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Toward a model of destination resident-environment relationship: The case of Gulangyu, China

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Abstract

This study tested an integrative model to better understand residents' environmentally responsible behaviour (RERB) and willingness to sacrifice for the environment (WTS) using a sample of 430 residents on Gulangyu Island in China. Results show that destination environmental quality and eco-friendly reputation directly affected resident environmental identification and environmental commitment. Destination eco-friendly reputation directly influenced RERB and WTS. Both resident environmental identification and commitment fully mediate the effects of environmental quality on RERB and WTS, and partially mediate the effects of destination eco-friendly reputation on RERB and WTS.

Keywords: destination environmental quality; destination eco-friendly reputation; environmental identification; environmental commitment; environmentally responsible behaviour; willingness to sacrifice for the environment

Introduction

Tourism industry heavily depends on the environmental and cultural resources of a destination (Cheng & Wu, 2015; Han & Hyun, 2017; Kiatkawsin & Han, 2017; Su & Swanson, 2017). It is important to maintain and protect these resources to achieve the destination's sustainable development (Han & Yoon, 2015; Su & Swanson, 2017). However, tourism activities can have negative impacts on the destination environment (Su, Huang, & Huang, 2018). Therefore, environmentally responsible behaviours and their formation mechanisms are of concern to tourism scholars and have become a key research topic in recent years (e.g. Cheng & Wu, 2015; Chiu, Lee, & Chen, 2014; Han & Hwang, 2017; Han, Hwang, & Lee, 2017; Han & Yoon, 2015; He, Hu, Swanson, Su, & Chen, 2018; Kiatkawsin & Han, 2017; Su, Huang, & Pearce, 2018; Su & Swanson, 2017). More often, the focus is on tourists rather than residents; however, residents of a destination constitute a key stakeholder group as they live in the destination and carry out various production and day-to-day living activities within the destination. As such, destination residents may have more influence on the destination's environment than visiting tourists.

Facing day-to-day dilemmas, residents need to decide on their environmental behaviours, just as Davis et al. (2011) suggested, "Whether to do what is best for themselves or whether to do what is best for the environment" (p. 262). The choice of whether residents choose environmentally responsible behaviours will have an effect on the sustainable development of a destination. In order to achieve sustainable destination development, it is valuable to explore the influencing factors and mechanisms of resident environmental behaviours. However, to the best of our knowledge, few studies have focussed on this topic.

Cognitive appraisal theory suggests that cognitions and perceptions influence an individual's behaviour (Smith & Ellsworth, 1985). According to cognitive appraisal theory, a

resident's environmental behaviours may be affected by cognitions and emotions about a destination. Perceived quality, as a cognitive construct, is widely confirmed as being a driving factor of behaviours in various disciplines (e.g. He & Li, 2011; Huang, Cheng, & Chen, 2017; Lai, 2015; Sen & Bhattacharya, 2001; Shukla, Banerjee, & Singh, 2016). In addition, perceived reputation is another important cognitive construct identified as an antecedent of behaviour (Keh & Xie, 2009; Su, Swanson, Chinchanachokchai, Hsu, & Chen, 2016). As both environmental quality and environmental reputation are becoming increasingly important in forging people's environmental behaviours (Han & Kim, 2010; Han & Yoon, 2015), this paper uses these constructs as resident cognitions about the destination environment, and therefore the antecedents of residents' environmentally responsible behaviour (RERB).

In recent years, research on person-environment relationship has identified that emotional constructs are very important in influencing an individual's environmental behaviours (Davis et al., 2011). Environmental identification (Clayton, 2003) and environmental commitment (Davis, Green, & Reed, 2009) are considered as two important person-environment constructs that have been used to measure the relationship between people and environment and to predict people's relative environmental behaviours (Clayton, 2003; Coy, Farrell, Gilson, Davis, & Le, 2013; Davis et al., 2009; Davis et al., 2011). However, few studies have included these two constructs simultaneously to predict environmental behaviours. This current study uses environmental identification and environmental commitment to measure the resident-environment relationship, and examine the roles of these constructs to residents' environmental behaviours.

Most studies to date have focused on environmentally responsible behaviour (ERB) (e.g. Cheng & Wu, 2015; Cheng et al., 2013; Han & Hwang, 2017; Kiatkawsin & Han, 2017; Su & Swanson, 2017) and ignored the role of willingness to sacrifice for the environment (Han & Hyun, 2017). However, Davis et al. (2011) suggest that willingness to sacrifice for the

environment is a more stringent construct for protecting the environment. Understanding willingness to sacrifice for the environment is important for eliciting self-sacrifice for the environment, which should be the other side of the coin to environmentally responsible behaviour (Iwata, 2002). What elicits an individual to decide to willingly sacrifice for the environment is worth exploring (Davis et al., 2011). Again, little attention has been paid to this construct in the tourism literature. Examining residents' willingness to sacrifice for the environment is important to understanding the resident-destination dynamism in the tourism context. As such, this study conceptualises willingness to sacrifice for the environment based on Davis et al.'s (2011) study, and examines residents' willingness to sacrifice as an important environmental behaviour construct in parallel with environmentally responsible behaviour.

Conceptual Framework and Hypotheses Development

Cognitive appraisal theory

Cognitive appraisal theory (CAT) has played an important role in predicting individual behaviours. It prescribes the process in which information affects an individual's cognitions and perceptions, which then impact their behavioural responses (Smith & Ellsworth, 1985). Individuals often judge and evaluate specific situations based on their past experiences and personal information (Ellsworth & Scherer, 2003). Further, CAT holds that an individual's subjective evaluations from an experience or an event will derive emotional reactions (Ellsworth & Scherer, 2003; Hosany, 2012; Scherer et al., 2001). CAT has been applied in predicting an individual's behavioural responses in various disciplines including psychology (e.g., Scherer et al., 2001), marketing (e.g., Watson & Spence, 2007) and tourism (e.g., Hosany, 2012).

Therefore, based on CAT, this paper postulates that under the stimulus of the external environmental information in the development process of a destination, including the evaluation of the destination's environmental quality and reputation, destination residents will elicit emotional connections to the environment such as environmental identification and environmental commitment. These constructs, in turn, will motivate them to engage in corresponding environmental behaviours, including environmentally responsible behaviour and willingness to sacrifice for the environment.

