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The intention and determining factors for airline passengers' participation in carbon offset schemes

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A B S T R A C T

Many airlines are now offering carbon offset schemes for their passengers to reduce their carbon footprint. This study uses the model of goal-directed behavior (MGB) as a basis to understand the intention and determining factors for airline passengers participating in carbon offset plans. Structural equation modeling is used to analyze data collected from 360 passengers in Taiwan. The results show that personal norms and positive anticipated emotions have a positive effect on desires. Desires have a positive and significant influence on intentions to participate in carbon offset schemes. The findings of this study can be beneficial for airlines wishing to promote carbon offset schemes.

1. Introduction

The impact of aviation on the environment is receiving increasing attention. Airlines are important members of the aviation industry and they have adopted a number of measures to reduce the adverse effects that their operations have on the environment (Li et al., 2003; Clarke, 2006; Girvin, 2009). Carbon offset schemes, such as the Fly Greener plan adopted by Cathay Pacific and the CO_2 ZERO plan of the KLM Royal Dutch Airlines, are among the many measures established. Airline passengers can volunteer to participate in carbon offset schemes and choose to use cash or earned member mileage to offset the amount of CO_2 emitted during flights (Mair, 2011; Lu and Shon, 2012).

However, improving the earth's environment cannot be accomplished over the short-term, and the effect of an individual's pro-environmental action is limited. Therefore, airline passengers' participation in carbon offset schemes cannot be fully explained using traditional cost-benefit analysis. Some researchers have called for the inclusion of other factors in explaining people's ecological behaviors (Kals et al., 1999; Carrus et al., 2008). This study proposes that goals, motivations, and emotions are potential factors that inspire airline passengers to participate in carbon offset schemes. The model of goal-directed behavior (MGB) is employed as a basis to understand the intention and determining factors for airline passengers participating in carbon offset schemes. Specifically, the goal of this study is to protect the environment, with the participation in the offset schemes specified as the focal behavior that can be pursued to achieve this goal. The results of this study cannot only enhance academic understanding of this issue, but also provide a reference for airlines implementing carbon offset schemes.

2. Conceptual background

The MGB was proposed by Perugini and Bagozzi (2001) as an extension of the theory of planned behavior (TPB). The TPB uses attitudes, subjective norms, and perceived behavioral control to predict and explain individual behaviors (Ajzen, 1985, 1990). Although the TPB has been successfully applied to understand a wide variety of human behaviors (Chu and Chiu, 2003; Shaw et al., 2007; Han and Kim, 2010), some have questioned its predictive and explanatory power (Perugini and Bagozzi, 2001). The MGB broadens and deepens the TPB by introducing new concepts of desires, positive and negative anticipated emotions, and past behavior that emphasize the importance of emotions, motivations, and goals in decision-making processes.

Attitudes are evaluative reactions to an action and are thought to reflect predispositions to respond in a favorable or unfavorable manner (Eagly and Chaiken, 1993; Bagozzi and Dholakia, 2006). Attitudes are therefore formulated to refer to a target behavior (i.e., attitudes toward the act). As an antecedent in the TPB, attitudes are considered to lack strong motivational content needed to induce an intention to act (Perugini and Bagozzi, 2001; Bagozzi et al., 2003). A consumer, for example, may have a positive attitude toward an Apple iphone 5 and has the money to make a purchase, but he/she may not form an intention to buy it simply because of personal

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preference (i.e., lack of motivation). Motivation is therefore the driving force that makes people take action and ultimately accomplish aims and goals. The MGB incorporates desires as a key intervening variable that provide the motivating impetus for intentions to form and suggests that all antecedents work through desires (intrinsic motivations) enroute to influencing intentions (Perugini and Bagozzi, 2001). Therefore, desires are conceptually distinct from attitudes and intentions within the MGB. Perugini and Bagozzi (2004) defined desires as "a state of mind whereby an agent has a personal motivation to perform an action or to achieve a goal". This type of motivation is triggered by an integration of different sources of appraisals (e.g., emotional, evaluative, and social) and represents the first step toward a decision to act, typically followed by an intention to do so (Carrus et al., 2008). In its deepest essence, desires are conceptualized to encapsulate a future orientation, whereby future outcomes are deemed 'desirable' or 'undesirable' (Shiu et al., 2008).

