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Measuring Traveler's Innovativeness

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ABSTRACT

Facing a growing amount of technology-driven services, travelers adapt the technology in order to enjoy the benefits of services. This research attempts to explore consumer adaptability of tourism services driven by technologies. This research operationally uses innovativeness as the term connoting the phenomenon of consumer's adaptability to technology-driven services. To glean the concept of innovativeness, a series of in-depth personal interviews is first deployed, resulting into eight dimensions of innovativeness. Afterward, an online survey incorporating 40 variables representing the eight dimensions is distributed that gathers 524 useable responses from experienced air travelers. Using a structural equation modeling, a parsimonious model is evidenced with a five-dimension solution retaining 13 innovativeness items. Meanwhile, the derived scale's construct and predictive validity are achieved. This study concludes that consumer innovativeness could be explicated by (1) novelty seeking, (2) vigilance, (3) interest, (4) experience seeking, and (5) social distinctiveness.

Keywords: *Innovativeness, technology, air traveler, scale development.*

INTRODUCTION

Technology-based services (e-commerce) are critical for the tourism industry because they promote the interactions between the providers and consumers while rendering service experiences to the consumers in a cost-effective way. Given there is a rising trend in examining the impacts of technology on travel experiences, however, the study on consumers' propensity of adapting technology-driven services is apparently limited. In consumer literature, researchers highlight those with high propensity to adopt new products as innovative consumers (Hirschman, 1980). In tourism, this concept has not been widely used. Most studies on tourism innovation have been conducted to examine the innovativeness of tourism organizations (Bieger & Weinert, 2006; Jacob, Tintoré, Aguiló, Bravo, & Mulet, 2003; Orfila-Sintes & Mattsson, 2009; Sundbo, Orfila-Sintes, & Sørensen, 2007; Tajeddini, 2010), tourism products/services (Frehse, 2006; Liburd, 2005), and tourism destinations (Hjalager, 2000; Mattsson, Sundbo, & Fussing-Jensen, 2005; Nordin & Svensson, 2007). Few studies, however, have identified vacation innovators and their behaviors (Goldsmith & Litvin, 1998; Litvin, Kar, & Goldsmith, 2001).

As past research has not explicitly examined consumer innovativeness in the hospitality and tourism field, nor has innovativeness achieved conceptual and measurement agreement, this study aims to understand consumer innovativeness in relation to technology-driven services in a

tourism setting. Specifically, three research questions are developed to achieve the study goal: 1) How could traveler's innovativeness be explicated from psychological aspects? 2) What are the attributes collectively illustrating the concept of traveler's innovativeness? and 3) Could the concept of traveler's innovativeness achieve its construct validity? Research question one intends to unveil the underlying dimensionality of the innovativeness that may allow marketers to describe the mindsets of innovative travelers and cope with their needs accordingly. Research question two and three are to render measurement variables representing the dimensionality of innovativeness and use those variables to predict the market trend in a scientific fashion.

RESEARCH METHOD

To address the study objective, the researcher relied on the scale development procedure suggested by DeVellis's (2011). To generate a large pool of items, personal interviews and focus group interviews were conducted to collect opinions from local residents, local hospitality managers, and college students to achieve a holistic view. The researcher asked in-depth questions on consumer innovativeness so as to unveil respondents' perceptions in this study. As suggested by Shannon (2004), the resultant items were evaluated by faculty and graduate students to improve item quality, face validity, and content validity.

To test construct validity and item reliability, an instrument with forty items were first pilot-tested in a convenient student sample at a mid-western university. A 7-point Likert scale was used to measure innovativeness, with 1 = strongly disagree and 7 = strongly agree. Exploratory Factor Analysis (EFA) was employed to detect the dimensionality and item reliability. Bad items were dropped to achieve a parsimonious scale. The instrument was further validated by online questionnaires in a general population. To measure consumers' adaptability of technology-driven service, this study was operationalized as air travelers' perception towards using an airport navigation application. Respondents must fulfill three criteria: 1) 18 years or older; 2) owner of a smartphone; and 3) been on an airplane in the past 12 months. In addition to the development of the consumer innovativeness measurement, two endogenous variables were included to assess the robustness of the derived scale in a perception-behavioral model. Respondents' perception was operationalized as perceived service innovativeness on a new airport navigation application; whereas behavior was operationalized as their intentions to adopt this new service. The former scale was adapted from Agarwal and Prasad's (1998) study, and the latter scale was measured by a three-item instrument (Agarwal & Karahanna, 1998, 2000).

RESULTS

Participants in the qualitative interviews consisted of 18 men and five women. Among three groups of respondents, residents were the oldest group (M=49), followed by local business managers (M=42), and college students (M=22). Coupled with items used in the literature, the qualitative study results assisted the researcher in creating an initial pool of statements. Eight overarching themes were identified: (1) novelty seeking; (2) eagerness; (3) openness; (4) vigilance; (5) venturesome; (6) experience seeking; (7) value seeking; and (8) social distinctiveness. Novelty seeking and social distinctiveness were mentioned the most.