Resident-environment relationship

The person-environment relationship is bi-directional. Human behaviours can influence the well-being of the environment, and the resultant environmental changes can conversely impact human well-being (Davis et al., 2011). Previous studies have confirmed that humans can obtain benefits from a "good" natural environment, such as great life satisfaction (Mayer & Frantz, 2004), mental, and physical health (Frumkin, 2001). Therefore, it is humans' best interest to protect the environment (Davis et al., 2011).

There is a long history of research focusing on the people-environment relationship and there have been an increasing number of empirical works over the previous decade (Davis et al., 2011). These studies have mainly attempted to understand the role of the personenvironment relationship on an individual's environmental behaviours (e.g., Clayton, 2003; Davis et al., 2009; Davis et al., 2011; Scannell & Gifford, 2010). How to measure this personenvironment relationship is an important issue. Clayton (2003) first introduced the concept of environmental identification as an index to measure the person-environment relationship. Another construct used to measure this relationship is environmental commitment, which is rooted in interdependence theory to examine the structure of the interpersonal relationship (Davis et al., 2011). Accordingly, we adopted these two environmental constructs to represent the resident-environment relationship and they will be outlined further below.

Environmental identification

Environmental identification comes from social identity theory and organisational identity theory (Hinds & Sparks, 2003). Social identity theory intends to connect cognitive processes to behavioural motivation. Based on social identity theory, organisational identification was developed as a concept to represent the degree of overlap between an individual's self-concept and their perception of the corporate entity (Dutton, Dukerich, & Harquial, 1994), and as such the concept is mainly concerned with employees in a company. Since its inception, the concept of organisational identification has been extended to the field of marketing and subsequently informed the 'customer-company' identification concept, which represents consumers' psychological attachment to a company based on the substantial overlap between perceptions of themselves and the company (e.g., Bhattacharya & Sen, 2003; Sen & Bhattacharya, 2001; Su, Swanson, & Chen, 2016). Based on social identity theory, and the conceptualisations of organisational identification and customer identification, we conceptualise resident environmental identification as residents' psychological attachment to the destination environment based on the overlap between their self perceptions and their perceptions of the destination. Reviewing previous empirical studies, the current study considers that residents' environmental identification may be impacted by their perceptions of the environment, which in turn influences their environmental behaviour.

Environmental commitment

Previously, several models have taken commitment to the environment as the core construct pertaining to the person-environment relationship (e.g. Davis et al., 2009; Davis et al., 2011). Commitment refers to the degree to which an individual's needs are met and can only be met by a particular entity (Le & Agnew, 2003). Commitment is the feeling and thoughts that elicit the behaviour required to maintain a relationship (Arriaga & Agnew, 2001).

Within the literature on interpersonal relationships, it is believed that commitment emerges from relational dependence and is accompanied by a cognitive shift, as individuals become partners (Davis et al., 2011). Commitment is said to predict pro-relationship outcomes such as relationship maintenance (Davis et al., 2011) and sacrificial behaviour (Etcheverry & Le, 2005). Davis et al. (2011) suggested that structural interdependence leads to the subjective experience of commitment, while Davis et al. (2009) empirically identified that environmental commitment not only predicts an individual's past environmental behaviour, but also predicts their future environmental behavioural intentions.

Relational quality theory views commitment as a process with a long-term relationship orientation, and psychological attachment to a partner (Davis et al., 2011; Rusbult et al., 2001). Previous literature has also shown that perceptions can be an antecedent of commitment, and commitment can predict behaviour (e.g. Coy et al., 2013; Davis et al., 2009; Davis et al., 2011). The process of commitment is viewed as a transformation of motivation (Rusbult et al., 2001), and indicates an essential adjustment as to how individuals view themselves, yielding revised motivations and behavioural choices (Davis et al., 2011). Thus, environmental commitment can predict pro-relationship outcomes, such as general environmental behaviour, and willingness to sacrifice (Davis et al., 2011).

Destination environmental quality

As environmental problems are becoming more and more serious, there is an increasing interest in environmental quality in order to achieve sustainable development (Davis et al., 2009; Davis et al., 2011). Thus, perception of environmental quality has grown as an area of research in various disciplines including geography, sociology, and psychology among others (Yu et al., 2015). Tourism industry is heavily reliant on environmental and cultural resources; therefore, attractiveness or quality of the environment has proved itself an important drawcard of a destination to visitors (Kiatkawsin & Han, 2017). Accordingly, some studies have focussed on the protection of a destination's environmental resources as an asset for the destination's sustainable development (e.g. Kiatkawsin & Han, 2017; Su & Swanson, 2017). Residents living in a destination are a key stakeholder group in the destination's development; the destination's environmental quality have impacts on various aspects of their lives, including their physical and mental health (Frumkin, 2001), and life satisfaction (Mayer & Frantz, 2004).

Eco-friendly reputation of the destination

Over the past few decades, academic works in the fields of management, economics, sociology and marketing have scrutinised the various impacts of corporate reputation (Barnett, Jermier, & Lafferty, 2006; Keh & Xie, 2009). Barnett et al. (2006) argued that reputation should be seen as "observers' collective judgments of a corporation based on assessments of the financial, social and environmental impacts attributed to the corporation over time" (p. 34). They emphasised that ideas of reputation should move away from mere awareness and incorporate forms of judgment.

Environmental sustainability has become an increasingly important issue over the past decades. According to an online survey, 55 percent of customers say they are willing to pay extra for goods and services provided by companies that are committed to positive social and environmental impact (Davis et al., 2011). Gaining and boosting an environmentally friendly reputation is becoming imperative to hospitality firms' long term success due to the increasing discerning nature of customers' eco-friendly decision making and purchasing habits (Han & Kim, 2010; Han & Yoon, 2015). A green reputation in the hospitality industry is thus considered central to effectively dealing with customers' growing demand for eco-friendly products.

Consistent with Barnett et al. (2006), the current study defines eco-friendly reputation of a destination as *residents' collective judgments of a destination based on their assessment of the environmental impacts attributed to the destination over time*. A destination's eco-friendly reputation could be seen as an overall evaluation of the extent to which a destination is substantially 'good' or 'bad' regarding the environment. It includes the estimations, judgments, evaluations and opinions of residents related to the destination's ecological or environmental activities.

