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#### **Abstract**

**Purpose** – By adopting retrospective evaluation theories, this study aims to explain how innovations provided by separate suppliers in the tourism value chain influence tourist's perceived value of the overall experience, and further uncover which innovative product attributes are more effective in improving tourist perceptions of the overall value.

**Design/methodology/approach** – A survey yielded 584 valid responses from tourists who had experienced specific tourist product innovations during their travels. Structural equation modelling was used to test the proposed theoretical model.

Findings – The results reveal that tourists evaluate overall travelling experience value either by recalling an intense, impressive moment (i.e. a heuristic approach), or through an evaluation of the overall utility gained from the whole trip (i.e. a normative approach). Furthermore, innovations that are perceived as increasing convenience and enabling learning contribute to tourists' overall value perception through both normative and heuristic approaches, while immersion resulting from innovation only contributes to overall perceived value through the heuristic approach.

**Practical implications** – Given the complex service ecosystem of tourism destinations, each tourism service provider should consider how innovations contribute to the experience of the whole trip and which attributes of innovations increase tourists' overall perceived experience value.

Originality/value – This study complements existing knowledge by revealing the relationship between product innovation in tourism sectors and tourists' perceived value of the whole trip.

Moreover, it offers a theoretical framework for further investigation into service product innovation in hospitality and tourism industry.

Keywords: service product innovation, perceived experience value, retrospective evaluation theory

### 1. Introduction

Innovation has become a critical factor in determining the international competitive position of tourism firms and destinations (Camisón and Monfort-Mir, 2012). Based on the Oslo Manual, product innovation means either introducing an entirely new offer or the inclusion of significant improvements to existing offers or their expected uses (OECD and Eurostat, 2005). Although Hjalager (2010) argues that product or service innovation can be used interchangeably, the term 'service product innovation' is preferred for our context in hospitality and tourism in order to distinguish it from manufacturing product innovation.

The ultimate goal of product innovation is to provide better experience to fulfil customer needs and thus contribute to customer satisfaction and loyalty (Stock, 2011). Nevertheless, unlike general consumer goods, travel is characterized as an extended experience, which is constituted by many individual but interdependent service components including transport, hospitality, entertainment, attractions as well as ancillary services. It implies that tourists perceived value is based on a global evaluation of the whole trip instead of a single component (Gallarza and Saura, 2006). Thus, the innovation of each service component should also pay attention to its contribution toward the overall value perceived by tourists.

However, most previous studies have focused on the effects of perceived innovativeness of new products on consumer attitudes toward the specific product or providers of the product (e.g.

Chang and Yang, 2008; Horng *et al.* 2013; Yang and Tan, 2017). Little is known about tourists' perceptions after experiencing an innovated service and the relationship between tourism service innovation, especially the level of novelty, and its influence on the entire travel experience.

Furthermore, in previous studies, an input-output approach has been commonly adopted in tourism research of innovation evaluation (e.g. Meyers-Levy and Tybout, 1989; Stock, 2011). These findings revealed the types of innovation attributes that would increase consumers' intentions to favour or adopt the innovated products, but fails to explain how tourist's evaluate these attributes and form their preferences. The answers to this question would help us to understand the reasoning underpinning the attitudes and decisions made by consumers toward innovated products.

In addressing these issues, this study aims to investigate the relationships among innovativeness of tourist products, perceived attributes of those innovations and two types of tourist evaluation approaches, all of which combined, we argue forms the perceived experience value of the whole trip (See Figure 1).

# 2. Literature review and hypothesis development

## 2.1 Service product innovation and consumers' perceptions

As a key factor underpinning business development and success, innovation is a complex phenomenon and different types of innovation exist, i.e. product innovation, process innovation, marketing innovation and organizational innovation (OECD and Eurostat, 2005). Product innovation directly contributes to consumers' purchase decision and plays a significant role in enabling them to differentiate between competing brands (Hjalager, 2010). Recently, as the service sector has come to predominate developed economies, this attention has shifted from manufacturing

product innovation into service product innovation (Gomezelj, 2016). Service product innovations in tourism refer to changes made by tourism enterprises, such as accommodation providers, tour operators or other actors in the tourism destination supply network, in terms of functions, characteristics or processes, which are perceived as new by tourists, either in a radical or incremental way (Hjalager, 2010; OECD and Eurostat, 2005).

As service providers continually innovate to enhance tourist's experiences, which are subjective in nature (Sørensen and Jensen, 2015), the success of these efforts rests on whether tourists do in fact discern the intended benefits of tourism innovation. Thus, examining tourist product innovation from tourist's perspectives is crucial for successful innovation management.