A pilot study was distributed among the student population to test the validity and reliability of the construct to ensure statistical power. An exploratory factor analysis with an oblique rotation was performed on all measurement items to identify a priori of each item to its construct (Tabachnick, Fidell, & Osterlind, 2006). A 10-dimension solution was suggested, explaining 64.8 percent of variance. KMO statistic (KMO=.868; $p=.000$) was greater than .60, indicating its adequacy for factor analysis. Above all, seven items were excluded from the measurement scale, where 33 of the 40 attributes were retained in the model, with each dimension containing two to five attributes.

During the measurement validation process, a total of 524 usable cases were generated out of 619 attempted surveys. Approximately half of the respondents were female ($n=260$, 49.6%). The average age of respondents was 36.48, ranging from 18 to 68 years old. Over half of the respondents were married ($n=276$, 52.7%). Most participants were Caucasian ($n=370$, 70.6%). Over half of the participants had a college degree or higher ($n=301$, 57.4%).

The consumer innovativeness scale developed in previous stages was further analyzed using online data. Confirmatory factor analysis (CFA) was performed using AMOS21.0 to examine reliability and validity of the measurement scale. Composite reliability and Cronbach's alpha in all dimensions were greater than 0.60, and factor loadings for scale items ranged from .66 to .90 (see Table 1). Discriminant validity was also evaluated by comparing the AVE values with ASV, and comparing the squared root of AVE values with correlations between the five latent variables. All criteria were achieved and the scale had no discriminant validity issues. The results of the modified model were greatly improved and construct validity was evidenced.

Table 1: Factor Loadings of Measurement Items

| | α | F.L. | S.E. | C.R. | p |
|---|----------|------|------|--------|-----|
| Novelty Seeking | .882 | | | | |
| I am eager to try new products on the market. (CI14) | | .90 | .044 | 24.202 | *** |
| I enjoy trying unusual products. (CI10) | | .76 | .046 | 19.341 | *** |
| I often consider buying products that are more effective than the current options. (CI15) | | .71 | .044 | 19.536 | *** |
| I am curious about trying products that I have never used. (CI20) | | .81 | --- | --- | --- |
| Vigilance | .742 | | | | |
| I do extensive research before acquiring new products. (CI29) | | .90 | .172 | 9.119 | *** |
| I make careful decisions about what I want to buy. (CI33) | | .66 | --- | --- | --- |
| Interest | .672 | | | | |
| I am not interested in buying new products. (CI6R) | | .70 | .139 | 7.103 | *** |
| I am not enthusiastic about buying new products. (CI24R) | | .72 | --- | --- | --- |
| Experience Seeking | .860 | | | | |
| Acquiring new products makes me happier. (CI28) | | .86 | .043 | 25.211 | *** |
| Using new products gives me a sense of personal enjoyment. (CI31) | | .88 | --- | --- | --- |
| Social Distinctiveness | .894 | | | | |
| I prefer to try new products with which I can stand out among my friends. (CI13) | | .86 | .041 | 25.305 | *** |
| I enjoy using new products that make me a visionary leader. (CI17) | | .85 | .039 | 24.615 | *** |
| Using new products makes me a trend setter. (CI25) | | .87 | --- | --- | --- |

***Note: All values were significant at $p<.001$.

α : Cronbach's Alpha; F.L.: Factor Loading; S.E.: Standard Error; C.R.: Critical Ratio.

To evaluate the performance of the model, model fit was evaluated by the model fit indices. In the measurement model, the CFA model exhibited good model fit ($\chi^2 /df= 2.401$, CFI=.981, NFI=.968, GFI=.963, NNFI=.973, and RMSEA=.052). A causal relationship between consumer innovativeness and other two endogenous variables were also examined to assess if the resultant scale has satisfactory predictive validity in a predefined construct. Structural Equation Modeling (SEM) results revealed that the structural model had acceptable model fit ($\chi^2 /df=3.068$, CFI=.949, NFI=.926, GFI=.882, NNFI=.942, and RMSEA=.063).

Among all five factors, experience seeking ($r=.950$), novelty seeking ($r=.904$), and social distinctiveness ($r=.858$) were three strong predictors (see Table 2). Consumer innovativeness had positive impacts on both perceived service innovativeness ($\beta=.675$, $p<.001$) and behavioral intentions ($\beta=.062$, $p<.05$) (see Figure 1). The study therefore concludes that the derived scale had acceptable validity and reliability that can be adapted for future studies to measure the level of consumer innovativeness.