Environmentally responsible behaviour

Environmentally responsible behaviour (ERB) is usually taken by those people who try to protect the environment and solve environmental problems (Stern, 2000). Cottrell and Graefe (1997) concluded that ERB includes environmental concern, commitment and ecological knowledge. According to Iwata (2001), ERB is reflected in many behaviours including waste recycling and energy management. Thapa (2010) suggested that ERB can be classified into political action, recycling, education, green consumption and community activism.

The term ERB involves a large range of actions and is often used interchangeably with other terms including pro-environmental behaviour, environmentally friendly behaviour, green behaviour and eco-friendly behaviour (Kiatkawsin & Han, 2017; Su & Swanson, 2017). ERB is a mechanism of environmental protection, and tourists' ERB contributes to the reduction of occurrences in ecological environment destruction in tourist destinations (Chiu et al., 2014). Prior research has shown a focus on how to encourage and improve tourists' ERB, which has been examined extensively. In the current study, we focus on residents and employed the term residents' environmentally responsible behaviour (RERB) and a definition consistent with Cheng et al. (2013). We define RERB as behaviours taken by residents who devote themselves to minimising adverse environmental effects and environmental protection while not destroying the environment at a destination during their day-to-day lives.

Willingness to sacrifice for the environment

Willingness to sacrifice (WTS) means "foregoing one's own immediate self-interests to promote the well-being of the partner or relationship (Van Lange, Anew, Harnick, & Steemers, 1997, p. 1331). This implies that an individual gives up his or her own benefits in order to preserve others' benefits (Davis et al., 2011; Han & Hyun, 2017). Davis et al. (2011) proposed the concept of WTS for the environment and defined it as "the extent to which individual's decisions will take into account the well-being of the environment, even at the expense of immediate self-interest, effort or costs" (p. 259). Willingness to sacrifice for environment is a valuable concept in the tourist destination context as individuals who are willing to sacrifice for the environment may exert stronger intentions to protect the destination environment (Han & Hyun, 2017; Iwata, 2002). Thus, this study incorporates resident willingness to sacrifice for the environment as an environmental behaviour construct, and explores its formation mechanism.

Hypotheses development

According to cognitive appraisal theory (Ellsworth & Scherer, 2003; Smith & Ellsworth, 1985), residents' perceived destination environmental quality represents residents' perceptions of the external environment. When residents perceive the good environment provided by the destination, they will appreciate the destination, be more willing to establish a good relationship with the destination, and eventually be inspired to identify with the destination. Therefore, it can be inferred that with the continuous improvement of environmental quality of the destination, residents will be more aware of the environment. Many studies in the marketing literature have proved that customer identification is positively related with perceived service

quality (e.g., He & Li, 2011; Huang et al., 2017; Sen & Bhattacharya, 2001). Perceived service quality can enhance the customer positive identification to a corporation, and then improve the appeal of corporate brand (He & Li, 2011).

Although little research has been done to examine the relationship between perceived environmental quality and environmental commitment, some marketing studies have confirmed the positive impact of service quality on customer commitment (e.g., Shukla, Banerjee, & Singh, 2016). In luxury branding, Shukla et al. (2016) found luxury brand companies tend to emphasize their service orientation to generate customers' emotional commitment. Their empirical findings show a positive correlation between service quality and customer emotional commitment. In the context of tea restaurant, Lai (2015) found service quality indirectly impacts customer commitment through customer satisfaction.

According to cognitive appraisal theory, individual cognition of the affairs affects their emotions, which in turn impact their behaviours (Ellsworth & Scherer, 2003). The perception of environmental quality by residents belongs to the cognitive category. Environmental commitment is a kind of "psychological contract" and embodies a kind of psychological state of the relationship between people and environment (Davis et al., 2009). Thus, it can be regarded as an affective construct (Davis et al., 2011). Therefore, it could be inferred that resident perceptions of environmental quality will influence their level of commitment to the environment.

Based on the above discussions, the following hypotheses are formulated:

H1: Environmental quality positively affects environmental identification.

H2: Environmental quality positively affects environmental commitment.

Good natural environment is the base of a destination's sustainable development, which brings various positive impacts to destination residents, including income growth, increasing employment opportunities (Su, Huang, & Huang, 2018). These positive impacts will encourage residents to take environmentally responsible behaviour to maintain the destination's sustainable development so that the benefits gained can also be sustained. Research in environmental psychology suggests that the external conditions of a particular place will have a stimulating effect on individuals and individuals will actively respond and adapt themselves to the environment in order to achieve the balance between person and environment (Davis et al., 2011; Hinds & Sparks, 2003). According to cognitive appraisal theory, an individual's cognitions and perceptions would impact their behavioural responses (Smith & Ellsworth, 1985). Destination environmental quality can be regarded as a stimulating factor from the environment, which will prompt residents to adopt corresponding environmental behaviours. Generally speaking, high environmental quality encourages residents to take environmentally responsible behaviour, and make them more willing to sacrifice for environment (Yu et al., 2015).

Based on the above discussions, we formulated the following hypotheses:

H3: Environmental quality positively affects environmentally responsible behaviour.

H4: Environmental quality positively affects willingness to sacrifice for the environment.

Although few studies directly examined the relationship between eco-friendly reputation and environmental identification, the positive relationship between corporate reputation and customer-company identification have been widely confirmed in marketing literature (e.g., Bhattacharya & Sen, 2003; Keh & Xie, 2009; Su, Swanson, Chinchanachokchai, Hsu, & Chen, 2016). Corporate reputation positively affects customer identification as it can symbolize identity attractiveness of the company (Keh & Xie, 2009). Customers would prefer to identify themselves with reputable business operators, as this can also reinforce their own identity and satisfy the need for self-enhancement (Bhattacharya & Sen, 2003). In the marketing context, Keh and Xie (2009) identified that corporate reputation positively affects customer-company identification. In the hotel context, Su, Swanson, Chinchanachokchai, Hsu, and Chen (2016) confirmed reputation significantly impacts identification.