Previous studies on service product innovation have focused on consumer's adoption outcomes, such as the effects of innovativeness on customers' behavioural intentions (Su, 2011), satisfaction (Weijters *et al.*, 2007) and loyalty (Yang and Tan, 2017). These studies are often positioned within the theory of diffusion of innovation in the adoption of new products (e.g. Camisón and Monfort-Mir, 2012). The findings provide valuable insights on which innovation attributes have a positive impact on consumers' attitudes and behaviours towards new products. However, they fail to reveal how these attributes play a role during the evaluation and judgement processes of consumers.

When exposed to an innovative product, the first thing consumers feel is its innovativeness. As the fundamental feature of product innovation, innovativeness is the degree to which the changes of services appear novel to customers (Alam and Perry, 2002). In fact, many other characteristics of innovations have been investigated, such as perceived ease of use (complexity), perceived usefulness (meaningfulness), relative advantage, compatibility and

trialability (Chung *et al.*, 2018; Ordanini *et al.*, 2014; Rogers, 2003). While the effects of these characteristics are reinforced across numerous studies, the research on how innovativeness affects consumers' evaluation towards new products is not consistent. For example, Stock (2011) suggested that the more innovative the service, the more positive consumers' evaluation, whereas other studies proposed an inverted u-shaped relationship between the level of innovativeness and consumers' positive evaluations (Meyers-Levy and Tybout, 1989).

In the tourism and hospitality research area, only a few studies can be found investigating the influence of innovativeness from a demand perspective and the findings are also not conclusive (Gomezelj, 2016). Siu *et al.* (2013) suggest that the innovativeness of service positively influences visitors' perception on museums' investment on customer relationships. But Ordanini *et al.* (2014) argue that the assessment of service innovation by customers in luxury hotels is a complicated process instead of a simple linear relationship. An important reason for the inconsistency is that consumers' evaluations are not directly determined by the degree of novelty, but through the beneficial attributes they perceive from the innovativeness. Thus, further studies examining the influence of innovativeness should be conducted, especially on how it could affect tourists' experience of the whole trip.

Consumers' experience can be understood as a bi-dimensional construct including intrinsic and extrinsic aspects. The intrinsic aspect emphasizes emotional consequences, whereas the extrinsic aspect focuses on functional consequences (Wei *et al.*, 2016). Therefore, we hypothesise that tourists' perceptions toward the experience of innovated products also includes intrinsic attributes (i.e. immersion and surprise) and extrinsic attributes (i.e. convenience and learning through experience).

A very limited number of studies have investigated tourists' perceptions after experiencing an innovated service. Notable studies include Xu *et al.* (2018) and Tussyadiah *et al.* (2018), which investigated the influence of tourists' perceived outcome quality or perceived enjoyment on their evaluation toward the innovative service product. However, these findings are far from enough to provide a comprehensive picture on how exactly the experience of innovated service being processed by tourists to form their overall assessment.

A number of innovation attributes likely to be pursued were identified through a literature review and these were filtered further and confirmed through some preliminary interviews of experienced tourists (the detailed procedure was provided in the section of methods). By comparing respondents commonly used descriptions with similar concepts identified in the literature, four attributes were summarized and investigated in our research, namely; immersion (Noseworthy *et al.*, 2014), surprise (Jin *et al.*, 2015), learning (Ryan and Glendon, 1998) and convenience (Chang and Yang, 2008).

Immersion is a state of deep involvement in the experience (Pine and Gilmore, 1999). If consumers' interest in an activity is sufficiently high, they are highly involved to the extent that they lose sense of time and place (Pine and Gilmore, 1999). New experiences that disrupt expectations positively, normally stimulate arousal and thus motivate individuals to engage in an act of discovery (Noseworthy *et al.*, 2014). Consumers tend to spend more time and energy in integrating knowledge from multiple sources in order to comprehend innovated products (Moreau *et al.*, 2001). Therefore, we propose the following hypothesis.

H1. Perceived service product innovativeness has a positive effect on tourists' perception of immersion.

From an experiential perspective, immersion is actually the integration of customers and experiences (Pine and Gilmore, 1999). When consumers immerse themselves deeply in innovative services, they could be enthralled by the experience of discovery (Peracchio and Tybout, 1996) and even forget reality (Kao *et al.*, 2008). Thus, immersion is also an intense momentary experience, which can lead to positive high-arousal emotions (Visch *et al.*, 2010). This kind of intense engagement is linked to memorability of experiences, which leads to an enhanced impression. The impression here refers to the extent of remained memory after the experience has ended (Kim, 2010).

