domains. From a social perspective, to encourage citizens to use more public transportation, it is necessary to provide the related facilities.

This study showed that the theory of planned behavior can be a powerful effect on individual behavior in choosing the mode of using transportation means. In addition, a deeper and more thorough analysis of the variables suggested that in the literature, it has been attempted to increase the use of public transport, improved its weaknesses, facilitate its use, promote public transportation routes, and equip the public transport stations. Among the factors affecting the intention to use public transportation, attitude plays the most significant role. In previous studies, Wicker, after numerous analyses, concluded that, despite what seems, attitude had a close relation with main behavior of citizens. Of course, this conclusion was contradictory to that of the present study (Fishbein & Guinan, 1996). In addition, the authors' research in this study has made some modification in the results of the past research done by authors such as Huang, Tenbült, Azjen, and Fiesit (I. Ajzen and M. Fishbein 1972; Huang, Lee, and Hsun Ho 2004; Tenbült et al. 2008) in terms of the relationship between attitude, subjective norm, and perceived behavioral control. Some of these changes in the results are: (1) The effects of attitudes, subjective norms, and perceived behavioral control on individuals in relation to the behavior and intention of using public transportation are not fixed and can change from community to community and culture to culture. (2) Perceived behavioral control is a limiting factor in actualizing the intention to use public transportation.

Finally, the results showed that attitude had a higher correlation with the intention to use public transportation ( $R = 0.520$ ), but in contrast to subjective norm and perceived behavioral control, it had less relation with the citizens' behavior intention, so with the aid of the authorities and those who can have a high impact on the relationship between these variables, such as the effect of parents on children, these two factors should be more precisely planned and addressed to increase citizens' behavior in relation to the intention of using the public transportation. Unlike the effect of the behavioral intention on the main behavior of the citizens, attitude is less correlated with other variables ( $R = 0.177$ ); thus, it is necessary to take more serious measures in focusing on the attitudes of individuals in terms of the citizens' main behavior by creating better culture and social pressures.

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