In the marketing literature, studies suggest when customers see good reputation from a company, they will be committed to the company, and develop goodwill and intentions to stay with the company (e.g., Bettencourt, 1997). Bennett and Gabriel (2001) argue that good reputation provides customers with positive cues and reinforcement, which lead to favourable commitment. In different contexts, empirical findings confirmed that corporate reputation positively affects customer commitment (Bartikowski & Walsh, 2011; Su, Swanson, Chinchanachokchai, Hsu, & Chen, 2016). Keh and Xie (2009) concluded that corporate reputation influenced customer commitment indirectly through customer trust and customer-company identification.

Eco-friendly reputation of destination is an overall evaluation of the extent to which a destination is substantially 'good' or 'bad' regarding the environment. According to cognitive appraisal theory (CAT), an individual's subjective evaluations will elicit emotional reactions (Ellsworth & Scherer, 2003; Hosany, 2012; Scherer et al., 2001). Further, environmental identification and commitment represent the emotional bond between residents and the destination environment. Therefore, it can be inferred that eco-friendly reputation can strengthen the relationship between resident and the environment, i.e., environmental identification and commitment.

Based on the above discussions, we developed the following hypotheses:

H5: *Eco-friendly reputation positively affects environmental identification.*

H6: Eco-friendly reputation positively affects environmental commitment.

Overall, very little research has directly examined the effect of eco-friendly reputation on resident environmental behaviours. However, the extant literature does inform the relationship between eco-friendly reputation and resident environment behaviours. In a green hotel consumption context, Han and Yoon (2015) confirmed that a hotel's eco-friendly reputation positively influenced guests' intention to engage in environmentally friendly behaviours. In marketing literature, corporate reputation has been widely confirmed as an important antecedent of customer behaviours (e.g., Bartikowski & Walsh, 2011; Caruana & Ewing, 2010; Su, Swanson, Chinchanachokchai, Hsu, & Chen, 2016; Walsh et al., 2009). A good reputation can elicit customer positive behaviour towards market transactions. Generally, good reputation can elicit customer positive behaviour (e.g., Bartikowski & Walsh, 2011; Caruana & Ewing, 2010; Su, Swanson, Chinchanachokchai, and customer citizenship behaviour (e.g., Bartikowski & Walsh, 2011; Caruana & Ewing, 2010; Su, Swanson, Chinchanachokchai, Hsu, & Chen, 2016; Walsh et al., 2009).

Eco-friendly reputation of destination reflects how good or back the destination environment is as perceived by the residents. Cognitive appraisal theory posits that an individual's cognitions and perceptions can affect behavioural responses (Smith & Ellsworth, 1985). Based on cognitive appraisal theory, it can be argued that eco-friendly reputation as resident perception can positively affect residents' environmental behaviours.

Based on the above discussions, the following hypotheses were developed:

H7: Eco-friendly reputation positively affects environmentally responsible behaviour.

H8: Eco-friendly reputation positively affects willingness to sacrifice for the environment.

In previous literature, some person-environment relationship studies found environmental identity is associated with environmental behaviours (e.g., Clayton, 2003). For instance, Clayton (2003) reported that stronger environmental identity leads to more sustainable actions

toward the environment. Besides, Leary et al. (2008) introduced the allo-inclusive identity concept and defined it as self-construal that goes above intra- and interpersonal relationships, and reported that a strong allo-inclusive identity for the natural world would ignite an individual's ecological concern and behaviours. Recently, Su and Swanson (2017) confirmed that tourist identification with the destination will positively influence their environmentally responsible behaviour. Relationship quality theory posits that the relationship between two parties would impact their behaviours, and elicit positive extra-role behaviours, such as citizenship behaviour, positive word-of-mouth (Su, Swanson, & Chen, 2018). A resident's connection to or identification with the destination indicates a link between the resident's self-identity and the destination. Thus, identification with environmental will promote residents' positive extra-role behaviours. We predict that a resident who strongly identifies with the environment is likely to participate in supportive activities towards the destination, such as acting in an environmentally responsible manner, and committing some sacrificing actions for the environment.

Based on the above discussions, we developed the following hypotheses:

H9: Environmental identification positively affects environmentally responsible behaviour.

H10: Environmental identification positively affects willingness to sacrifice for the environment.

According to cognitive appraisal theory (CAT), emotional responses would elicit corresponding behaviours. Commitment can be regarded as a form of affective bonding that shapes behaviour (Coy et al., 2013). Furthermore, commitment can also predict prorelationship outcomes, such as sacrificial behaviour (Etcheverry & Le, 2005). Commitment is positively related to willingness to sacrifice because the latter demonstrates "foregoing one's own immediate self-interests to promote the well-being of the partner or relationship" (Van Lange et al., 1997, p. 1331) and thus would naturally show a level of commitment. Furthermore, some empirical studies have confirmed that environmental commitment could lead to corresponding environmental behaviours. For example, Davis et al. (2011) found environmental commitment could predict general ecological behaviour and willingness to sacrifice for the environment. Following Davis et al. (2011), Coy et al. (2013) further identified that environmental commitment could predict student support for "green" campus initiatives and willingness to sacrifice for the environment. Lee (2011) demonstrated that conservation commitment partially mediated the relationship between place attachment and environmentally responsible behaviour. Based on above discussion, we formulated the following hypotheses:

H11: Environmental commitment positively affects environmentally responsible behaviour.

H12: Environmental commitment positively affects willingness to sacrifice for the environment.

Summing up the hypotheses above, a conceptual model illustrating the relationships among resident's cognitions (environmental quality, eco-friendly reputation), residentenvironment relationship (environmental identification, environmental commitment) and residents' environmental behaviours (environmentally responsible behaviour, willingness to sacrifice for environment) is presented below (Fig. 1).

** Figure 1 here **

Methodology

Measurement scales

A self-administered questionnaire survey was managed to collect empirical data to test the model. The scale measuring environmental quality was adapted from the studies of Waller (1970) and Yu et al. (2015) and included four items modified toward the research context. To measure eco-friendly reputation, three items were adapted from Lee et al. (2010) and Thomas (2011). This scale has shown sufficient reliability and validity in a green hotel consumption context (Han & Yoon, 2015). Environmental identification was measured by four items adapted from Mael and Ashforth's (1992) organisational identification scale. Environmental commitment was measured by a 4-item scale adapted from Davis et al. (2009). To measure environmentally responsible behaviour, a scale of six items was adapted and modified from Smith-Sebasto and D'Costa (1995) and Thapa (2010), which demonstrated good reliability and validity in an island tourism (Cheng et al., 2013) and ecotourism context (Chiu et al., 2014). Finally, willingness to sacrifice for the environment was measured by four items adapted from Davis et al. (2011). All items were measured on a seven-point scale from 1 for 'extremely disagree/dissatisfaction' to 7 for 'extremely agree/satisfaction'.