H2. Immersion has a positive effect on consumers' impression of the innovated tourism service product.

Surprise is defined as the freshness or specialness of an experience when customers encounter unique stimuli in unexpected situations during consumption of products or services (Holbrook and Hirschman, 1982). Expectation is the core concept regulating surprise (Whittlesea and Williams, 2001). Thus, unexpected innovations are likely to elicit surprise emotions. Previous studies have found that surprise is essential to generate delight for tourists because of the unexpected fulfilment of a wish or need (Crotts and Magnini, 2011). The more innovative a product, the larger the gap between reality and perceived expectations, and thus the greater potential for surprise to be elicited.

H3. Perceived service product innovativeness has a positive effect on tourists' perception of surprise.

As people consume products or services, surprise makes them feel fresh, unique and distinctive, which is an antecedent of delight and an enhanced quality of experience (Ma *et al.*, 2013). Tourists in particular, seek surprise during their trips since they enjoy the spontaneity or

uniqueness of experiences (Tung and Ritchie, 2011). Due to its unexpected nature, surprise has been shown to contribute to the vividness of encountered experiences in consumer's memory (Kao *et al.*, 2008). As a trigger of arousal (Crotts and Magnini, 2011), we propose that surprise perceived from the innovation can strengthen tourists' impressions.

H4. Surprise has a positive effect on consumers' impression of the innovated tourism service product.

Convenience is widely acknowledged by scholars as an attribute of a product that reduces its non-monetary price (Farquhar and Rowley, 2009) and it have become valued more highly by consumers (Priporas *et al.*, 2017). Thus innovativeness in firms should attend to consumer's desires for convenience. Self-service technology that leads to a reduction in customer waiting times (Collier and Sherrell, 2010), the use of E-menus to facilitate ordering (Hartwell *et al.*, 2016) and the utilization of mobile payments systems that simplify transaction processes (Ozturk *et al.*, 2017) are all examples of innovations that have successfully provided convenience for consumers. The more innovative of the service product, implies more advanced technology and more efficient way to solve customer's problem, which leads to higher perceived convenience. Thus, we propose that perceived innovativeness is linked to perceived convenience.

H5. Perceived service product innovativeness has a positive effect on tourists' perception of convenience.

Farquhar and Rowley (2009) provided an updated definition to better understand this concept: "the convenience of a service is a judgement made by consumers according to their sense of control over the management, utilization and conversion of their time and effort in achieving their goals associated with access to and use of the service." Since convenience simplifies services

processes, reduces time, and effort, it is an attribute that adds benefits or utilities for consumers (Chang and Polonsky, 2012; Priporas *et al.*, 2017). It is closely related to perceived utility, which is the degree that the innovated service product is perceived useful and capable in satisfying consumer's needs (Ordanini *et al.*, 2014).

H6a. Convenience has a positive effect on consumers' perceived utility of the innovated tourism service product.

In addition, convenience is not simply about saving time and effort, but also empowers consumers by giving them a sense of control over their expenditure of their resources (Farquhar and Rowley, 2009). Since convenience can reduce physical and sometimes cognitive effort, it often generates willingness to explore the technology (Collier and Kimes, 2012) and sometimes even enhances consumers' feeling of trust toward the providers (Yang *et al.* 2006). All of these benefits derived from convenience-driven innovations could lead to pleasant sensations as outcomes for consumers (Farquhar and Rowley, 2009), which in turn could leave a good impression for consumers.

H6b. Convenience has a positive effect on consumers' impression of the innovated tourism service product.

Learning through experience discussed here refers to increases in knowledge or broadening of the mind through tourism. The facilitation of customer learning is recognized as an important mechanism to engage customers in service delivery and adds to competitiveness (Hibbert *et al.*, 2012). During the process of new product learning, in general terms, consumers categorize new products as belonging to types of product class and compare features and benefits, which can increase their knowledge about this type of experience (Moreau *et al.*, 2001). Tourists, often

motivated by novelty seeking, are almost inevitably confronted with new experiences, which facilitates learning processes (Stone and Petrick, 2013). When products are radically innovative, consumers could utilize a process of analogy to categorize it, which is also a process of opening the mind and a higher level of learning (Gregan-Paxton and Moreau, 2003).

H7. Perceived service product innovativeness has a positive effect on tourists' perception of learning through experience.

Indeed, learning has been long recognized as one of the motivations of pleasure travel (Crompton, 1979), which means to some extent, tourists desire to learn from travel experiences through interactions with a local culture, experiencing different landscapes, or learning a new language (Tung and Ritchie, 2011). The learning outcomes from use of an innovated service include mastering new skills, knowledge and even changed behaviour patterns. These benefits have been shown to be usefully linked to increases in tourists' overall satisfaction (Bos *et al.*, 2015). Since the learning process enables intellectual development and self-improvement, we may conclude that learning through experience would increase tourists' perceived utility.