Another difference between the MBG and the TPB is the addition of the anticipated emotions that take into account the emotional consequences of both achieving and not achieving a certain goal. Positive emotions arising as a result of anticipated goal attainment and negative emotions as a result of anticipated goal failure motivate one to act so as to promote goal achievement and avoid goal failure (Bagozzi and Dholakia, 2006; Leone et al., 2004). Some researchers have suggested that ecological behaviors should not be considered as the mere result of a rational choice. Factors such as interest, love, and emotional affinity toward nature can also stimulate people's ecological behaviors (Kals et al., 1999). Similarly, Vining and Ebreo (2002) suggested that both positive and negative emotions could be predictors of ecological behavior. It is now generally accepted that an integration of cognitive and affective factors can better explain people's ecological behaviors. Norms are guidelines or rules that control behaviors in the social environment and can affect people's inner psyches and external behaviors. Personal norms emphasize that a person is personally convinced that a certain behavior is either right or wrong, and is not affected by pressure from other people or groups (Bamberg et al., 2003, 2007). The central characteristic of personal norms is internalization. In other words, personal norms are adopted by people not because they fear social sanctions, but because they worry that negative emotions (such as regret and guilt) will be generated when the norm is violated.

Previous studies have documented the effectiveness of the MGB in the prediction of a wide range of human behaviors. Building on the TPB, Perugini and Bagozzi (2001) developed the MGB and tested it in two studies. In the body weight regulation study, attitudes and subjective norms positively influenced desires, which in turn had a positive influence on intentions. In the study effort data, attitudes, negative anticipated emotions and subjective norms positively influenced desires. Desires also had a positive influence on intentions. For both studies, the MGB explained significantly more variance in intentions and behavior than the TPB. Bagozzi and Dholakia (2006) investigated the social and psychological antecedents of customer participation in a Harley-Davidson and a non Harley-Davidson motorcycle riding groups. For the Harley rider groups, desire to participate in the brand community was significantly influenced by attitude, positive anticipated emotions, and negative anticipated emotions. For the non-Harley rider groups, desire was significantly affected by attitude and positive anticipated emotions. For both groups, desire had a strong influence on social intentions and fully mediated the effect of attitude on social intentions.

Han and Ryu (2012) extended the MGB by incorporating important factors relating to the re-buying intentions and tested the new model in a full-service restaurant setting. The results indicated that desire was a positive function of attitude, and re-buying intention was positively predicted by desire. In the tourism context, Lee et al. (2012) developed an extended MGB to explore potential travelers' decision-making processes when the risk of 2009 H1N1 infection discouraged international travel. The results showed that attitude, subjective norm, positive anticipated emotion, and negative anticipated emotion were positively associated with desire to travel internationally. Desire was positively associated with intention to travel internationally. Bamberg et al. (2007) investigated the role of personal norms in the decision to use public transportation instead of the car in two samples. The results showed that personal norm was a significant predictor of public transportation-use intention. Other studies have provided further support for the role of personal norms as an additional determinant of pro-environmental behavioral intention (Harland et al., 1999).

Researchers have also pointed out that the MGB is an appropriate framework for the study of pro-environmental behavior because it takes into account personal goals, motivations, and emotions that were largely ignored by previous research in this area (Carrus et al., 2008). The work of Carrus et al. (2008) applied the MGB to predict intentions to use public transportation instead of the private car for going to work, and to recycle household waste. The results showed that the MGB was superior to the TPB in explaining intentions to perform the two ecological behaviors. Negative anticipated emotions were found to be significant psychological drivers of individual desire to engage in pro-environmental actions. Desire, in turn, exerted a positive influence on pro-environmental behavioral intentions. A recent study by Song et al. (2012) provided further support for the application of the MGB in the ecological behavior domain. They proposed an extended MGB incorporating environmental concern, perceived customer effectiveness, and environmentally friendly tourism behaviors to understand the nature-based festival visitors' behavioral intention formation process. The results demonstrated that attitudes, subjective norms, and positive anticipated emotions affected desires, which in turn influenced behavioral intentions.

In light of the above literature, this study proposes the following hypotheses

H_1. Attitudes have a positive effect on desires.

H_2. Personal norms have a positive effect on desires.

H_3. Positive anticipated emotions have a positive effect on desires.

H_4. Negative anticipated emotions have a negative effect on desires.

H_5. Desires have a positive effect on intention to participate in carbon offset schemes.

3. Methodology

The conceptual framework is presented in Fig. 1. Attitudes, personal norms, positive anticipated emotions, and negative anticipated emotions were latent exogenous variables. Perceived behavioral control and past behavior were excluded because they were less relevant to this study. Desires were used as the intervening variable through which the exogenous variables influence intention to participate. The goal of this study (i.e., protecting the environment) is implicitly expressed in the measures of anticipated emotions and desires. People who are concerned about the environment are more likely than others to perform certain behaviors (e.g., participate in the offset scheme) to reach their goals (i.e., protecting the environment). Although the influence of an individual's pro-environmental behavior is small, the aggregate