The adapted scales from English-language literature were translated from English to Chinese and then back-translated into English by academics. Discrepancies between the original English version and the back-translated version were checked and revisions were made in the Chinese version questionnaire to ensure the accuracy of the translation. The Chinese questionnaire was then reviewed by experts in terms of its content and format. Three academics and four destination managers were invited to review the questionnaire. Their comments and feedback were incorporated into the final revision of the survey instrument.

Data collection and analysis

Data for this paper was collected from a survey on the residents of Gulangyu Island, Xiamen City of Fujian Province, a famous island destination in China. Gulangyu Island has approximately 2000 permanent residents. All of the residents enjoy a comfortable and relaxing lifestyle. Only electric-powered vehicles are permitted on the island, so that the environment is free from the noise and pollution of combustion engines. This provides residents and tourists alike with clean air, ever-present green trees and lovely flowers to appreciate and enjoy.

As we did not have the access to a household list of the Island, we used a systematic sampling approach by selecting every second household on each street in the Island. 12 trained college students were divided into four groups to conduct the survey door-by-door on the streets. First, investigators asked the respondents whether they are residents of Gulangyu. If the answer is yes, it continues to the second step. Second, the respondents were asked whether they would like to participate in the survey. Getting the definite answer, the investigators would give the questionnaire to the respondents to fill in. This survey was voluntary and anonymous to protect the respondents' privacy. Finally, the investigators received the questionnaire, and checked the completeness of the questionnaires. The survey questionnaires were distributed from 23 April to 16 June 2017. A total of 600 questionnaires were distributed with 483 returned to the researchers. This produced a response rate of approximately 80%. However, after eliminating incomplete questionnaires, there were a total of 430 usable questionnaires that were used for further analysis (89.3% valid rate).

SPSS 21.0 was used for the statistical analysis of the survey data. The measurement scales were first tested to evaluate the reliability, convergent and discriminant validity of the

constructs in the theoretical model. Structural equation modelling was then used to examine the hypotheses using AMOS 21.0.

Results

Respondent profile

As shown in Table 1, there were slightly more female than male respondents (54.2% vs. 45.8%). Most respondents are relatively young. 39.1 percent of the respondents were in the age group of 18 to 24 years old, while another 34 percent of them were in the group of 25 to 44 years old. Generally, the respondents were well educated with 60.7% of them having an undergraduate or associate degree. About one-third (31.4%) of the respondents earned a monthly income less than 3000¥.

Table 1 here

Common-method bias test

Harman's single-factor method was used to test whether common-method bias was an issue. Using SPSS 21.0 all measurement items were used for an exploratory factor analysis. The solution identified six factors. The factor with the largest eigenvalue explained 38.294% of the total variance, which is below 50% and thus suggests the absence of common method bias (Chang, Witteloostuijn, & Eden, 2010).

Measurement model test

Confirmatory factor analysis was run to test the overall measurement model. Fit indices $(\chi^2/df=2.782; \text{RMR}=0.061; \text{RMSEA}=0.064; \text{NFI}=0.920; \text{IFI}=0.947; \text{TLI}=0.937; CFI=0.947)$ indicated the model fit the data well (Hu and Bentler, 1999). Table 2 lists the means, standard deviations, standardised factor loadings of all the measurement items and the reliability scores. All the Cronbach alpha values were above the 0.700 threshold value suggested by Hair et al. (2010), indicating sufficient reliability of the measurements. However, as shown in Table 2, some items for environmental identity, environmental commitment and environmentally responsible behaviour have a factor loading lower than 0.500 respectively, which is below the criteria set by Hair et al. (2010). Thus, they were removed from the model. The remaining items had factor loadings above 0.500 which were significant at the 0.01 level. Additionally, all the composite reliability and Cronbach alphas of the constructs were greater than 0.700, and the average variance extracted (AVE) of each construct is above 0.500. Thus, the convergent validity of the constructs was confirmed (Fornell & Larcker, 1981; Hair et al., 2010).

** Table 2 here**

As shown in Table 3, all of the correlations among the constructs are significant at the 0.01 level, with the values ranging from a minimum of 0.343 (between environmental quality and environmentally responsible behaviour) to a maximum of 0.646 (between eco-friendly reputation and willingness to sacrifice). The values of the square root of AVE ranged from 0.752 (environmental identity) to 0.897 (environmental quality). The values of square root of AVE are all higher than the inter-construct correlations, indicating satisfactory discriminant validity of the measurements (Anderson & Gerbing, 1988).

Table 3 here

Structural model test

After confirming the reliability and the validity of the measurement model, the proposed structural model was subsequently subjected to test. The model fit indices ($\chi^2/df=2.892$; RMSEA=0.065; NFI=0.919; IFI=0.946; TLI=0.935; CFI=0.946) indicated that the model fit the data very well, and was suitable for further examination.

As shown in Table 4, environmental quality had a significant direct effect on environmental identification ($\lambda_{31} = 0.244$, p<0.01) and environmental commitment ($\lambda_{41} =$ 0.163, p<0.01). Thus H1 and H2 are supported. However, environmental quality did not directly influence environmentally responsible behaviour ($\lambda_{51} = 0.075$, p>0.1) and willingness to sacrifice ($\lambda_{31} = 0.049$, p>0.1). Therefore, H3 and H4 are not proved. Eco-friendly reputation was found to have significant direct effects on environmental identification ($\lambda_{32} = 0.397$, p<0.01), environmental commitment ($\lambda_{42} = 0.435$, p<0.01), environmentally responsible behaviour ($\lambda_{52} = 0.246$, p<0.01) and willingness to sacrifice ($\lambda_{62} = 0.434$, p<0.01), respectively. Thus, H5, H6, H7 and H8 are supported. In addition, environmental identification had significant direct effects on environmentally responsible behaviour ($\beta_{53} = 0.125$, p<0.05) and willingness to sacrifice ($\beta_{63} = 0.112$, p<0.05), respectively. Therefore, H9 and H10 are supported. Finally, environmental commitment was found to directly affect both environmentally responsible behaviour ($\beta_{54} = 0.229$, p<0.01) and willingness to sacrifice ($\beta_{64} = 0.273$, p<0.01). Therefore, H11 and H12 are supported.

