Chapter 5
Predicting Low-Carbon Travel Behavior: A Modified Theory of Planned Behavior Model from Taiwan

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ABSTRACT
The activities of the tourism industry and tourists cause many of the world’s carbon dioxide emissions. To reduce carbon emissions resulted from travel, low-carbon tourism has become an urgent issue. Little research has paid attention to low-carbon travel behavior of tourists, and their influence factors are still unclear. Therefore, the purpose of this chapter is to establish a modified Theory of Planned Behavior model to predict which factors may impact low-carbon travel behaviors. In this study, an effective sample of 387 Taiwanese was collected in the first “ECO Taiwan Expo.” Through a rigorous structural equation modeling process, the results show that the respondents are independently involved in low-carbon tourism, rather than influenced by significant others or groups. In addition, past travel experiences could improve travelers’ perceived behavioral control and behavioral intention toward low-carbon travel behavior. Finally, the moderating effect of perceived behavioral control is evidenced between behavioral intention and preferred behavior in this study.

INTRODUCTION
United Nations World Tourism Organization (UNWTO) and United Nations Environmental Program (UNEP) (2008) mention that the activities of tourism industry and tourists cause world’s 5% to 14% carbon dioxide (CO₂) emissions, these emissions continued growth in the ratio of 3.2% per annum (Peeters & Dubois, 2011). The CO₂ emissions caused by tourists use aircraft, cars, boats and other transport, as well as accommodation facilities and resources consumed.
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the most impressive (Simpson, Gössling, Scott, Hall, & Gladin, 2008). Sustrans (2007), Simpson et al. (2008), and Gössling, Haglund, Källgren, Revahl, and Hultman (2009) all believed tourists can change the energy consumption and high carbon travel behavior to slow down the trend of increasing carbon emissions. It also makes the “low-carbon tourism” (LCT) becoming an urgent issue concerned by researchers in recent years.

Simpson et al. (2008, p. 100) indicated that LCT is tourism flows towards low-carbon transport and less distant destinations with extended lengths of stay. Tourists’ behavioral changes will be importance in reversing the trend of CO₂ emissions in tourism (Simpson et al., 2008, p. 67). Therefore, this study believes to understand the predictions of tourists’ low-carbon travel behavior (LCTB) would be valuable. In other words, the nature of low-carbon tourists should be clear. To solve the problem, the Theory of Planned Behavior (TPB) is used in this research.

The TPB explains individuals’ behavioral intentions and subsequent behavior as a result of three factors: personal attitudes, subjective norms, and perceived behavioral control. TPB is often used in many tourism and hospitality research. For example, researchers predict and examine tourists’ intention for choosing destination (Lam & Hsu, 2006), decision-making (Quintal, Lee, & Soutar, 2010), tour planning (Sparks, 2007), explaining the formation of hotel customers’ intentions to visit a green hotel (Han, Hsu, & Sheu, 2010) and so on. However, the research gap still exists in the model about explaining tourists’ LCTB tendency. Hence, the first purpose of this study is to establish a reasonable model via TPB to predict which factors may impact LCTB.

LCTB is a new tourism diagram stated initially by Simpson et al. (2008). In this study context, LCTB refers to tourists may reduce CO₂ emission while they choose destinations, environmental friendly transport, and environmentally certified hotels, as well as eating in restaurants providing local, on season, and/or organic food. Tourists can also demand transportation in new, fuel-efficient aircraft, stay at destination in a long time, or make a short tour near their living surrounding. Globally, environmental concerns receive relatively little coverage in tourism industry due to consumer purchasing decisions and corporate environmental performance is largely unknown (Buckly, 2002). Locally, public reception toward environmental issues has also been lukewarm in Taiwan. In response, Taiwan government has introduced new initiatives to increase the environmental awareness of the public in an effort to transform Taiwan into a “low-carbon island”. The regency of this topic in the public mindset makes it a good point of focus for this study.

The second purpose of this study is, the researchers want to make up gaps in theories by integrating possible constructs. The specific objectives of this study are to address the impact of attitude, subjective norms, and perceived behavioral control, past travel experiences on behavioral intention, to exam the impact of behavioral intention on preferred behavior, to investigate the moderating role of perceived behavioral control in the relationship between behavioral intention and preferred behavior, and to identify perceived barriers that tourists possibly perceive.

Consequently, this study choices the TPB framework to determine the persuasive efficacy on behavioral intention and preferred behavior toward LCT. The relationship between past travel experiences, the three predictive factors of behavioral intention, and preferred behavior will be investigated. In addition, perceived behavioral control may affect as moderator between behavioral intention and preferred behavior. Thus, the researchers propose a modified model in this research to exam the moderator effect of perceived behavioral control.