

DISSERTATION INFORMATION

INTRODUCTION

Ph.D. candidate: **DUONG NGOC HAI**

Dissertation title: **STUDYING ON ROAD-CROSSING MANEUVER OF MOTORCYCLISTS IN MIXED TRAFFIC CONDITIONS UNDER THE THEORY OF PLANNED BEHAVIOR - A CASE STUDY OF HAU GIANG**

Major: **Transportation Construction Engineering**

Major code: **9580205**

Advisor: **Assoc. Prof. Dr. Chu Cong Minh**

University: **Ho Chi Minh City University of Technology, VNU-HCM**

ABSTRACT

A dissertation studies road-crossing performance to target effective interventions reducing the highest number of road-crossing-related crashes in Hau Giang province. The thesis contains two research, including research 1 establishing the framework of TPB in context of driving behavior and research 2 identifying the TPB model predicted riders' crossing maneuvers.

Research 1 reviews 42 TPB studies relating to driving behavior to evaluate the predictive utility of TPB by employing a meta-analysis and structural equation model. The results indicate that these studies sought to predict 20 distinct driving behaviors (e.g., drink-driving, use of cellphone while driving, aggressive driving) using the original TPB constructs and 43 additional variables. Among these 43 variables, the current research identified the six that are commonly used to enhance the TPB model's predictive power. These variables are past behavior, self-identity, descriptive norm, anticipated regret, risk perception, and moral norm. Applying the pooled correlation matrix is to estimate results from a structural equation model. The findings report that the standard TPB model accounts for 32% intentional variance and 34% behavioral variance. Strength of relationships of TPB variables and additional variables with intention is elaborately estimated. Similarly, capacity of each additional variable to predict driving intention is also calculated. The influence of the TPB constructs on intention is modified by behavior category and traffic category.

Research 2 conducts two independent samples to investigate riders making the crossing maneuver on undivided two-way roads in Haugiang. The sample 1 uses the extended TPB model to predict motorcyclists' road-crossing behavior that complied with traffic rules (complying maneuvers, CM). The model involves attitude and perceived behavioral control indirectly measured on beliefs, other factors directly gauged, two additional factors including perceived risk and situation awareness. The proposed model for other sample is mainly based on the model of sample 1 to elicit riders' beliefs when making crossing maneuvers that violated traffic regulations (illegal maneuvers, IM); however, there is an adjustment about items measured observed variables and outcome variable of the model (near-misses). The results show that the final model explained 21% of the variance in CM intention and 41% of the variance in CM behavior. Facilitating circumstances, subjective norm, and descriptive norm are predictors of CM intention, whereas intention and risk perception are determinants of CM behavior. For IM performance, the proposed model interpreted 49% of the variance in IM intention and 23% in near-misses. Meanwhile, advantage beliefs, descriptive norm, subjective norm, facilitating circumstances, and situation awareness have direct effect on IM intention, near-misses are directly influenced by IM intention, facilitating circumstances, and risk perception. Interestingly, situation awareness is considered as a determinant of perceived risk. The riders suppose that the probability of collision in both traffic directions has no significant difference. Based on the findings regarding predictors of road-crossing performance, 17 strategies and explicit countermeasures are proposed to implement in a practice.

NOVELTY OF DISSERTATION

Reviewing driving behavior TPB papers aims to establish "an efficient searching tool" that helps readers conveniently find about worldwide research situation, literature review, and future research gaps in the field of driver behavior.

Both a meta-analysis and structural equation modeling are effectively applied for studying in road traffic safety domain.

Influence of innovative moderating variables in the associations between TPB components is investigated.

Examining the TPB model to explain the crossing maneuver is the first study to be conducted in as to explore latent factors on driving performance.

It is the first time that factors relating to moving traffic environment (e.g., situation awareness, risk perception) are together incorporated in the proposed TPB model.

The thesis modifies the output of the hypothesized TPB model compared to the standard TPB model by Ajzen, indicating that near-miss related to IMs is used as a measure instead of the subsequent behavior in the origin TPB model./.

Advisor

Ph.D. candidate

Assoc. Prof. Dr. Chu Cong Minh

Duong Ngoc Hai