** Table 4 here**

The power of the model

The values of \mathbb{R}^2 in a model can be used to show the explanatory power of the model on the endogenous variables. The \mathbb{R}^2 values of 0.01, 0.09 and 0.25 can be regarded to be the threshold values to show small, medium and large statistical power of the model respectively (Cohen, 1988). As shown in Figure 2, the model explained 50.0%, 31.6%, 28.8% and 28.2% of the variance for willingness to sacrifice, environmental identification, environmental commitment and ERB respectively. This indicates that the model captured large effects of the exogenous variables on the endogenous variables. Therefore, the proposed model was confirmed with good explanatory power.

Figure 2 here

Mediating effects of environmental identification and commitment

To examine the mediating roles of environmental identification and commitment between environmental quality/eco-friendly reputation and ERB/willingness to sacrifice, the bootstrap method was employed. The bootstrap samples were set at 2000 with a confidence level of 95%. The results in Table 5 show that all mediating paths were significant, indicating that environmental identification and environmental commitment mediated the effects of environmental quality and eco-friendly reputation, on ERB and willingness to sacrifice.

Table 5 here

Based on Baron and Kenny's (1986) method and criteria, further exploration was undertaken to examine the full or partial mediating roles of environmental identification and environmental commitment. Environmental quality was found to directly influence environmental identification and commitment, but did not directly impact ERB and willingness to sacrifice. At the same time, environmental identification and environmental commitment directly affected ERB and willingness to sacrifice. The indirect effects of

environmental quality on ERB and willingness to sacrifice through environmental identification and environmental commitment were all significant. Thus, environmental identification and environmental commitment fully mediated the effects of environmental quality on ERB and willingness to sacrifice.

Eco-friendly reputation directly affected environmental identification, environmental commitment, and at the same time directly influenced ERB and willingness to sacrifice. Both environmental identification and environmental commitment directly affected ERB and willingness to sacrifice. As the indirect effects of eco-friendly reputation on ERB and willingness to sacrifice were also significant, it can be concluded that environmental identification and environmental commitment partially mediated the effects of eco-friendly reputation on ERB and willingness to sacrifice to sacrifice respectively.

Discussion

Based on cognitive appraisal theory (CAT), this study developed and tested an integrative model postulating residents' environmental cognitions (i.e., environmental quality, ecofriendly reputation) as the antecedents, two resident-environment relationship related constructs (i.e., environmental identification, environmental commitment) as the mediators, and resident environment behaviours (ERB and willingness to sacrifice) as the outcomes in the tourist destination context. Findings of this study have both theoretical and practical implications.

Theoretical implications

According to CAT, an individual's cognition is based on external information and experience and cognitions can inspire emotional responses (Smith & Ellsworth, 1985). In the marketing and environmental psychology literature, identification represents a psychological attachment (Bhattacharya & Sen, 2003), and commitment represents the feelings and thoughts of an

individual (Arriaga & Agnew, 2001). Both constructs can be regarded to belong to the affective domain. Specifically, environmental identification and environmental commitment are considered as two relational constructs between the individual and the environment in environmental psychology (e.g. Clayton, 2003; Davis et al., 2009; Davis et al., 2011; Scannell & Gifford, 2010). Usually, destination residents receive various forms of information about the destination's environment. They would have distinctive cognitive beliefs on the destination's environmental quality and eco-friendly reputation.

The empirical results show that both types of resident cognitions toward the destination environment (i.e., environmental quality and eco-friendly reputation) positively affected the resident-environment relationship constructs, confirming that resident cognitions toward the environment can help establish the relationship between resident and destination environment. These findings are consistent with previous studies, suggesting the relationships between cognitions and emotional responses can also be established when applying to the relationship between destination residents and environment.

In the environmental psychology and marketing literature, prior studies have also confirmed that cognitions directly impact behaviours (e.g. Bartikowski & Walsh, 2011; Caruana & Ewing, 2010; Davis et al., 2009; Davis et al., 2011; Su, Swanson, & Chen, 2016). This study found that eco-friendly reputation directly impacted resident environmental behaviours, but environmental quality did not. The reason may be that resident as a key stakeholder group of the destination may care more about the impression of their home place in the eyes of others due to their highly emotional bond to the destination. This may explain why eco-friendly reputation affected residents' environmental behaviours while environmental quality did not. It is valuable to further examine the relationships between environmental quality, eco-friendly reputation and environmentally responsible behaviour, willingness to sacrifice for environment as very little research has addressed the issue.

Prior studies suggested that person-environment relationship can drive an individual's environmental behaviours (e.g. Clayton, 2003; Davis et al., 2009; Davis et al., 2011; Le & Agnew, 2003; Mayer & Frantz, 2004; Scannell & Gifford, 2010). However, very little research has examined the role of resident-environment relationship in driving residents' environmental behaviours in a tourism context. The study found both environmental identification and commitment had a significant and direct effect on resident ERB and willingness to sacrifice for the environment. These findings demonstrate the importance of resident-environmental behaviours.

This study further investigated the mediating role of the resident environment relationship (i.e., environmental identification, environmental commitment) between resident environmental cognitions (i.e., environmental quality, eco-friendly reputation) and resident environmental behaviours (i.e., ERB, willingness to sacrifice for the environment). Environmental identification and environmental commitment were found to fully mediate the effects of environmental quality on residents' ERB and willingness to sacrifice for the environment, but partially mediates the effects of eco-friendly reputation on resident behaviours. These findings are similar with previous marketing studies which identified that customer identification mediates the effect of customer perceptions on their behaviours (e.g. Bhattacharya & Sen, 2003; Keh & Xie, 2009; Martin, Ruiz, & Rubio, 2009; Martinez & del Bosque, 2013). The findings are also consistent with studies in the environmental psychology literature showing that environmental commitment mediates the effect of perceptions on environmental behaviours (e.g. Coy et al., 2013; Davis et al., 2011). These findings show the applicability of CAT in understanding the formation process of resident environmental behaviours.