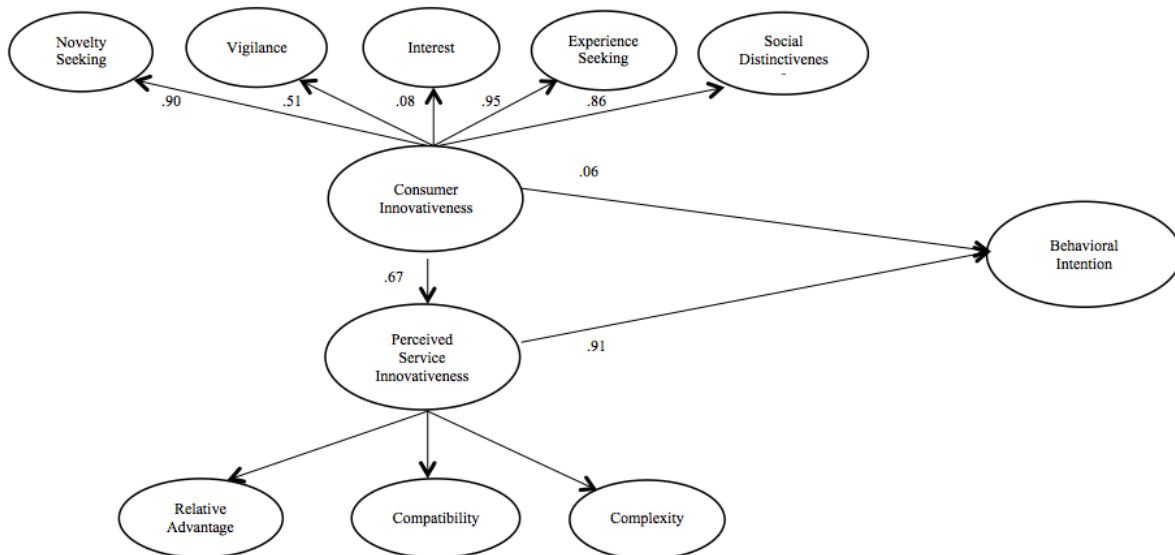
Table 2: Standardized Regression Weight

| | S.P.C. | S.E. | C.R. | <i>p</i> | R ² |
|---------------------------|--------|------|--------|----------|----------------|
| Novelty Seeking→CI | .90 | .046 | 17.034 | *** | .82 |
| Vigilance→CI | .51 | .044 | 7.214 | *** | .26 |
| Interest→CI | .08 | .075 | .896 | .371 | .01 |
| Experience seeking→CI | .95 | .046 | 19.119 | *** | .90 |
| Social Distinctiveness→CI | .86 | --- | --- | --- | .74 |

***Note: All values were significant at $p<.001$.

S.P.C.: Standardized Path Coefficient; S.E.: Standard Error; C.R.: Critical Ratio.

Figure 1: Path Diagram of Consumer Innovativeness



CONCLUSION

A 13-item, five-dimensional scale was developed to measure consumer innovativeness. The revised model had good model fit, construct validity, predictive validity, and reliability. The results of the study provide new insights and understanding of the concept as well as practical implications for tourism managers. First, this study introduces a new variable that may influence tourist perceptions and decision-making process, that of innovativeness. This concept has been widely studied in marketing research concerning consumers' characteristics and their responses to new products. Many existing marketing research has conceptualized innovativeness by studying consumers' tendencies to purchase a new product. These studies suggested multiple ways to measure innovativeness that may or may not be readily applicable in tourism contexts, however. The results of this study confirm that innovativeness indeed influences how consumers perceive the characteristics of new products and services. This perception may further influence consumers' decisions on their adoption or purchase.

Another concept confirmed in this study is that innovativeness is not unidimensional or static. Innovativeness is conceptualized herein as a multi-dimensional concept with five major components: novelty seeking, vigilance, interest, experience seeking, and social distinctiveness. Particularly, this concept consists of both consumers' characteristics and motivational components. This finding indicates that tourism consumers seek products/services that are both new and meaningful to fulfill their needs. Within these five dimensions, experience seeking, novelty seeking, and social distinctiveness have higher loadings. When examining consumer innovativeness, researchers may thus give these dimensions more weight than other dimensions.

This finding has two implications: (1) service innovation is perceived as an important factor in consumer adoption behavior. Innovators seek continuous service innovation, and would not be interested in buying old-fashioned, redundant tourism products; and (2) consumers' different levels of innovativeness may influence how they perceive service innovation, where a brand-new service innovation may not be considered as creative, novel, or useful by non-innovators. Practical implications associated with the above insights could be applied to the design and promotion of new tourism products. With the development of new technology and pervasive social media, consumers are bombarded with tons of information that helps them decide on their vacation destinations, restaurant options, or hotel choices, which may be influenced by business marketing as well as the consumer's social contacts. Marketers ought to strive for new designs and provisions of the next best products to satisfy consumers' needs. Marketers should therefore focus on the novelty and outcomes of the new tourism product, rather than their basic attributes.

The study has a few limitations in data collection process. The response rate is very low compared to other data collection methods. Another limitation is its use of a survey sampling company. This limitation needs additional research to examine issues of concern and modification of the measurement at multiple study settings. Nevertheless, this study contributes theoretically to understanding of the innovativeness concept and in suggesting an acceptable measurement scale. Follow-up studies that investigate the underlying causes for consumer innovativeness may contribute further to the understanding of the concept. Future studies would also benefit from examining customers' new product usage behaviors in a longitudinal fashion.

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