H8a. Learning through experience has a positive effect on consumers' perceived utility of the innovated tourism service product.

In addition, as a complex process, learning involves many counter-intuitive components and activities, which can lead to personal, transformative and memorable outcomes (Falk *et al.* 2012), which form the basis of impressions. According to Roberson (2018), during travel experiences, being exposed to something new and learning from it can have significant mental, as well as emotional, impact. Ballantyne *et al.* (2018) further demonstrates that levels of tourist engagement during learning is a strong predictor of long-term memory. Especially when the new

experience is liked by people, the memory of it can be intensified because the tourist's attention is caught and directed (Roberson, 2018).

H8b. Learning through experience has a positive effect on consumers' impression of the innovated tourism service product.

## 2.2 Perceived experience value and retrospective evaluation theories

In the context of the experience economy, experience is widely acknowledged to be the essence of tourism products. Recent research has focused on how tourism destinations can add value for tourists through experience design (e.g. Quan and Wang, 2004; Servidio and Ruffolo, 2016). Among these efforts made by destinations, service product innovation is the most common method to add value for tourist experiences. When tourists came back, they would evaluate the entire experience of their travels, including a wide array of services from transportation to accommodation to entertainment and so on (Tussyadiah, 2014). The value perceived from the amalgamation of these service elements determines tourist's overall evaluation toward the destination (Cronin *et al.*, 2000).

Previous studies have investigated consumers' perceptions toward product innovations or providers of these products such as self-service check-in kiosks (Chang and Yang, 2008) or tourism resorts (Yang and Tan, 2017). However, to the best knowledge of the authors, there has not been any study which investigated how these innovations influence tourists' evaluation of the entire experience. In fact, this is particularly important for tourism destinations, since many are now competing in a global marketplace based on similar attributes. Thus, to enhance competitiveness, tourism suppliers seek to add extra value for the whole travel experience through effective innovation (Gomezeli, 2016).

Indeed, tourist value perception is a process of receiving, selecting, organizing and

interpreting information based on the various experiences at the destination (Prebensen *et al.*, 2013). The higher value perceived from the experience by tourists, the more chance a positive emotional response would be generated (de la Peña *et al.*, 2016). For tourists, trips are multi-episode events because they involve all kinds of activities between locations and people encountered. Their emotions and feelings change constantly through the course of the trip. Therefore, when tourists evaluate the whole experience value retrospectively, it is important to understand whether an innovation made by a single provider contributes to the overall assessment and how the evaluation is processed.

Based on psychological theories of retrospective evaluation, two different approaches could be adopted in the evaluation of multi-episode events, the normative and heuristic approaches (Kahneman *et al.*, 1997; Miron-Shatz, 2009). The normative approach assumes that people make moment-by-moment judgments of experiences, which results in a total evaluation through the accumulation of the weighted utilities obtained from each part of the experience. The heuristic approach challenges the normative position. Instead of assuming that computations determine judgments, it proposes people's evaluations rely on segments that represent the whole experience (Miron-Shatz, 2009). These segments can be the most intensified moment or the end of the event (Verhoef *et al.*, 2004) so that the heuristic approach is also known as the peak-end rule. Consensus has not been reached concerning the predictive power of each approach. For example, Miron-Shatz (2009) finds that people's retrospective evaluations of a single day rely on the averaged ratings of emotions, or occasional peaks, whereby other studies propose that the peak-end rule is adopted more frequently during the evaluation for the sequential presentation of mixed-valence affective events (Thomas *et al.*, 2018)

In the tourism literature, some studies imply that tourists' evaluations are largely based on a peak rule (Quan and Wang, 2004) because tourists escape from their daily life to pursue intensified peak feelings such as "rush" (Buckley, 2012). However, other scholars argue that each component of the whole trip can be critical for tourists since if any one fails to satisfy, the total experience would be more or less spoiled and sometimes there is no clear peak moment that can be identified by tourists (Nawijn *et al.*, 2013). Additionally, it has been proved that under different contexts (Mak *et al.*, 2013), and motivations (Mkono *et al.*, 2013), a service (e.g. food consumption) offered by a single provider can be regarded either as a peak moment generating great impressions or supporting experience that only provides functional utility. Therefore, we come to the proposition that both normative and heuristic approaches exist during tourists' retrospective evaluation. Accordingly, innovated tourism service products can increase consumers' perceived experience value either by simply leaving a profound positive impression or adding utility to the whole trip.

