

Introducing Psychology Analysis Based on TPB to Explore Residents' Acceptance for the New Transit

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1. Introduction

A new transit project of constructing High Speed Surface Transportation (HSST) is under consideration in Shiga Prefecture. The line is expected to cross Kusatsu and Otsu cities in Shiga Prefecture, connecting three universities and the residential areas to be ended with JR Kusatsu and Ishiyama Station, totally about 11 kilometers, and it is to be extended in the future. With the background on this project, the article is going to apply Theory of Planned Behavior to explore residents' acceptance for the new transit by social psychology method to enhance the hybrid planning system with more effective evaluation criterions. The target of this study is to provide convenient, comfortable transportation with high service level to make citizens satisfied as much as possible and to promote the new transportation style.

2. Introduction of TPB

Though transportation planning is centered on transportation policies or infrastructure, transportation should be considered as a tool for people to realize some activities. So it is said that travel demand is a derived demand. There comes the necessity to find out the process of decision making for trip including the transportation choice, which leads to the psychological analysis.

Many researches have been carried out to study the relationship of

the behavior and psychology. In this study, acceptance and implementation of the new transit module will be evaluated using the Theory of Planned Behavior (TPB) (Ajzen & Fishbein, 1980) as a theoretical framework. TPB has been proved to be able to describe the psychological process to reach an intention, which is predicted to directly influence conduct of the behavior. The simulation frame has been shown in **Fig. 1**.

Attitudes are a function of beliefs about the behavioral outcome and an evaluation of how those outcomes are desirable. Normative influences are what an individual believes others think they should do (normative beliefs) and how many individuals feel influenced by these social referents (motivation to comply). Perceived behavior control is perceived ease or difficulty in performing a behavior. Therefore, the model does not include any background variables, such as age, marital status, or education. These demographic variables are posited to indirectly influence behavioral intention and behavior through their interactions on the three elements mentioned above. Brief-based measure of each element is obtained by applying the expectancy-value formula to the measuring data.

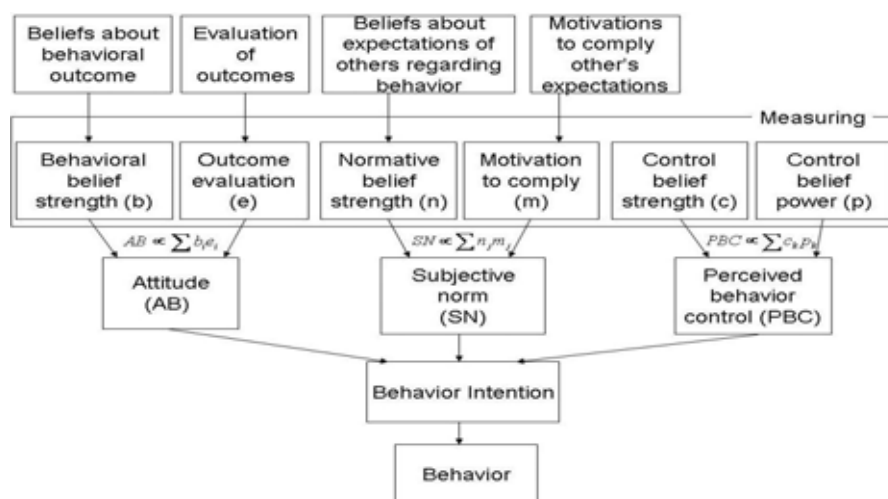


Fig. 1 Frame of Psychological Analysis

Keyword: Transportation planning, social psychology, theory of planned behavior, acceptance, new transit

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3. Research Process

The questionnaires were distributed randomly in residential area of the two cities and 152 samples were usable. SPSS was applied for descriptive, factor reduction and inferential analysis. The simulation structural equation model (SEM) was made with Amos 5, shown in Fig.2. Four common model fit measures are used to assess the model's overall goodness of fit.