Managerial implications

This study also generates managerial implications for destination management. Destination management organizations (DMOs) should strive to maintain high environmental quality in the destination for environmental quality indirectly impacts resident environmental behaviours via resident-environment relationship. Thus, DMOs should implement sanitary cleaning and monitoring management to keep destination clean and sanitary. DMOs can set up a special sanitation team to arrange timely cleaning-up of the garbage. Besides, DMOs may build a complete environment health video surveillance system to carry out 24/7 environmental monitoring and reporting.

As eco-friendly reputation of a destination not only directly impacts resident environmental behaviours, but also has indirect influences such behaviours through residentenvironment relationship, it may be more effective for DMOs to promote resident environmental behaviours by paying more attention to eco-friendly reputation than environmental quality in their public relations and marketing campaigns. Thus, it is recommended that DMOs develop an eco-friendly reputation management plan (e.g., general eco-friendly practices and activities, in-house personnel training program for crisis management), and hire specialists to monitor and manage online and offline destination ecofriendly reputation. More importantly, local residents and communities should be engaged in in implementing the reputation management plan. Besides, DMOs should track and monitor the changes of the destination's environmental reputation over time. DMOs are encouraged to utilize destination reputation management tools (e.g., TrustYou, Internet Honey, and Travel 2.0) to better understand the eco-friendly reputation status and driving factors of reputation changes. Through these efforts, positive resident behaviours toward the destination's environment can be nurtured. Our findings show that resident-environment relationship positively influences resident environment behaviours. Therefore, proactive community-based initiatives can be launched to enhance resident's identification with the environment. These may include local environment awareness campaigns to enhance residents' appreciation of and their connection to the environment, and citizen education programs to increase the commitment level of local residents to the destination environment.

Limitations and Concluding Summary

This study has several limitations. First, the study was confined in an island destination context, thus the results may not be generalised to other destination contexts. Future research may verify the model and the findings of this study in other destination contexts (e.g. rural destinations, adventure tourism destinations). Second, residents may have different environmental cognitions at different stages of a destination's life cycle (Kim, Uysal, & Sirgy, 2013). Gulangyu Island as the site of this study is in the mature development stage. Future studies may look at a destination in a different life cycle stage (e.g., early development stage) or use the stage as a moderator in postulating the relationships among the constructs in the model. Finally, this study only collected cross-sectional survey data in a short period of time. Future studies may consider a longitudinal design to test the causal relationships following a more solid methodology.

This study developed and empirical tested a model of destination resident-environment relationships with a sample of destination residents on the Island of Gulangyu in China. Based on cognitive appraisal theory, the model proposes that destination residents' perceptions of the destination's environmental quality and eco-friendly reputation, would affect their affective responses toward the destination such as environmental identification and environmental commitment, which in turn influence residents' environmentally

responsible behaviour (RERB) and willingness to sacrifice (WTS) for the environmental. Results show that both environmental quality and eco-friendly reputation of the destination affected destination residents' environmental identification and environmental commitment; while eco-friendly reputation had direct effects on both RERB and WTS, environmental quality did not have such direct effects on RERB and WTS. Accordingly, both environmental identification and environmental commitment were found to be full mediators between environmental quality and RERB/WTS; however, they only turned out to be partial mediators between eco-friendly reputation and RARB/WTS. The study contributes to a better understanding of the relationship between destination residents and destination environment and offers insights in destination marketing and management.

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Figure 1. Conceptual Framework



Figure 2: Structural model Test Results (Note: * means significant at the 0.05 level; ** means significant at the 0.01 level; ns means not significant at the 0.05 level)

Demographic	Percentage	Demographic Characteristic	Percentage
characteristic	(n)	(n)
Age		Monthly income	
18 to 24	39.1 (168)	Less than 3000¥	31.4 (135)
25 to 44	34.0 (146)	3000 to 3999¥	11.2 (48)
45 to 64	20.9 (90)	4000 to 4999¥	19.5 (84)
65 or older	6.0 (26)	5000 to 5999¥	19.3 (83)
		6000¥ or more	18.6 (80)
Gender			
Male	45.8 (197)	Level of education	
Female	54.2 (233)	Less than high school	7.2 (31)
		High school/technical school	23.3 (100)
		Undergraduate/Associate degree	60.7 (261)
		Postgraduate degree	8.8 (38)

 Table 1: Profile of respondents

Table 2: Measurement model test results

	Items		SD	SFL	t-
				Vä	alue
	Environmental quality (CR = 0.943, AVE = 0.805; Cronbach α = 0.943)				
	Overall the natural environment of Gulangyu Island is comfortable	4.67	1.515	0.875	22.712
	Gulangyu Island has less garbage, is clean and the sanitary conditions are good	4.62	1.495	0.915	24.488
	Gulangyu Island has clear air and water, and high vegetation coverage	4.74	1.453	0.895	23.581
	The landscape layout, architecture of Gulangyu Island are in harmony with the natural environment	4.65	1.481	0.904	23.983
	<i>Eco-friendly reputation (CR = 0.908, AVE = 0.768; Cronbach</i> $\alpha = 0.907$)				
	In general, Gulangyu Island has a good reputation in the ecological and environment field	5.69	1.094	0.855	21.574
	Overall, Gulangyu Island has a positive eco-friendly reputation	5.58	1.141	0.914	23.961
	Overall, Gulangyu Island has a favourable reputation for its green practices	5.60	1.160	0.859	21.721
	Environmental identification (CR = 0.793, AVE = 0.566; Cronbach α = 0.780				
	I am very interested in what others think about the natural environment of Gulangyu Island	5.36	1.178	0.787	17.596
	It is my wish to maintain a good environment in Gulangyu Island	5.48	1.176	0.846	19.280
	*When someone praises the environment of Gulangyu Island, it feels like a personal compliment	5.93	1.099		
	When someone criticises the environment of Gulangyu Island I would feel embarrassed	5.84	1.189	0.602	12.672
	Environmental commitment ($CR = 0.911$, $AVE = 0.774$; Cronbach $\alpha = 0.910$)				
	In my mind, I am committed to maintaining the greatest environmental interests of Gulangyu Island	5.73	1.186	0.879	22.516
Island	In the future, I will be interested in strengthening the connection with the environment of Gulangyu	5.73	1.162	0.929	24.641
	I strongly feel that I am closely related to the environment of Gulangyu Island	5.81	1.172	0.829	20.956
	*I am expecting a strong connection with the environment of Gulangyu Island	5.63	1.366		
	Environmentally responsible behaviour (CR = 0.877, AVE = 0.591; Cronbach α = 0.876)				
	I comply with the legal ways not to destroy the Gulangyu Island's environment	6.14	0.955	0.617	13.532
	I try not to disrupt the fauna and flora of Gulangyu Island during my life	5.53	1.243	0.805	19.389
	When I see garbage and tree branches, I will put them in the trash	5.61	1.245	0.811	19.628
	If there are cleaning environment activities, I am willing to attend	5.69	1.238	0.805	19.389
	I try to convince partners to protect the natural environment on Gulangyu Island	5.90	1.144	0.751	17.561
	*I report to the Gulangyu Island administration any pollution or destruction	6.14	1.028		
	Willingness to sacrifice for the environment ($CR = 0.845$, $AVE = 0.578$; Cronbach $\alpha = 0.840$)				
Island	I am willing to give up things that I like doing if they harm the natural environment of Gulangyu	5.74	1.211	0.716	16.228