H9. When an innovated service product is part of an overall travel experience, consumer's impression of a single innovated service product has a positive effect on their overall perceived experience value.

H10. When an innovated service product is part of an overall travel experience, consumer's perceived utility of a single innovated service product has a positive effect on their overall perceived experience value.

To sum up, we propose the following relationships to illustrate how tourism service product innovativeness affects the overall perceived experience value. At first, the perceived attributes of innovated service products mediate the influence of innovativeness on tourists' impressions and perceived utilities toward the service product. As illustrated in section 2.1, all of

the attributes (i.e. immersion, surprise, convenience and learning through experience) facilitate a memorable experience.

Hypothesis 11: Perceived attributes (a. immersion, b. surprise, c. convenience, d. learning through experience) of an innovated service product mediate the effect of innovativeness on consumers' impressions.

In contrast to making an impression, the concept of utility seems less connected to memorable experiences but more to an ability to solve problems or provide practical solutions, which add value (Batra and Ahtola, 1991; Voss *et al.*, 2003). Among the four attributes, learning through experience is helpful for self-improvement and convenience can directly reduce non-monetary costs, which adds utility value. However, immersion and surprise are not highly related to problem solving. A tourist may be immersed in, or surprised by a new product never encountered previously, but this would not add extra utility to the whole trip if the service product was irrelevant to his/her needs.

Hypothesis 12: Perceived attributes (a. convenience, b. learning through experience) of an innovated service product mediate the effect of innovativeness on consumers' perceived utility.

Secondly, the experience value perception of tourists is a complicated evaluation process which may involve value for money, emotional response, quality performance and so on (Gallarza and Saura, 2006; Sweeney and Soutar, 2001). Findings of recent studies have shown that, both intensified emotional response toward discrete elements (Buckley, 2012) and, duration-weighted average without peak moment (Nawijn *et al.*, 2013) can be used by consumers as the basis to make an overall assessment of the travel experience. Therefore, the following hypotheses are proposed:

H13: When an innovated service product is part of an overall travel experience,

consumer's impressions of a single innovated service product mediates the effects of perceived attributes (a. immersion, b. surprise, c. convenience, d. learning through experience) on their overall perceived experience value.

H14: When an innovated service product is part of an overall travel experience, consumer's perceived utility of a single innovated service product mediates the effects of perceived attributes (a. immersion, b. surprise, c. convenience, d. learning through experience) on their overall perceived experience value.

# [Insert Figure 1 here]

### 3. Methods

## 3.1 Questionnaire design

Semi-structured interviews and a survey were conducted. The interview was undertaken to identify the innovated service products and the attributes perceived by tourists from them. Through a snowball sampling, 29 informants were selected. They are all tourists who would travel at least two times a year. The duration of interview is from 15 to 50 minutes, based on how many innovations the interviewees recalled. In total, there were 70 innovative tourism service items extracted from transcribed texts. Firstly, innovations that could only be applied by specific enterprises were excluded due to low generalizability. Then, to avoid information overload for respondents, the remaining items were further filtered given the coverage of different tourism sectors, different levels of innovation and innovations with or without high-technology. Finally, 22 items were selected for the questionnaire design (See Table I ). Besides, four attributes perceived by tourists from the innovation were summarized and investigated in the survey, which are surprise, immersion, learning

and convenience.

The questionnaire consisted of four parts. The first part activated respondents' memory regarding a certain tourism service product innovation. They were asked to choose one of the 22 service product innovation items they have experienced before and describe the situation of that experience in words to ensure they could recall sufficient details. In order to avoid information overloading, five different versions of the questionnaire were randomly distributed to respondents with only 4 to 5 innovation items presented on each. For the five versions of the questionnaire, except for the innovation items presented, the remaining questions were identical.

## [Insert Table I . here]

All of the variables in part 2 and part 3 were measured using a 7-point Likert-type scale ranging from 1 = strongly disagree to 7 = strongly agree. The second part of the questionnaire measured variables related to tourists' perceptions toward the innovated service products including perceived innovativeness of this product, perceived attributes after using the innovated product, impressions of the product and perceived utility. Tourists' perceived experience value of the whole trip was measured in the third part of the questionnaire. The measurements of these variables are all based on previous research and the detailed items and references are presented in Table III. The last part of the survey was composed of six demographic questions including travel frequency, gender, age, education, income level and occupation.