The first one is the relative chi-square χ^2/df . Wheaton et al (1977) suggest a ration of approximately 5 or less as beginning to be reasonable. In most research, however, the chi-square to degrees of freedom ratios in the range of 2 to 1 or 3 to 1 are the indicative of an acceptable fit between the hypothetical model and the sample data. For the model in this study, the relative chi-square is 2.321, which is considered to be reasonable.

The second fit measure is the comparative fit index, briefed as CFI (Bentler, 1990). CFI values close to 1 indicate a very good fit. The CFI of this model is 0.855, which tells that the model concluded can be considered to be good.

The third one is root mean square error of approximation, called RMS by Steiger and Lind, and RMSEA by Browne and Cudeck (1993). The RMSEA of this model is 0.094. The opinion recognized mostly is that a value of about 0.08 or less for the RMSEA would indicate a reasonable error of approximation and the model with RMSEA less than 0.1 is just acceptable.

The last one is The Bentler-Bonett (Bentler & Bonett, 1980) normed fit index, briefed as NFI. Since the scale of the fit indices is not necessarily easy to interpret (e.g., the indices are not squared multiple correlations), experience will be required to establish values of the indices that are associated with various degrees of meaningfulness of results. In our experience, models with overall fit indices of less than 0.9 can usually be improved substantially. In this case, the NFI is 0.777. As other measures show, this model still needs modified to be more practical.

4. Conclusion

Based on the finding of the study, several salient implications can be derived. Firstly, PCB contributes the most in explain intention of acceptance, although the correlative coefficients between these three components express close relationship. It means that most residents' decision of taking what kind of transportation facilities or choosing what kind of travel pattern depends mostly on the accessibility or service time or the position of facilities related in their trip. In the other aspect, land use, e.g. construction of new shopping center, will influence passengers' decision in using new transit or not. As mentioned before, the NPO project of reconstructing old Kusatsu River, if be taken into consideration with the HSST, will produce more positive affect. This concept will be studied in the further study.

Secondly, in subjective norm, we investigate the influence from groups of others to personal decision in travel behavior. The coefficient is 0.85, which is larger than the other two factors in SN group: norm to contribute the environment protection and media. It means that the passengers would like to follow groups in social behavior as we hypothesized. In future study, questionnaire will be performed with students and employees. More contents will be added in, and some new structure will be expanded from the original framework.

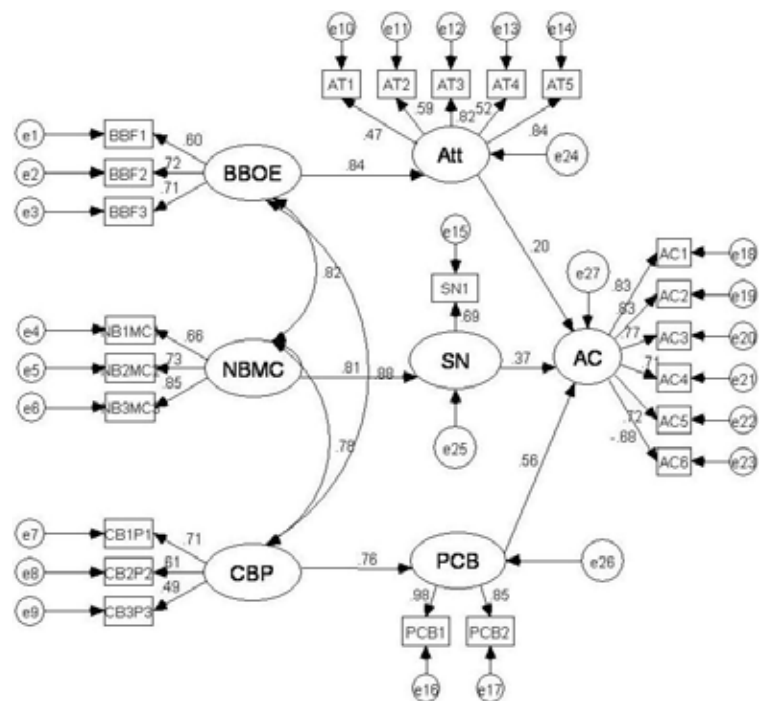


Fig.2 Simulation Model based on TPB