I am willing to take on responsibilities that will help conserve the natural environment of Gulangyu	5.52	1.194	0.842	20.384
Island				
I am willing to do things for the environment of Gulangyu Island, even if I'm not thanked for my	5.14	1.251	0.691	15.461
efforts				
Even when it is inconvenient to me, I am willing to do what I think is best for the environment of	5.66	1.141	0.783	18.356
Gulangyu Island				
	0.0.4 5 5 1	0.00 	0.45	

Goodness of fit statistics: $\chi^2/df = 2.782$; *RMR* = 0.061; *RMSEA* = 0.064; *NFI* = 0.920; *RFI* = 0.905; *IFI* = 0.947; *TLI* = 0.937; *CFI* = 0.947 NOTE: SD = Standard deviation; SFL = Standardized Factor Loading; CR = Composite Reliability; AVE = Average Variance Extracted *items removed from the model due to low factor loading below 0.500

	Environmental	Eco-	Environmental	Environmental	Environmentally	Willingness
	quality	friendly	identification	commitment	responsible behaviour	to sacrifice for the
		reputation				environment
Environmental	0.897					
quality						
Eco-friendly	0.506**	0.877				
reputation						
Environmental	0.443**	0.508**	0.752			
identification						
Environmental	0.380**	0.507**	0.543**	0.880		
commitment						
Environmentally	0.343**	0.461**	0.393**	0.452**	0.769	
responsible behaviour						
Willingness to	0.419**	0.646**	0.494**	0.564**	0.531**	0.760
sacrifice for the						
environment						

 Table 3: The correlation coefficients and average variance extracted

NOTE: ** indicates a significant level of 0.01; the square root of average variance extracted (AVE) is shown on the diagonal of the matrix; inter-construct correlations are shown off the diagonal.

Hypothesis	Relationship between variables	Path	Standardised	t-	Standard	Hypothesis
	-	label	path loadings	value	Error	test outcome
H1	Environmental quality \rightarrow Environmental	λ_{31}	0.244**	4.236	0.040	Supported
	identification					
H2	Environmental quality \rightarrow Environmental	λ_{41}	0.163**	3.038	0.039	Supported
	commitment					
H3	Environmental quality \rightarrow ERB	λ_{51}	0.075	1.297	0.025	Not
						Supported
H4	Environmental quality \rightarrow Willingness to	λ_{61}	0.049	0.941	0.035	Not
	sacrifice					Supported
H5	Eco-friendly reputation \rightarrow Environmental	λ_{32}	0.397**	6.551	0.057	Supported
	identification					
H6	Eco-friendly reputation \rightarrow Environmental	λ_{42}	0.435**	7.597	0.056	Supported
	commitment					
H7	Eco-friendly reputation \rightarrow ERB	λ_{52}	0.246**	3.480	0.041	Supported
H8	Eco-friendly reputation \rightarrow Willingness to	λ_{62}	0.434**	6.664	0.057	Supported
	sacrifice					
H9	Environmental identification \rightarrow ERB	β ₅₃	0.125*	1.962	0.040	Supported
H10	Environmental identification \rightarrow Willingness to	β ₆₃	0.112*	1.980	0.053	Supported
	sacrifice	-				
H11	Environmental commitment \rightarrow ERB	β_{54}	0.229**	3.824	0.036	Supported
H12	Environmental commitment \rightarrow Willingness to	β_{64}	0.273**	5.128	0.048	Supported
	sacrifice	-				

Table 4. Structural model evaluation modes and hypothesis testing outco
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NOTE: * means significant at the level of 0.05; ** means significant at the level of 0.01

Paths	Indirect	Lower	Upper	р
	effects	bound 95% CI	bound 95%	value
			CI	
$EQ \rightarrow EI \rightarrow ERB$	0.031	0.003	0.113	p<0.05
$EQ \rightarrow EI \rightarrow WTS$	0.027	0.005	0.100	p<0.05
$EQ \rightarrow EC \rightarrow ERB$	0.037	0.003	0.114	p<0.05
$EQ \rightarrow EC \rightarrow WTS$	0.044	0.005	0.121	p<0.05
$ER \rightarrow EI \rightarrow ERB$	0.050	0.006	0.162	p<0.05
$ER \rightarrow EI \rightarrow WTS$	0.044	0.010	0.144	p<0.05
$EQ \rightarrow EC \rightarrow ERB$	0.100	0.021	0.220	p<0.05
$EQ \rightarrow EC \rightarrow WTS$	0.119	0.033	0.233	p<0.05

Table 5: Bootstrapping test of the mediations

Notes: EQ = Environmental quality; EI = Environmental identification; ERB = Environmentally responsible behaviour; WTS = Willingness to sacrifice for the environment; ER = Eco-friendly reputation; EC = Environmental commitment.