# 3.2 Data collection and analysis

A purposive sampling was adopted to select respondents that have prior experience of innovated service products. Respondents were approached through an online survey invitation from the sample database owned by the professional data collection company, (17,000,000 users). Data collection

took place between Nov. 2016 and Feb. 2017. Incomplete questionnaires and those finished within 5 minutes were excluded automatically by the data collection system. A total of 637 questionnaires were eventually provided by the company.

A further screening process was performed by checking the description of the product innovation provided by the respondents matched those listed in the categories. The purpose was to ensure that those respondents who have actually experienced product innovation participated in the study. There are 53 participants failed the inspection check, which resulted in a total of 584 valid responses. The detailed sample profile is presented in Table II.

# [Insert Table II . here]

The collected data were analysed using SEM with AMOS 23.0 to test the hypotheses. SEM provides a maximum-likelihood estimation of the entire system in a hypothesized model, which enables the assessment of variables against the data (Jöreskog and Sörbom, 1981). In our analysis, we adopted Anderson and Gerbing's (1992) two-step strategy to test the hypothesized model. We first examined the measurement model using confirmatory factor analysis (CFA) and then performed SEM, based on the measurement model, to estimate the fit of the hypothesized model to the data.

## 4. Results

# 4.1 Measurement quality testing

The measures for the variables under scrutiny were found to have acceptable factor loadings, ranging from 0.658 to 0.918. The measurement model fit results showed a good fit to the data according to Hu and Bentler's (1999) two-index strategy (SRMR = 0.044, RMSEA = 0.049). The

other fit indexes were also above satisfactory levels ( $\chi 2 = 698.376$ , df = 292, p < .001,  $\chi 2/\text{df} = 2.392$ , GFI = 0.915, NFI = 0.919, CFI = 0.951, RFI = 0.903, TLI = 0.941) and the cut-off criteria is based on Hair *et al.* (2010).

Internal consistency was examined considering the Cronbach's alpha coefficient and the scale composite reliability. As displayed in Table III, measures for each construct were internally consistent in that the Cronbach a for study variables ranged from 0.733 to 0.900 and composite reliabilities ranged from 0.829 to 0.922. These values exceeded the recommend threshold of 0.70. In addition, AVE values ranging from 0.530 to 0.842 were all greater than the suggested cut-off of 0.50. As seen in Table IV, most correlations are moderately high and the square root of AVE values were greater than the correlation coefficient of any two constructs. Thus, discriminant validity was also confirmed.

# [Insert Table III. and Table IV. here]

4.2 Finding of the SEM and construct relationship

### 4.2.1 Structural model

The structural modelling results indicated that the hypothesized model (Figure 1) was a good fit to the data ( $\chi 2 = 709.498$ , df = 303, p < .001,  $\chi 2/df = 2.342$ , GFI = 0.917, NFI = 0.918, CFI = 0.951, RFI = 0.905, TLI = 0.943, RMSEA = 0.048). The details about the results of the SEM are displayed in Table V. As expected, product innovativeness positively and significantly affected perceived attributes of innovated product, and the influence ranking is learning through experience ( $\beta$ = 0.731, p < 0.001), surprise ( $\beta$ = 0.605, p < 0.001), immersion ( $\beta$ = 0.515, p < 0.001), and convenience ( $\beta$ = 0.393, p < 0.001). Therefore, Hypotheses 1, 3, 5 and 7 were supported.

Three of the four relationships between the perceived attributes of the innovated service

product and tourists' impressions were significant, the most influential factor is convenience ( $\beta$ = 0.424, p < 0.001), followed by learning through experience ( $\beta$ = 0.348, p < 0.001) and immersion ( $\beta$ = 0.171, p < 0.01), while the influence of surprise ( $\beta$ = 0.076, p > 0.05) on tourists' impression was not significant. Thus, H2, H6b and H8b were supported, but H4 was rejected. The links between convenience and tourists perceived utility of the innovated service product ( $\beta$ = 0.733, p < 0.001), learning through experience and perceived utility ( $\beta$ = 0.384, p < 0.001) were significant, providing support for H6a and H8a. The direct relationship between tourists' impressions of the innovated service product and tourists perceived experience value was significant ( $\beta$ = 0.322, p < 0.001), and similarly, tourists perceived utility of the innovated service product positively influences tourists' perceived experience value ( $\beta$ = 0.464, p < 0.001). Thus, H9 and H10 were supported.

# [Insert Table V. here]

## 4.2.2 Mediating Effects

To test the mediating effect of the attributes (including immersion, surprise, convenience and learning through experience), impressions and perceived utility, we applied the approach suggested by Baron and Kenny (1986) and Hopwood (2007). This comprises a comparison of the full mediation (M1) and partial mediation models (M2) to test the effect of interposing the mediator variable between an independent and dependent variable. The hypothesized model is comprised of two groups of mediators: (1) attributes (including immersion, surprise, convenience and learning through experience) and (2) impressions and perceived utility. We developed two competing models: model 3 with only attributes as mediators but without impressions and perceived utility as mediators (M3); and model 4 with only impressions and perceived utility as mediators but without attributes as mediators (M4). A further model without mediators (the non-mediated model, M5) was

constructed to test the effects of independent variables on the mediators and dependent variable. The model fit indices of the fully mediated, partially mediated, and non-mediated models are shown in Table VI.

## [Insert Table VI. here]

First, according to the previous analysis, the fully mediated model fits the data adequately. The following paths were all found to be significant; from perceived service product innovativeness to attributes; from immersion, convenience and learning through experience to impressions; from convenience and learning through experience to perceived utility; and, from impressions and perceived utility to perceived experience value of the whole trip. Therefore, the conditions for a mediation effect required by Baron and Kenny (1986) and Hopwood (2007) are fulfilled, namely that the independent variable significantly affects the dependent variable, which is true apart for the path from surprise to impressions.

Second, the partially mediated model (M2) contained non-significant paths between perceived service product innovativeness to impressions ( $\beta_{M2\text{-innovativeness-impression}} = 0.203$ , p = 0.154), innovativeness to perceived utility ( $\beta_{M2\text{-innovativeness-utility}} = 0.075$ , p = 0.621), and to perceived experience value of the whole trip ( $\beta_{M2\text{-innovativeness-value}} = 0.048$ , p = 0.518). The direct and indirect paths as well as their significance levels are shown in Table VII. Since the significance of the independent variable evaporated in the presence of the mediation variable, a full mediation effect can be assumed. Additionally, according to the  $\chi 2$  test and model fit indices (Hair *et al.*, 2010), it is clear that both competing models fit the data, however, the fully mediated model provides a better fit than the two competing models.

## [Insert Table VII. here]

Finally, the non-mediated model does not have good model fit indices and certainly not better than the fully mediated model. Yet, all the direct paths are significant ( $\beta_{M5\text{-innovativeness-impression}}$ ) = 0.763, p < 0.001;  $\beta_{M5\text{-innovativeness-utility}}$  = 0.737, p < 0.001;  $\beta_{M5\text{-innovativeness-value}}$  = 0.638, p < 0.001), and since the independent variable significantly affects the mediator, the condition for the mediation effect is fulfilled (Zhao *et al.*, 2010). To conclude, with the exception of the "surprise" variable, the mediation hypothesis (H11a, H11c, H11d, H12a, H12b, H13a, H13c, H13d, H14a, H14b) we proposed were supported, but H11b and H13b were rejected.

#### 5. Discussion

#### 5.1 Conclusion

The findings reveal that service innovation in a single provider does not affect perceived experience value directly, but is fully mediated, firstly by the attributes perceived from the innovation and subsequently, either by the impressions or the utility perceived from the attributes. The dual mediation model proposed was revealed to be more robust than both direct effect model and single mediation models, which provides a theoretical basis to understand more precisely how service innovation can add value to the whole travel experience.

### 5.2 Theoretical implications

This study empirically verified that tourists evaluate overall experience value either by recalling an intense, impressive moment or through an evaluation of the overall utility gained from the whole trip. This finding is consistent with retrospective theory proposed by Miron-Shatz (2009) and confirms its suitability for application in tourism contexts. In a recent review of decision making process theory in tourism, McCabe *et al.* (2016) argue that tourists can activate two different types of systems to make judgements that inform their decision making, one is intuitive, quick and

effortless (e.g. emotionally driven) and the other rational, deliberative and effortful (e.g. utility maximization).

However, in the majority of studies of tourism behaviour, tourist's decision making styles are presumed to be homogeneous. For example, in tourism destination choice studies, a normative processing approach (i.e. utility maximization) is often implied (e.g. Apostolakis and Jaffry, 2005; Papatheodorou, 2001; Seddighi and Theocharous 2002), whereas in the study of travel experience evaluation, a heuristic approach (i.e. peak-end rule) is the predominant assumption (e.g. Quan and Wang, 2004; Buckley, 2012). Indeed, different tourists may adopt different decision styles in different tourist contexts, such as short breaks or one-in-a-lifetime travel experiences (Li *et al.*, 2017). Therefore, the application of a single type of decision style greatly reduces the accuracy of predictions of tourists' behaviour. This study contributes to these debates by quantifying the existence of both evaluation systems within the context of value perceptions of innovations, which offers a more comprehensive analysis that can progress theories of tourists' behaviour.

Moreover, previous research has asserted that tourists perceive the contributions of different attributes separately and differentially in evaluations of overall value. For example, monetary cost was found to have a positive influence on tourists perceived value by Bradley and Sparks (2012), but the relationship between monetary cost and perceived value was found to be weak in some studies (Bajs, 2015) and does not contribute at all in others (Gallarza and Saura, 2006). One possible, and promising, reason behind the inconsistency is that the contribution of attributes to tourists overall perceived value differs because tourists were applying different evaluation approaches. An individual using a heuristic approach who focuses more on impressive moments may find monetary cost less important than a person who adopts a normative approach, whose value

perceptions are influenced more by instrumental attributes. Therefore, our research model enables further investigation of the contributions of a range of attributes of innovated service products based on each evaluation approach.

Additionally, consumers can experience both intrinsic and extrinsic aspects of innovated service products (Wei et al., 2016). The former ones have found to be useful in influencing consumer intentions to accept the product, while the later often lead to utilitarian outcomes such as efficiency and time saving (Meuter et al. 2005). The results of this study extend these findings by revealing that extrinsic attributes of innovations (i.e. convenience and learning) are not only useful in adding utility for the whole travel experience. They also contribute to tourists' evaluation through a heuristic path by leaving a good impression. In contrast, the contribution of intrinsic attributes such as immersion and surprise are rather limited in terms of the overall value perception through a normative approach. Because these attributes may generate behavioural engagement intentions leading to memorability, yet the specific product may not be deemed as useful for the whole trip. This implies that when taking a strategic point of view, individual tourism suppliers should ensure that extrinsic benefits of the innovation are understood and communicated to tourists.

Another interesting finding is that although consumers feel surprise when they encounter a service product innovation, the relationship between surprise and impression of the innovated product is not significant, which leads to the non-significant mediation effects related to "surprise". This result contradicts to the findings of Tung and Ritchie (2011), who posited that surprise leads to a memorable experience. One possible reason is that people tend to recall positive experiences rather than negative ones (Kim *et al.*, 2012). In previous research, surprise is always implied as positive (e.g. Tung and Ritchie, 2011; Oliver *et al.*, 1997; Rust and Oliver, 2000). But since some innovations

can be complicated, expensive or hard to learn, the valence of surprise can be either positive or negative. In our study, we only measured the extent of surprise rather than its valence. Thus, we may conclude that surprise perceived from service product innovation is not always useful for increasing tourists overall perceived value. This finding adds further proof that ultimately, the goal of product innovation is not only about surprising consumers with something new, but to impress them by either creating positive emotional experiences or providing specific benefits.

### 5.3 Practical implications

Given the complex service ecosystem of tourism destinations, the innovations of each tourism sector should not only focus on their specific services but also consider its use in contributing to the experience of the whole trip. By applying a multiple evaluative lens through which visitors view their experiences, tourism practitioners should be able to provide more effective and targeted innovations in product design according to the goal they want to achieve and varying by type of product. For example, the evaluation process for products with low cost and low personal involvement (e.g. a breakfast at the restaurant) should be different from that for expensive products with high levels of personal involvement (e.g. visiting the core tourist attraction). A quick and intuitive approach (i.e. based on impressions) may be adopted more often for the former whereas a more deliberate evaluation process (i.e. based on utility) is more likely to be used for the latter. Thus, different suppliers should make innovations with attributes that correspondence to the dominant evaluation approach adopted in that specific context.

Besides, the advertising of innovated service products should try to activate the corresponding evaluation approach in terms of the main attributes perceived from the innovation. For innovations perceived with more intrinsic attributes such as immersion, emphasizing a

memorable experience should be more useful than advertising its utility, whereas for the innovation perceived with more instrumental attributes such as convenience or learning, advocating its functional value for the whole trip should be more effective.

## 5.4 Limitation and future research

This study only investigated and illustrated the mental mechanism (normative or heuristic) about how people evaluate experiences that extend over time. In further studies, it could help to explore what factors or contexts trigger different evaluation processes. For example, Miron-Shatz (2009) indicated that inclination to use heuristic or normative evaluation depends on the type of retrospective evaluation context (i.e. absolute or comparative evaluation). In addition, the profile of respondents was skewed towards a younger demographic due to the feature of online data collection and the possibility that younger people are more willing to try innovated products. Thus, the results may be biased toward the experiences and perceptions of younger tourists. Although there is no significant difference among different demographic groups within the sample, some interesting findings may be lost due to the limited numbers within subgroups. Future studies are encouraged to further investigate the differences among different demographic groups regarding their experiences and evaluations of innovated service product.

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